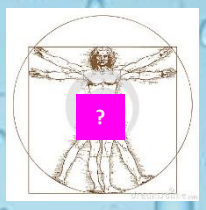
COOL WATER:

The Geo-Climatic Source of Western Exceptionalism*



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Content

Introduction

"The value of a person resides in her
individuality, not her *ancestry*."
(anonymous quote)

Western Exceptionalism

Why the West? This question inspires a massive and still growing literature. It looks at humanity's 19th century breakthrough into the modern era and its emancipatory outcomes, most notably mass prosperity, longevity, education and democracy. This literature asks why this breakthrough has been pioneered so unexpectedly by a region that—until then—was an insignificant backwater of civilization: Northwestern Europe and its overseas settler colonies in North America, Australia and New Zealand. Together, these areas constitute the Protestant core of what we henceforth refer to as the "West."[1]

Awareness that the West diverges from other cultures in its emphasis on individualism, liberalism and other elements of an emancipatory worldview is more acute today than it has been for a long time.[2] After the end of the *Cold War*, scholars and media pundits alike began to believe that democracy might be Western in origin but not in appeal because its liberal values express a universally human desire for freedoms. Consequently, a narrative formed telling that liberal democracy is irresistible in the long run and will make its way into all corners of the world, irrespective of historically grown cultural boundaries. Francis Fukuyama's opus *The End of History*[3] symbolizes the apex of this democratic euphoria.

Yet, the democratic optimism of the 1990s did not last for long. Instead, the failure of the *Arab Spring* and the revival of authoritarianism among major powers (most notably China and Russia) rejuvenated awareness that democracy and its liberal values are firmly culture-bound—culture-bound in the sense that liberal democratic principles continue to distinguish the West from other parts of the world.[4] Echoing Samuel Huntington's *Clash of Civilizations*[5], today's world is back to a geo-political polarization in which the West's liberal democracies compete with their authoritarian alternatives in China, Russia, the Middle East and elsewhere for the superior version of modernity.[6] All of this calls for a deeper understanding of the original source of the West's liberal-democratic signature.[7]

Since the beginning, the *Why the West* literature stresses that Western civilization is unique in its distinctly individualistic-libertarian way of thinking.[8] Libertarian individualism involves a worldview by which people see themselves and others first and foremost as autonomous persons

in their own right, each of whom is equal in their possession of individual agency and, hence, equally entitled to self-determination in private life and to participation—with an equal voice and vote—in public affairs.[9] Where this individualistic-libertarian ethos flourishes, societal development adopts an emancipatory dynamic, evident in recurring rights struggles against extant forms of discrimination, exploitation and oppression. This legacy started from the Nonconformists, Abolitionists and Suffragists, continued to the Civil Rights movement and lasts until this day, visible in the *Occupy Wall Street*, *Black Lives Matter*, *Me Too* and numerous other human empowerment movements.[10]

The emancipatory spirit that motivates rights struggles such as these originates in the West but is spreading elsewhere far beyond its Western roots, thus promoting the indiscriminate progression of human empowerment as a global trend.[11]

Our book unravels the geo-climatic source of the West's emancipatory struggles and why the motivation driving these struggles is about to spread around the world beyond its original geo-climatic source—which we describe as the Cool Water (CW-) Condition: the combination of mostly cool seasons in coastal proximity with steady rainfall.

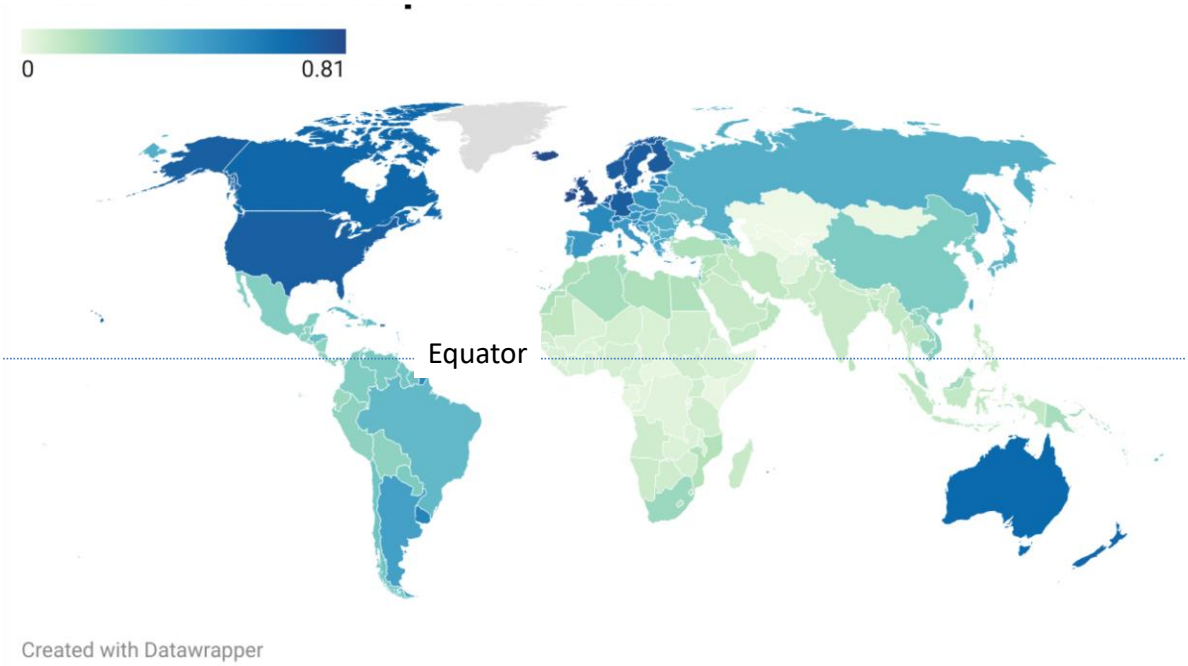
The still growing *Why the West* literature reaches from the legendary initial contribution by Max Weber (*The Spirit of Capitalism*) to various recent works by authors like Eric Jones (*The European Miracle*), Jack Goldstone (*Why Europe?*), Niall Ferguson (*The West and the Rest*), Ian Morris (*Why the West Rules*) and Joseph Henrich (*The WEIRDest People*), to name just a few of the most prominent books.[12] This literature offers a true cornucopia of valuable insights trying to explain why the West appears to be so exceptionally liberal, individualistic and immersed in emancipatory rights struggles.

However, the *Why the West* literature suffers from two shortcomings. First, descriptions of Western exceptionalism regularly embody a normative undertone, either praising the peculiarities of Western civilization as adorable achievements of human progress, or condemning them as despicable manifestations of colonial exploitation. In highlighting the CW-Condition as the geo-climatic source of the West's cultural distinction, our book avoids both normative extremes. For the CW-Condition addresses an entirely exogenous geo-climatic configuration for which the West and its people are neither to praise nor to blame.

Second, attempted explanations of Western exceptionalism are notoriously caught in endogenous circularity. They identify as causes of the West's singularities either certain institutions (e.g., property rights, political representation, a multipolar power structure) or ideologies (e.g., Christianity, Protestantism, the Enlightenment) that are *symptoms* of the West's evolved uniqueness but not its original *cause*. Indeed, prevalent descriptions of Western exceptionalism largely fail to elaborate on the *first* difference from which the West's distinctness started to evolve.

Filling this gap, we carve out Western civilization's *first* difference. We argue and demonstrate that this *first* difference lies in the geo-climatic condition under which Western civilization—and above all its Protestant branch—evolved. That is (once more), the Cool Water (CW-) Condition: the combination of mostly cool seasons with ubiquitous water resources. The CW-Condition is in no part of the world more pronounced than in Northwestern Europe and the areas of prime

The ***COOL WATER*** Map of the World



Note: Countries' entire territories are colored in the tone of their main historic population centers, reflecting the idea that – for instance – the development of Australia as a whole depends on the rather strong CW-Condition of Sidney and Melbourne, rather than the weak CW-Condition of Australia's desert-like outback. Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

migratory attraction in Europe's former settler colonies in North America, Australia and New Zealand (as shown in the CW-map of the world). Strikingly, not a single contribution to the *Why the West* literature even recognizes the CW-Condition in its unique combination of geo-climatic features. To cite two prominent examples, neither Larry Siedentop's highly acclaimed "*Inventing the Individual*," nor Joseph Henrich's equally praised "*The WEIRDest People*" even mention geo-climatic configurations as a potential influence on emancipatory societal dynamics—in spite of the CW-Condition's exceptional presence among the West's historic population centers.[13]

***But what is so special about the CW-Condition*?**

In a nutshell, the CW-Condition makes water and its derivative resources (i.e., land usable for hunting, fishery, forestry, crop cultivation and cattle herding) so *diffuse* that any emerging economy only functions with *decentral management of water, land and labor*. Decentral management infuses *local autonomies* into the social fabric, so much that evolving forms of social organization—be it family households, religious orders, business corporations or civic associations—mature under *self-governance*. Experience in self-governance equips social groups with a quintessential skill: the power to organize *grassroots resistance* against top-down impositions, like over-taxation and other forms of resource extraction. As a consequence, the state building process begins slowly, proceeding as a *conflictual affair* between

rulers' authority ambitions and bottom-up opposition, thus directing state formation towards *contractual institutional arrangements* by which elected assemblies check the executive power of central rulers. As this happens, government faces one bottom-up rights struggle after the next—cementing a logic that guides state action towards an increasingly indiscriminate pursuance of the common good.[14]

Throughout the first centuries and millennia of human civilization, *coercive* states dominated the pristine agrarian empires of the Middle East, the Mediterranean, India, China and pre-Columbian America. But despite their endurance and recurrent occurrence (as, especially, in the case of China), the coercive orders of the world's foremost agrarian empires proved unable to crack the glass ceiling from which to jump onto the next evolutionary stage. Indeed, coercive states all around the world failed to unleash the *grassroots economic initiative* and the *bottom-up civic activism* needed to launch an industrial-democratic take-off. The much later emerging *contractual* states in the CW-areas of Nortwestern Europe and its settler colonies, by contrast, initiated exactly this take-off—shortly after their first appearance. Hence, from the beginning at which the first cross-national differences in industrialization and democratization surfaced, the gradual absence-vs-presence of the CW-Condition powerfully predicts industrial-democratic progress[15]—a pattern that remains evident until today.[16]

And yet, as our monograph demonstrates, there is a pervasive demographic transition rolling all over the globe, shifting people's lifetime investment from fertility to education—a process intimately linked with rising life expectancies. And as people's lifetime horizon expands, their ambitions of what they want to get out of life for themselves, their children and others are ascending. In consequence, emancipatory aspirations spread into all corners of the world. By implication, emancipatory struggles progressively dissociate from their geo-climatic limitation to the CW-Condition, thus pulling all of humanity into the gravitational field of emancipatory struggles.

This is the current stage of the civilization process that this volume addresses.

Building on Christian Welzel's *Freedom Rising*[17], which is the first work to call attention to the CW-Condition, our monograph summarizes the findings of the German Science Foundation-funded Reinhart Koselleck project, titled "The Cool Water Effect: Why Human Civilization Turned towards Emancipation in Cold-Wet Regions."[18]

Our monograph reviews the *Why the West* literature to carve out its consistent blind spot, which lies in its negligence of the *first* difference from which the Western singularities started to take shape. Our novel contribution is to locate this *first* difference in the specific geo-climatic configuration under which Western civilization—and especially its Protestant branch—evolved: again, the Cool Water (CW-) Condition. We conceptualize the CW-Condition and its components and measure their gradual absence-vs-presence on different domains of observation, including countries, sub-national provinces and supra-national population families, as well as pre-industrial tribal populations.

In the next step, we illustrate and quantify the impact of the CW-Condition on various developmental outcomes with an emancipatory signature, past and present. Emancipatory outcomes, as we understand them, include societal features that liberate people from material, psychological and legal constraints on how to shape their lives. We summarize and measure these liberating features under the term "human empowerment." Indeed, our human empowerment index provides an encompassing overall measure of emancipatory outcomes, including economic development (which empowers people materially), emancipative values (which empower people psychologically) and liberal democracy (which empowers people legally). We evidence the statistical impact of the CW-Condition on human empowerment for past periods when the first cross-national differences in industrialization and democratization surfaced, as well as for the current era, using the most recently available data at the time of our writing.

Our exhaustive quantitative analyses draw on several large-scale datasets, most notably the *Varieties of Democracy* (V-Dem) panel dataset, the *World Values Surveys* (WVS) time series files, the global *PRIO-Grid Data*, the *Ethnographic Atlas* (EA)/*Standard Cross-Cultural Sample* (SCCS) and various nation-specific datasets.

Furthermore, we test the CW-Condition's emancipatory impulse against a myriad of alternative initial drivers of emancipatory dynamics, suggested in the *Why the West* literature as original causes of modern-day human progress. The result of our extensive tests is straightforward: The emancipatory impact of the CW-Condition withstands all controls for alternative remote causes of societal development today.

Finally, we demonstrate that emancipatory aspirations are spreading into all corners of the globe—as the result of a humanity-wide cognitive mobilization, driven by the pervasive globalization of science, technology and knowledge, followed by a ubiquitous demographic transition from fertility to education that is happening literally everywhere. We argue that this "quantity-to-quality" transition in people's lifetime investment capitalizes on our species' most potent, yet up till then, largely under-exploited faculty: individual intellect. We conclude that the continuation of this tendency embodies the prospect of a groundbreaking emancipatory shift in the civilization process writ large.

Importantly, our insights indicate a slow but steady decline in the determining power of the CW-Condition over developmental outcomes. By implication, this weakening of the grip of geoclimatic conditions means an increasing leverage for civic agency and public policy in steering societal development towards desired outcomes, such as those addressed by the Human Development Report (i.e., prosperity, longevity, education) or the United Nations' Sustainable Development Goals (e.g., fighting famine, poverty, violence, epidemics, discrimination, oppression, ecocide and other calamities).

The geographic link of emancipatory outcomes to the CW-Condition and the slow dissolution of this link involve intriguing policy implications in the long run. For one, climate change is about to shift the world's CW-areas further away form the equator and farther North- and Southwards to the poles. This prospect underlines the repercussions of climate change and the urgency of policies to combat global warming, especially in the Global South where the risks of climate-induced

disasters are about to grow as the CW-Condition shifts farther away from the equator to places smaller in territorial extension. On the other hand, the slow dissociation of emancipatory outcomes from the CW-Condition indicates a large-scale delimitation of humanity's "quantity-to-quality" transition, which flags out investment into human intellect (i.e., education and health) as by far the most important policy priority. Not only does more indiscriminate, longer and better education enrich a population's human capital and, thus, help to promote national economies on the value chain from low- to high-end products and services. What is more, especially educating girls is the most potent contribution to women's empowerment and gender equality, with all kinds of broader positive outcomes in terms of non-violence, anti-discrimination, anti-corruption, high quality child rearing, health care, economic prosperity, civic activism and vital democracy—in effect, the counter-thesis to the Taliban and other forces of "Endarkenment."[19] This conclusion deserves every emphasis against reactionary forces whose advocates propagate high female fertility and other patriarchal sex and family norms as demographic priorities.

Upon a second look, it is surprisingly simple to understand the developmental advantages of the CW-Condtion. They root in the very decentrality of individuals' access to vital resources. If lowering fertility and expanding education promote human intellect to become societies' most vital resource, decentrality is realized at maximum scope because no resource other than human intellect is more fully under the control of the individuals who possess it. In that sense, human capital formation contributes to individualization—positively understood as individuals' growing agency and control over their lives, which is synonymous with human empowerment: the penultimate emancipatory outcome in societal development.

In perspective, our monograph provides genuinely novel insights into civilizational dynamics with an emancipatory signature. These insights deepen our understanding of the West's distinctions, their origin in geo-climatic conditions and why this geo-climatic conditioning is slowly but steadily dissolving.

Books most closely related thematically and most similar in scope empirically to our work include three monographs: Joseph Henrich's *The WEIRDest People in the World* (Macmillan, 2020), John Gerring et al.'s *The Deep Roots of Democracy* (Cambridge University Press, 2022) and Oded Galor's *The Journey of Humanity* (Vintage, 2023). So, how does our monograph relate to the three exceptional works?

Taking *Henrich*'s opus as a point of departure, we build on his demarcation of Western civilization and the description of its emancipatory singularities under the term WEIRD (***W***estern, ***E***ducated, ***I***ndustrialized, ***R***ich, ***D***emocratic). But we go beyond Hernich's volume by evidencing that the West's *first* distinction lies in the CW-Condition. We also pick up Henrich's central claim that the West's emancipatory signature resides in the Medieval church's kinship-loosening marriage policy. Contrasting with this proposition, we demonstrate that kinship looseness is (and has always been) a typical feature of areas with a pronounced CW-Condition all over the world, thus stressing our *first* difference approach.

Gerring et al.'s recent book argues that the liberal elements of modern democracies originate in the harbor-richness of Europe's exceptionally long and indented coastline and that democracy

continues to flourish most vibrantly where Europeans settled in large numbers, with the liberal legacy in their baggage. As much as our findings confirm this insight, we go beyond it by showing that coastal proximity is only one element among others embodied in the CW-Condition. Moreover, we document that the emancipatory effects of the CW-Condition reach much farther than into the promotion of liberal democracy in the institutional domain. Instead, these effects also impact economic prosperity in the material domain and emancipative values in the psychological domain, which merge with liberal democracy into promoting human empowerment more broadly speaking. Most importantly, we show that—under mutual control—the explanatory power of European descent over emancipatory outcomes vanishes, while the CW-Condition retains its emancipatory effect in undiminished fashion. In a nutshell, ***ecology trumps ethnicity in driving emancipatory civilizational dynamics***.

Oded Galor's new monograph emphasizes that humanity's late escape from Malthusian economic cycles followed the "quantity-to-quality" shift in human lifetime investment: that is, the transition from fertility to education. This demographic transition in turn followed a progression in the knowledge requirements of production technologies, thus creating a demand for mass education. Valid as this argument is, it has an empirical void that our contribution fills. Indeed, we show that—even though the increasing knowledge requirements of production technologies should incentivize universal schooling—this incentivization is conditional: It only kicks in where the deployment of knowhow-intense technologies is spatially diffuse—in other words, where the CW-Condition favors decentral forms of water, land and labor management. And although Galor advocates geography and climate as the first difference in societies' development, his list of geo-climatic influences overlooks the CW-Condition as an entity combining the most significant geo-climatic advantages in a single constellation. Therefore, our focus on the CW-Condition adds a pivotal cornerstone that completes existing attempts to unify otherwise isolated theories of developmental dynamics.

The books by Gerring et al. and Galor continue a long tradition on the influence of geo-climatic features on progressive societal development, either in terms of economics (e.g., prosperity), psychologies (e.g., individualism) or politics (e.g., democracy).[20] In fact, this literature has a long track record reaching all the way back to Montesquieu[21] (and even Thucydides), who already speculated that tropical heat depresses people's work motivation and incentivizes slavery for this reason. Till today, the best documented environmental influence on societal development is the "lucky latitude" effect: Prosperity, individualism and democracy all are more advanced in colder climates in large distance from the equator, whether northward or southward.[22] By the same token, poverty, conformism and autocracy all prevail in hot and dry regions where advanced forms of agriculture depend on intensive irrigation.[23] Vice versa, scholars have shown that where rainfall is abundant and continuous, prosperity, individualism and democracy are more likely to flourish.[24] Researchers attribute a similar tendency to areas with sea access, long coastlines and many harbors.[25]

Yet, these geo-climatically oriented writings still have a marginal status in the "deep roots" literature[26], which is heavily dominated by institutional economics. Moreover, even the geo-climatically oriented "deep roots" literature addresses the three most advantageous features—cool

climates, steady rain and coastal proximity—in isolation instead of elaborating on their very combination, which exists in unique strength in the Protestant areas of Northwestern Europe and their migratory detsinations overseas.

As should be obvious from this brief review, our monograph builds on and complements works of comparable historic scope, while it provides important add-ons and void fillings. More importantly, our claims and findings go beyond those included in the three thematically closest books, thus enriching the extant literature with essentially novel and far-reaching insights. Indeed, we examine the deep causes of why the emancipatory turn in the civilization process originates in the globe's CW-areas and why this turn remained for the most time since its initiation a singularity of the CW-areas. In addressing this issue, we review the "deep roots" literature on the remotest and most original drivers of societies' developmental achievements today. Accordingly, we analyze the role of geography, genes, disease, agriculture, language, religion, statehood, colonialism, law traditions and other institutional legacies from the pre-industrial past. Doing so, we examine the developmental role of the CW-Condition in juxtaposition to all the other remote drivers of development, arguing that the CW-Condition is their connecting source and, hence, the true origin of the contemporary world's developmental differentiation. We demonstrate this point with a focus on developmental outcomes with an *emancipatory signature*: that is, societal achievements that liberate ordinary people from material, psychological and legal constraints on how to shape their own lives and their entire societies' course.

Book Overview

Our volume encompasses twelve chapters, apart from the Introductory and Concluding chapters. These twelve chapters are organized in four parts. Chapters 1 to 3 in Part A situate the CW-Condition in history. Chapters 4 to 6 in Part B theorize the CW-Condition's alleged impact. Chapters 7 to 9 in Part C evidence the CW-Condition's emancipatory impact. Chapters 10 to 12 of Part D address the CW-Condition's further implications. The following overview briefly addresses each chapter's thematic focus along the sequence of their appearance.

PART A: **Situating** the CW-Condition in History

Chapter 1 ("*The Emancipatory Turn in Civilization*") describes the sudden emancipatory redirection in the civilization process, which began to show its first signs around 1500 CE, explicating in which ways this turn began to put an end to the long misery of the Malthusian agrarian era in human history.

Chapter 2 ("*The CW-Condition Understood*") introduces the CW-Condition, reasons what is so particular about it, and why it should infuse an emancipatory dynamic into evolving social orders.

Chapter 3 ("*The CW-Condition Measured*") documents the geography of the CW-Condition, showing where it is most pronounced and how we measure it, given the CW-Condition's particular combination of climatic and geographical features.

PART B: **THEORIZING** THE CW-CONDITION'S IMPACT

Chapter 4 ("*Development as Emancipation*") argues why social progress should be understood in terms of "human" empowerment and why such an understanding must center on the idea of emancipation, that is, how free people are from material, psychological and legal constraints on their lives.

Chapter 5 ("*The CW-Condition's Gestation*") addresses the question of why mature forms of agriculture and well-organized states emerged suspiciously late in the world's CW-areas but why, once this did happen, the CW-Condition redirected and accelerated further societal development towards the double emancipatory outcome of industrialization and democratization.

Chapter 6 ("*The CW-Condition's Benignes*s") elaborates on why populations evolving under the CW-Condition develop a more indiscriminately benevolent vision of human nature, life and the world as a whole and how this element of egalitarianism favors cooperation among strangers and an impartial orientation toward the common good in business, government and among citizens.

PART C: **EVIDENCING** THE CW-CONDITION'S IMPACT

Chapter 7 ("*The CW-Condition and Colonialism*") demonstrates that the CW-Condition shaped the dominant form of colonialism, namely "extraction colonialism" under a weak CW-Condition and "settlement colonialism" under a strong CW-Condition.

Chapter 8 ("*The CW-Condition in Perspective*") relates the CW-Condition to a myriad of other legacy factors discussed in the "deep roots" literature as distant prime movers of societies' developmental differentiation. Here we show that the CW-Condition operates as the connecting source of all of these prime movers, which is evident in the fact that the CW-Condition correlates negatively with all prime movers supposed to delay human progress but positively with all those believed to fuel human progress.

Chapter 9 ("*How the CW-Condition Shaped the West*") picks up the connecting source thesis of Chapter 8 and unfolds a path model of historical layers from the agrarian era into the post-industrial period, establishing an evolutionary sequence from (*a*) initial geo-climatic features manifest in the CW-Condition to (*b*) female reproductive autonomy at pre-industrial times to (*c*) industrial-era cognitive investments to (*d*) human empowerment today.

PART D: THE CW-CONDITION'S FURTHER **IMPLICATIONS**

Chapter 10 ("*The CW-Effect beyond Countries*") demonstrates that the emancipatory effect of the CW-Condition is universal because it operates reliably in different contexts of observation, including some 200 pre-industrial tribal populations, the Earth's 64,000 inhabited geographical grid cells, the close-to-100 gubernatorial districts of Czarist Russia, the European Union's roughly 300 sub-national regions, the 275 sub-national provinces of the world's territorially largest countries as well as the world's distinct ethno-linguistic population families.

Chapter 11 ("*The CW-Condition and Genes*") argues why and shows that the emancipatory effect of the CW-Condition is genuinely a matter of ecological endowments and has nothing to do with the genetic make-up of the populations that evolved under these endowments: Ecology trumps biology in the making of civilizations.

Chapter 12 ("*The Recess of the CW-Condition's Grip*") documents that the CW-Condition's determination of emancipatory outcomes has constantly declined since the decolonization period, thus dissolving human emancipation's spatial limitation. A key explanation of this decline in the geo-climatic determinacy of societal development is the worldwide quantity-to-quality shift in people's lifetime investment from fertility to education: what we call the "births"-to-"brains" transition—a development that capitalizes on our species' most valuable quality, which we interchangeably address as agency, individuality or personhood. As we document, this "births"-to-"brains" transition is the most indicative manifestation of humanity's cognitive mobilization, moral liberation and aspirational ascension—a psychological process of self-empowerment that deserves no humbler label than Enlightenment.

To close, the **Concluding** chapter discusses the broader implications of our CW-Theory for the understanding of human nature and the logic of the civilization process, pinpointing democracies' inherent advantage over autocracies in unleashing intrinsic human motivations and mass-scale civic energies to the benefit of an indiscrimante pursuance of the common good. From an evolutionary perspective, we argue that the "births-to-brains" shift in humanity's lifetime investments and the mass-scale psychological awakening following from it is an evolutionary advantageous process because it capitalizes on the human qualities with the greatest reality-shaping power: cognition, imagination, motivation and initiative—in short, individuality. To recite our anonymous entry quote: "*The value of a person resides in her individuality, not her ancestry*."

To keep this manuscript readable, measurement documentation, methodological considerations, modeling specifications and other details of a technical nature are outsourced into an interactively navigable collection of ***S***upplementary ***O***nline ***M***aterial (referred to as SOM throughout this manuscript), available online at www.coolwatereffect.com.

We hope our readers find this opus stimulating and mind provoking, even where they disagree with us. In any case, we gratefully welcome every feedback—whether encouraging or critical—preferably sent to the corresponding author, Christian Welzel, available at: cwelzel@gmail.com.

PART A: SITUATING THE CW-CONDITION IN HISTORY

1 The Emancipatory Turn in Civilization

Once *homo sapiens* began to populate parts of East Africa roughly 150,000 years ago[27], our species explored, discovered and invented increasingly sophisticated tools, technologies and practices that enabled ever more complex forms of cooperation. During this progression, two transformations stick out as evolutionary leaps to a whole new level of social organization: the Neolithic Revolution and the Industrial Revolution.[28]

The Neolithic Revolution started some 10,000 years ago, at the end of the last Ice Age. It transformed foraging tribes into agrarian societies. Foraging communities collect and hunt their food. They take what is available and roam to other places when local resources are exhausted. Humans lived in this condition for more than ninety-nine percent of the time since the dawn of our existence.[29] Unlike foraging communities, agrarian societies are sedentary and exert greater control over their natural habitat in reshaping landscapes to make them suitable for growing crops and herding cattle.

Agrarian societies produce their own food. As cultivation methods mature, peasants produce more food than they themselves can consume. This agrarian surplus creates the basis for market trade and tribute systems. Food surpluses make it possible to feed an urban population whose members specialize in an increasingly diverse repertoire of non-agrarian activities, such as manufacture, commerce, tribute collection, policing, law making, jurisdiction and warfare. After the invention of money, more complex taxation systems emerge on which the two backbones of organized statehood are built: armies and bureaucracies. Based on armies and bureaucracies, well organized territorial states evolve into large-scale agrarian empires. These agrarian empires constitute the organizational core of the first civilizations in the Middle East, India, China, the Mediterranean and later in pre-Columbian America—what we call the pristine civilizations.[30]

Coercive Orders

The splendid examples of humanity's pristine civilizations share some key geo-climatic features. They all emerged in summer-hot/semi-arid climates where full-scale agriculture is limited to the course of gigantic river streams and their adjacent alluvial plains, such as the Euphrates and Tigris, the Nile, the Indus and the Yellow River. Making these river streams navigable and turning the territories along their shores into farmland requires massive landscaping projects as well as the construction and maintenance of a complex irrigation infrastructure. With this irrigation

infrastructure, a strictly hierarchical management of water, land and labor establishes itself. As Karl Wittfogel[31] pointed out already in 1957, irrigation-managed agriculture provides a fast track into well-organized bureaucratic states in control of wide territories. The resulting agrarian empires embody highly centralized structures with strict chains of command and autocratic power concentration around the central ruler and his imperial court—what Wittfogel called "oriental despotism."

Ironically, as impressive as the agrarian empires appeared in terms of their achievements in mathematics, writing, medicine, the fine arts, architecture, military power and their degree of centralized control over large populations and territories, once in place they turned into evolutionary dead-ends with respect to further civilizational progress. Autocratic rulers and their supporting elites have a vested interest in perpetuating their superior social position. Inheritance systems designed to transfer the social status of parents to their offspring serve exactly this purpose. The inheritance of social status from one generation to the next freezes social systems in immobility and leaves people no room to improve their position through merit.[32] The absence of meritocratic prospect minimizes the incentives for initiative, effort and creativity. In justification of inheritance systems, agrarian empires created sacral myths that legitimize the existing social hierarchy as a reflection of the divine cosmic order.[33] The ensuing dogmas taboo doubt and critique, thus breeding an intellectual climate of fear, conformity and intimidation. A conformist climate discourages independent thinking, the development of new ideas and, as a consequence, experimentation, exploration and innovation. In spite of intermittent phases of relative openness and toleration, the agrarian empires' entrapment in petrified hierarchies always came back to dominance at one point and effectively disabled all of the agrarian empires in history, no matter how mighty, to trigger the bottom-up outburst of societal energy—including both economic initiative and civic activism—needed to launch a double industrial-democratic take-off.[34]

At any rate, Wittfogel postulated that an autocratic tendency is inherent in irrigation-managed agriculture because irrigation management requires the central coordination of water, land and labor. There have to be "managers" to oversee the work needed to build and maintain canals, drains, bridges, locks, dikes and other large-scale constructions. And when these infrastructures stretch over wide territories, there needs to be a multi-layered chain of command among the managerial class. Finally, there needs to be a system of conscription that forces masses of ordinary people into work. The inevitable outcome is a centralized hierarchical power structure stretching over large territories—in short, imperial autocracy.[35]

Wittfogel's stylized description of this power configuration fell quickly in disfavor among historians, presumably for being too simplistic. Yet, recent contributions using systematic data largely confirm that irrigation-managed agriculture favors autocratic regimes—even until this day, in spite of the fact that agriculture is no longer the main economic sector in most countries. Obviously, irrigation-built states in early agrarian history leave societies with a legacy of coercive institutions that lingers into later periods, long after agriculture has ceased to be the prime economic domain.[36]

Since irrigation-managed agriculture is prevalent in summer-hot/semi-arid areas with a prolonged dry season, the Wittfogel-thesis suggests a clear connection between geo-climatic

conditions, on one hand, and labor organization, on the other, with an eminent imprint on social power configurations and the cultural values needed to back them up. This ecology-organization nexus is the whole point of departure of this book, although we look at Wittfogel's geo-climatic focus in reverse—by identifying the cool-wet summers of the CW-Condition as the ecological origin of civilizational dynamics with an emancipatory signature.

The CW-Effect in a Nutshell

Indeed, this book highlights a geo-climatic configuration that is the mirror image of Wittfogel's constellation: climates in relative coastal proximity with mostly cool temperatures throughout the seasons and a continuity of rainfall without a dry period—what we call the CW-Condition. We claim that the CW-Condition lays at the origin of Western civilization's immersion in emancipatory rights struggles. With very few exceptions, of which Israel is most noteworthy, the CW-Condition is unusually pronounced among all geographical areas of Western civilization, yet most outstandingly in those regions that—since the Reformation—drive the West's emancipatory pulse: the Protestant areas of Northwestern Europe and their overseas extensions to North America and Australia/New Zealand. In recognition of this fact, this book argues that, once agriculture emerges, the CW-Condition favors a decentral organization of water, land and labor in combination with local self-administration and consensual institutions, such as elected councils, local assemblies and voluntary associations of all sorts, that together establish a pluralistic social order. Once the feudal barter economy monetized, the decentral-pluralistic social order gave rise to a novel form of *contractual* statehood, which contrasted sharply with the *coercive* form of statehood prevailing everywhere else in the world where states came into being.

The contractual state emerged from constant rights struggles by which a multitude of self-organized groups fought to preserve their freedoms and autonomies against the power ambitions of central authorities. The contractual state rose from these struggles as a form of government in which elected assemblies check a ruler's executive authority, thus distracting government from the private benefit of the ruler and his cronies and redirecting state action, instead, toward the increasingly indiscriminate pursuit of the common good. By extending the franchise to ever wider circles of the population, in parallel to extending taxation and other civic obligations (like military service and school attendance), the *contractual* state evolved into the *liberal democracies* of our time, based on universal male and female suffrage and other generalized entitlements. This dynamic continued to be driven by the rights struggles of previously marginalized groups, from peasants to the working class, women, people of color and people outside the norm of heterosexuality.

Essence:

> *A civilizational dynamic driven by continuous rights struggles is inherently emancipatory by aiming at equal entitlements and opportunities that tear down discriminatory group divisions and thereby liberate individuals from societal limitations of their decisions, actions and life planning—thus, unchaining people's very individuality, which is the very*

essence of human empowerment and emancipation (the two terms used inter-changeably throughout this book).

As we will see, our planet's CW-areas exist in large migratory distances from our species' geographic origin in East Africa. Consequently, modern humans began to populate this world's CW-areas considerably later than they settled in the Middle East and the other summer-hot/semi-arid areas, reaching from the Mediterranean to East Asia, where mature forms of agriculture first emerged. Significantly, the later emerging human cultures in the world's CW-areas embodied emancipatory features from the beginning, visible in nuclear family arrangements with consensual marriages and in self-governing local entities, like village assemblies, townhall meetings and voluntary associations of all sorts. This decentral, locally autonomous and pluralistic social fabric characterized human life in the world's CW-areas from the foraging and horticultural into the agrarian stage of subsistence and has been transplanted in modernized format into the industrial and digital age of today.

Essence:

The late occurrence of human cultures in the world's CW-areas, in combination with their typically decentral-multipolar social fabric, prevented an early establishment of highly organized forms of statehood. And even if and where CW-located cultures entered a process of territorial state formation, the dynamic was strikingly different from the coercive type of statehood that established itself everywhere else in the world where states emerged early. Indeed, the later formation of states in the world's CW-located cultures gave rise to a novel type of contractual state and its subsequent maturation into the liberal democracies of today. During the colonial confrontation with the coercive states in the world's older civilizations outside the CW-sphere, the contractual state turned out to be so powerful that its occurrence reverted the direction of the civilization process, from perfecting human exploitation to promoting human emancipation. That is our main thesis.[37]

A History of Misery

The spread of agriculture during the Neolithic Revolution was critical for our species' dominance over planet Earth. The emerging agrarian societies' food production allowed to sustain much denser and larger populations than was possible among foraging societies. For this reason, humanity began to grow more steeply in numbers after the invention of agriculture.[38] As cultivation methods matured and more sophisticated forms of irrigation-management took hold, agrarian societies gave rise to coercive states that expanded through conquest and warfare into far-ranging territorial empires.

Since the ages, observers have been impressed by the grandeur of the agrarian empires of the pre-industrial era, most notably their vast territorial extensions and their splendid achievements in construction, architecture, weaponry and the fine arts. Even more impressive perhaps, the agrarian empires excelled by an amazing perfection in the orchestration of their members' subsistence

activities, giving each occupational group—from farmers to miners, artisans, traders, architects, artists, administrators and soldiers—its supposedly pre-ordained place in a hierarchical order of divine legitimacy.

Exactly because of their perfection in organizing human exploitation, the agrarian empires' achievements were altogether underwhelming when we look at their contribution to *mass*-level human wellbeing. Indeed, throughout the entire agrarian period, ordinary people's life expectancies remained as short or even fell shorter than they have been during our long foraging past, fluctuating somewhere between thirty-five and forty years on average. And in contrast to the apparent luxuries of the tiny hereditary upper castes, mass living standards grew nowhere much above the existential minimum for long. Instead, recurrent famines, epidemics and wars—the proverbial "three horsemen of the apocalypse"—turned life into an endless Malthusian cycle of recurrent disaster and recovery. Even worse, ordinary people lacked any legal protection of life, integrity and property by law. Far from it, human rights were an unknown concept and ordinary people had no control over their life at all: They were told where to live, what to produce (only to give half of it away), whom to marry and what to believe. Ordinary people had little choice over their own small world and no voice in their larger society. They were locked in their subordinate social position, with no hope of escape through merit. Slavery, serfdom, bondage, forced labor and oppression were the norm for the bulk of the population in all agrarian empires in human history—without exception. If anything, life was a source of threat and suffering—a situation that makes religion a welcome provider of comfort to people, and a powerful tool in the hands of the privileged to tame the masses, so as to make them live at peace with their dire human condition.[39] Till today, Karl Marx's description of religion as an "opiate for the masses" is to the point in this respect.

The Industrial Breakthrough

After millennia of a miserable agrarian history, the Industrial Revolution proved to be the most dramatic change in the way people live. Starting from an entirely unprecedented, bottom-up driven outburst of scientific discoveries, technological inquiries and mechanical innovations, the Industrial Revolution harnessed fossil energy to run machine parks that automated the production of commodities in large factories. The automation of production tremendously increased labor efficiency, such that goods could be produced in large amounts in a short time at a cheap price for a mass market. Ordinary people now began to participate in the economy as consumers. Companies made greater profits, and as industrialization progressed the companies also paid higher salaries—at least after the pauperism of the initial phase of the Industrial Revolution passed by. Ever since, there was a labor market on which the demand for a person's skills determined the level of pay. Because of this and driven by the increasing demand for more skilled workers, education has become an opportunity for individual career and life planning and the primary vehicle for upward social mobility. Per capita incomes rose on a mass scale and the state could collect income and consumer taxes on a much broader basis and use its massively grown revenues to fund public

infrastructure and services, like railroads, streets, sewage systems, water pipes, electricity grids as well as schools, hospitals, courts, fire and police stations and much more. Complex welfare systems, involving pension schemes, health care and unemployment benefits, followed suit. With the extension of income taxation and other civic obligations, like military service and school attendance, into all population segments, political representation also expanded until universal male and female suffrage created modern day democracy.[40]

Where industrialization advanced, the long-term consequences included longer, more prosperous and more dignified human lives, giving people access to education, opportunities for upward social mobility, as well as human rights and democratic voice. True, vast areas of the world under Western colonial rule did not participate in this mass-scale improvement of living conditions for long (and too long).[41] Nevertheless, this was the very first time in the entire history of our species that broad population segments in at least some parts of the world escaped poverty and oppression and began to experience prosperity and freedom on a mass scale instead.[42]

These improvements have not been immediately visible in the initial phase of industrialization, which brought child labor, polluted, infested and crowded cities, salaries close to or below the existential minimum and entirely inhumane working conditions, as described lucidly in the works of Friedrich Engels and Charles Dickens.[43] But emerging trade unions, the rise of social democracy and the suffragist movement enforced child labor bans, shorter working hours, labor protection laws, better pay and the introduction of universal welfare schemes in the second half of the 19th century. These developments corrected the grievances of early industrialization and secured prosperity and suffrage for the bulk of the population, including the working class, women and people of color.[44]

The Industrial Revolution has been the most transformative phase in the entire history of humankind in three respects, all three of which need to be addressed in superlatives to understand their scale.[45] First, since the dawn of civilization there has *never* been a period in which *one* civilization rose to dominance over *all* others around the globe. Before the colonial age, even the most powerful agrarian empires in the different corners of the world were hardly aware of each other's existence, let alone able to reach out to one other. But the Industrial Revolution led the West to a position of unchallenged and wholesale preponderance that allowed it to reach out to other civilizations and force them to take their subservient place in the first truly global order.[46]

Second, despite their impressive achievements in architecture, arts and social orchestration, the agrarian empires of the pre-industrial era turned out to be innovation traps after all. Once they reached the level of state organization needed to sustain their coercive orders, the agrarian empires suffocated further innovation and creativity under rigid hierarchies programmed for social immobility. To legitimize their hierarchical constitution, the agrarian empires' upper castes created dogmas that taboo criticism, questioning, independent thinking and free exploration. Such taboos tighten the culture and discourage innovation. The social systems of agrarian empires were frozen hierarchies that locked ninety percent or more of the population, the peasants, into serfdom—a position of exploitation that was inherited and could usually not be escaped. In other words, agrarian empires blocked most of their human talent pool. The thin hereditary upper castes had a vested

interest in the perpetuation of the immobile social hierarchy, thus favoring religious doctrine and other tools of intimidation designed to depress ordinary people's initiative, curiosity and creativity—in short: individuality. Sometimes, an innovation occurred in some sector of society. But none of the empires established science as a separate and independently organized social sector programmed solely to pursue empirical discoveries and technological innovation. The ideological programming of the agrarian empires towards intimidation limited their systemic learning capacities—a structural deficit that entrapped the agrarian empires in recurrent cycles of decay and recovery, until the confrontation with Western colonial powers quickly terminated their long-lasting existence.[47]

In their approach to innovation, the emerging contractual states of Northwestern Europe's CW-areas, which began to take shape in the late Medieval period, were the anti-thesis to the coercive states of the agrarian empires. In spite of their much smaller territorial scale before colonization, Northwestern Europe's contractual states outperformed the coercive states of the agrarian empires on every account: including technological potency, economic productivity, mass mobilization, military power as well as the governments' regulatory and fiscal capacities. The greater capacities of contractual vis-à-vis coercive states surfaced, not despite, but because of the constitutional checks on government that define the contractual state: These checks tie government action to aggregate societal preferences. Precisely because of this tie, governments can mobilize voluntary support from among the population at a scale unavailable to coercive states. The supremacy of Northwestern Europe's contractual states explains why the West's late-maturing powers colonized the world, instead of having been colonized by the much older coercive empires of the non-Western world.[48]

Explicitly encouraging independent, bottom-up driven discoveries, inventions and innovations, Northwestern Europe's contractual states institutionalized the continuous accumulation of knowledge through schools, universities, academies, laboratories, libraries, museums and research associations, all of which were connected in an expanding web that established science and education as a separate and independently organized social sector—a sector that emancipated itself from the church[49] and increasingly defied any ideological control over its proceedings. The contractual states, thus, favored the Industrial Revolution through which the pace of technological and organizational innovations reached an unprecedented and still accelerating speed. While innovation was a largely unplanned and altogether discouraged activity in the coercive states of the pre-industrial era, it became the guiding mind program in the contractual states of the industrial era.[50]

Third, and most importantly, the Industrial Revolution not only accelerated the civilization process. It actually changed its main theme by redirecting state development from perfecting human exploitation towards advancing human empowerment, driven by a continuing series of emancipatory rights struggles from below—a groundbreaking reversal of the logic of civilization as such. Pre-industrial empires had no mechanism to aggregate the preferences of their populations and to design policies to satisfy these preferences. The whole idea of governing for the common good would have seemed entirely outlandish to the rulers of these states, for whom the bulk of the population was simply a source of cheap mass labor, available to serve the luxury needs of the tiny

hereditary upper caste. Building state capacities in the agrarian empires, like establishing a tax farming system, has always been forcefully imposed on the people at the grassroots of society. Abandoning people's original freedoms and forcing them into conscribed labor and into a rigid hierarchy was, thus, an integral part of the state building process. Accordingly, foremost thinkers, like Thomas Hobbes in his famous *Leviathan*[51], considered the annihilation of ordinary people's original freedoms as the quintessential definition of civilization itself.

The Industrial Revolution came as a radical game changer of this pattern. Indeed, the Industrial Revolution emerged from societies in Northwestern Europe, most notably England of course, in which the state formation process took a unique path. The Atlantic Northwestern flank of Europe, inhabited mostly by Germanic tribes, was for millennia a backwater of civilization in which non-Western cultures showed no interest. There is no record of Chinese, Indian or Arab explorations into Northwestern Europe and little, if any, engagement in the literature of these civilizations with Europe's Atlantic Northwest. Even the Roman Empire was at best peripherally interested in this region of Europe. The Roman narrator Tacitus described the Germanic tribes as "barbarians." The center of civilization in Europe has since 2000 BCE been the Mediterranean South, most notably Greece and Italy.[52]

The Contractual State

Following the extinction of the Roman Empire's Western hemisphere in 476 CE, neither Europe as a whole, nor its territorially tiny section at the Atlantic Northwestern flank, came ever close to a lasting empire that unifies all territories under a coercive state with a standing army and centralized bureaucracy with a single undisputed emperor at the top. On the contrary, the Medieval feudal kingdoms of Northwestern Europe constituted a multi-polar web of power-sharing arrangements. True, there were hierarchies: The Pope and the German emperor had nominal authority over kings, the kings over dukes, dukes over lords and lords over their farmers. But these hierarchies were largely symbolic and lacked rigid means of enforcement, in the absence of standing armies and a salaried bureaucracy. Kings had to take advise from councils, to share authority with cardinals and bishops and to cope with multiple local, sectoral and corporate autonomies, visible in a myriad of self-governing bodies, including local assemblies, cities, city leagues, corporations, fraternities, sororities, monasteries, merchant guilds, freemasons and many others. Moreover, a considerable portion of the ordinary population, including all city dwellers and significant segments of the peasantry, was personally free. Free people were exempt from feudal obligations and could not be ordered to do things they did not want to do. They decided themselves where to go, which profession to pursue, whom to marry and to whom pledge allegiance and under what terms.[53]

When the feudal economy started to become monetized in the 14th century, rulers had for the first time the option to engage in state building. They could try to levy monetary taxes on the emerging bourgeoisie's financial resources and use the revenues to accumulate government budgets, in an attempt to fund armies and bureaucracies. And this is what ambitious rulers tried to do.

As a legacy of the feudal system, however, they were confronted with a pluralistic and decentral social fabric whose entities were used in self-governance. The practice of self-governance naturally feeds a spirit of assertiveness, which turned associations into opposition to unconsented monarchical infringements.[54] Equally important, the experience of self-governance equips its practitioners with the skill to mobilize resources, forge coalitions and organize effective resistance against over-ambitious rulers. Consequently, rulers had to negotiate their state building intentions with the bourgeoisie and other independent groups—negotiations resulting in a social contract that became known under the slogan "no taxation without representation." The deal was that rulers were granted the right to tax certain segments of the population, in exchange for these segments' representation in elected assemblies. Rulers needed these assemblies' consent to decide the amount of taxation and the purposes of its use, as for instance in financing a war campaign. The result was the *contractual state* that stands in sharp contrast to the *coercive state*, which prevailed everywhere else in the pre-industrial world where states emerged.[55]

The contractual state reconciles its actions with the aggregate preferences of the taxed population. In the absence of universal suffrage, the contractual state is not a *democracy*—at least not yet. But it embodies the potential to evolve naturally into a democracy, by expanding the franchise alongside the extension of taxation and other civic obligations into all population segments.[56]

At times, European rulers have been successful in getting rid of the shackles that elected assemblies tied on them. The result was royal absolutism, which was the ideal that all power-greedy monarchs aspired for. But in Northwestern Europe, royal absolutism was at best temporarily successful and has eventually been swept away by liberal revolutions, most notably the English, Dutch, American and French revolutions.[57]

The key point is that the Industrial Revolution emerged from contractual states that tied government action to bottom-up societal preferences. By universalizing the franchise on the way to fully fledged mass democracies, the Industrial Revolution has greatly re-enforced the state's orientation towards the wellbeing of the *general* population, rather than the most privileged segments of society. This popular orientation of the state led to completely novel policy programs and an intentional commitment of the state to societal development, progress and modernization. The commitment to modernization as a mission inspired orchestrated research initiatives, economic growth policies and welfare state programs, all explicitly targeted to create and secure "*mass* flourishing"[58], or what became known since then as the *common* good.

Of course, the common good orientation of the state was not exactly an expression of pure benevolence and altruism on the part of the rulers. Instead, the common good orientation reflected as much the rulers' self-interest, deriving from the insight that—in the economic and military rivalry with neighboring states—the chances to survive depend on the *entire* population's wellbeing. This kind of governmental "populism" has the sideeffect to turn ordinary people into prosperous consumers (so as to make them capable to pay taxes) and into entitled citizens (so as to make them willing to serve).[59]

In pre-industrial times, the logic of the civilization process tailored state capacities to the wellbeing of the thin hereditary upper caste, and nothing else. For common people this meant that

civilization operated towards their exploitation. But now, in rapidly industrializing Northwestern Europe and its settler colonies overseas, state action has been completely re-directed towards human wellbeing on a mass scale. The target was the population writ large, which implanted into state planning an orientation of impartiality.

In qualifying this statement, two critical reservations are due. For one, the indigenous peoples in Europe's settler colonies have been decimated and outnumbered so quickly that their wellbeing was of no government's primary concern, until very recently. Next, the wellbeing of Europeans coincided with the colonial exploitation of non-Whites especially in the Global South, although it is debatable to what extent colonial exploitation was a necessary precondition for Europeans' growing prosperity.[60]

Not downplaying these qualifications, it remains nevertheless a noteworthy truth that for the people of European nations and their settler colonies overseas, the rise of contractual statehood and its subsequent evolution into liberal democracy brought emancipatory consequences of a pervasive scale, in liberating people from perennial material, psychological and legal restrictions of their lives. From a humanitarian point of view, this was a most radical sea change in the civilization process because the emancipatory re-programming of state action unlocked nations' entire talent pool and gave everyone opportunities (albeit not equal chances, yet) to climb up the social ladder and to dedicate one's life to a purpose of one's own choice.[61]

Essence:

The takeaway of this chapter is that the Double Emancipatory Revolution towards industrialization and democratization originates in Northwestern Europe's CW-climate. The reason is that the diffuseness of vital resources under the CW-Condition favors variants of agriculture with a decentral management of water, land and people. The social fabric emerging from this condition is pluralistic in nature and infused with local, corporate, sectoral and other forms of autonomy. Once the process of state formation starts under these circumstances, a contractual order takes shape in which elected assemblies check executive authority, thus tying government action to social consent and directing state activity towards a more indiscriminate pursuance of the common good. It happened in the frame of this contractual state order that governments encouraged the myriad of grassroots initiatives and social movements that drive industrialization and democratization.

Summary

The Neolithic Revolution gave rise to agrarian empires in the summer-hot/semi-arid Eurasian civilization belt from the Mediterranean, the Middle East and India to China. Based on the hierarchical management of water, land and labor, the agrarian empires imposed a coercive order on people in which social status was inherited by birth, with almost no prospect to climb the social ladder through merit. As coercive orders, the agrarian empires suffocated ordinary people's creative

energies and proved unable to unleash the outburst of grassroots innovations needed to make the next civilizational step, that is, launching the Industrial Revolution.

In contrast to the agrarian empires of Eurasia's summer-hot/semi-arid civilization belt, Northwestern Europe's CW-area adopted intensive forms of agriculture late, and when it did, it directed the resulting state formation process onto a completely different pathway: namely, towards a contractual order in which the ruler's executive power is checked by elected assemblies. Political representation exercised by these assemblies directed government action towards an increasingly indiscriminate provision of the common good. This was so because the type of rain-fed agriculture performed under the CW-Condition did not need hierarchically managed irrigation, thus preserving the autonomy of nuclear family households as independent production units. As a consequence, the whole economy's labor organization remained largely decentral, which favored local self-governance and a pluralistic, rather than monolithic, social order. In the context of such a pluralistic order, state formation could only progress in parallel to extending political representation, which tied government to societal consent—hence, the contractual state. This contractual agrarian setting was much better prepared than the coercive agrarian empires of Eurasia's summer-hot/semi-arid civilization belt to lead humankind to the next level and launch the Double Emancipatory Revolution of industrialization and democratization. With this Emancipatory Turn in the civilization process, at least some limited segments of humankind began to escape the enduring misery of the Malthusian agrarian era, thus setting new standards of mass flourishing for an increasing share of our species.

2 The CW-Condition Understood

The Great Turn in the civilization process towards emancipatory struggles constitutes no less than a paradigm shift in world history. Given the paramount significance of this paradigm shift, it is easy to understand that scholars asked early on why the Emancipatory Turn happened among a segment of humanity that has, up till then, been a strange backwater of civilization. Even more strange perhaps, Northwestern Europe not only has been a backwater of civilization. Northwestern Europe's state building process followed an entirely abnormal path that did not establish a contiguous continental empire. Nor did it create centralized power structures with unrestricted rulers. Instead, Northwestern Europe ended up in a system of fiercely competing nation states, with severe constitutional limits to the rulers' executive powers. A well organized, unified continental empire with central control over advanced technologies, an effective bureaucracy, an orchestrated trade network, connected urban centers, a unified market and a regular agrarian surplus would seem to have been in a much better position to initiate a systematic "Great Leap Forward" program, so as to lead humanity to the next level of civilization in launching an industrial take-off. But Northwestern Europe's power configuration was the opposite of all of that. And yet, this was the place where the double industrial/democratic take-off happened.[62]

Why the West?

This mind-boggling conundrum is known as the *Why the West* question. The same riddle is sometimes addressed as the "Needham Puzzle," which expresses astonishment about why it was not China that led humanity into the Industrial Revolution, even though the Chinese empires had all the pre-industrial preconditions in place to make the industrial leap, and for quite a long time so.[63]

The huge and still growing *Why the West* literature continues to ask these kinds of questions in different geographic versions: Why did Europe and not China, or some of the other Eurasian civilizations with a much longer historical record, take the vanguard role? And why, within Europe, was it the Atlantic Northwest and its settler colonies overseas that did it, rather than the Mediterranean South with its much longer record of civilization?[64]

The *Why the West* question also varies in terms of the type of civilizational achievements that authors emphasize in pinpointing the West's pioneering role. Thus, the *Why the West* question refers, alternately, to Western breakthroughs in scientific inquiry, technological inventions, economic productivity[65], military power[66] and state capacity[67] as well as the ideologies[68] and

institutions[69] that sustain market competition, political representation, the rule of law and individual rights—all of which are, until today, distinct signatures that define the West.

Asking these questions that way is missing a key point, however. All these "killer apps," as Niall Ferguson calls them, exist entangled in a single tightly-knit package. Therefore, one cannot explain one piece of this package by the other.[70] Otherwise, the explanation remains entrapped in endogenous circularity and fails to explain wherein the package as a *whole* originates.

Essence:

> *We see the cohesive core of the Western "breakthrough package" in what we define as human emancipation, that is, people's liberation from external domination over their thoughts, decisions and acts—in other words, people's exoneration from material, psychological and legal constraints on how to live their lives. Emancipation in this understanding unlocks people's agency, that is, the faculty to pursue purposes of their choice and to take responsibility for their own actions. Emancipation, thus, means that material, psyhological and legal limitations of people's individuality recede.*

In that sense, emancipation is a thorny process rather than a splendid achievement; it is indeed a constant struggle for ever new emancipatory gains, from the abolition of serfdom, slavery and other cruelties, to the invention and implementation of ever new entitlements and an increasingly indiscriminate emphasis on universal human wellbeing. Given emancipation's glacially progressive nature, its successes did not all come at once, like a big bang, and then everything about emancipation was just in place. Instead, Western civilization began in the 14th and 15th century to embark on a trajectory that oriented itself with growing vibrancy toward emancipatory struggles, each of which inspired new social movements to terminate a yet extant form of domination and discrimination. Up to date, this dynamic shows no signs of slowdown. Instead, it seems to be progressing in self-accelerating fashion and to expand into all corners of the world, visible in the ubiquity of places where people rise and raise their voice against authoritarian impositions, including China, Hong Kong, Iran, Belarus, Myanmar and numerous other locations.

Emancipatory struggles are by no means always successful. On the contrary, the past shows many instances that appear as massive and horrible setbacks from an emancipatory point of view, including colonial exploitation, genocides, two world wars and the Holocaust. And until this very day, civil wars, interstate wars, terrorism, torture, execution, human trafficking and the many manifestations of group discrimination continue on a daily basis. The fact, however, that we look at these instances today as humanitarian disasters reveals that we evaluate events implicitly against firmly encultured emancipatory standards. Indeed, in coping with and overcoming these humanitarian disasters and human misery more generally speaking, emancipatory struggles became more and more visibly the signature feature that defines the pulse of Western civilization. Enlightenment philosophy and its precursors in the Reformation and Humanism were the earliest markers of the West's emerging emancipatory spirit.[71]

In trying to answer the *Why the West* question, we should not ask why only the West made the Great Discoveries or why the West was first in the Scientific Revolution or in market capitalism

or in the Industrial Revolution or in abolishing slavery, torture and serfdom or in establishing civil liberties, human rights, constitutional states, mass democracy and women's, children and gay rights. Instead, we should ask why the West was first in redirecting the evolution of civilization onto an *altogether* emancipatory trajectory, which includes each of the aforementioned breakthroughs, and many more. Indeed, all of the West's pioneering explorations, inventions and innovations—whether they were of a technological, cultural or institutional nature—had in common that they were directed towards freeing human existence from its this-worldly limitations. With Enlightenment philosophy, this emancipatory orientation became the defining mind program of the West and the ideological core of its cultural identity, so much that harsh post-colonial criticism of Western civilization's undisputable colonial sins defines today's political correctness—a state of debate unthinkable without the firm enculturation of an emancipatory moral standard. In a sense, Western civilization has been so successful in establishing emancipation as the standard of civilization that even the fiercest critiques of the West measure it against exactly this standard.[72]

True, the West's emancipatory rights struggles started out from limited population segments, most notably the male "white" bourgeoisie of Northwestern European descent. This limited beginning implied the exclusion of the working class, women, people of color and colonized nations from emancipatory entitlements. And yet, the Enlightenment view of human nature that inspired the initially limited rights struggles—namely, that all humans are by means of their very personhood equally entitled to have a voice and vote in their society—also motivated the subsequent rights struggles against one remaining form of group discrimination after the other. This emancipatory, anti-discriminatory spirit continues to fuel civic energies in the West, manifest in the *Occupy Wall Street*, *Me Too* and *Black Lives Matter* movements.[73]

In the beginning, the Catholic Inquisition and later on nationalism, fascism and other reactionary movements competed with and, at times, overshadowed the West's emancipatory orientation. Yet, the emancipatory orientation outlasted all of these cultural backlashes and might as well outlast the current challenge of swelling authoritarianism. As it continued to endure and to push the frontier of emancipatory achievements further ahead, the West's emancipatory orientation became the signature feature of its cultural identity.

Essence:

> *Understanding the West requires to understand the origin of its emancipatory drive. Doing so is to understand all of the West's pioneering scientific, technological, economic, institutional and ideological innovations as intertwined elements of a pervasive mobilization program aimed at tearing down existential constraints on human life and unleashing human initiative on a mass scale. The appeal of this mobilization program resides in the emancipatory promise that all individuals can escape hardship through personal merit—a promise that lends legitimacy to the struggles of discriminated groups for equal access to meritocratic opportunity.*

For a long time, the credibility of the West's emancipatory promise has been corrupted by the shadow of colonial exploitation and related forms of group discrimination. Yet, rights struggles

and equal opportunity claims by swelling numbers of people all around the world—most notably women, people of color and sexual nonconformists—are now filling the emancipatory promise with credibility in their fight against supremacist beliefs in white, male, heterosexual and other group-related superiorities.[74]

EXCURSION: "FIRST DIFFERENCE" EXPLANATIONS

Any causal theory of development that fails to specify the first difference from which subsequent developmental differentiations emerge is inherently incomplete. Indeed, causality is epistemologically speaking a serial concept that asks for the sequence of stages in a temporal chain of evolving societal variation. And since all sequences have an origin from which they start, causal theories that fail to identify this very origin are deficient in a most essential aspect of causal thinking.

Viewed under this premise, explanations that declare the West's liberal institutions (like rights and representation) or its liberal ideologies (like Protestantism and the Enlightenment) as causes of the West's particular emancipatory pathway towards industrialization and democratization are essentially incomplete. Historically, the West's liberal institutions and ideologies did not fall from heaven but developed from something else that must have been in place before. Not identifying this first difference is at best incomplete theorizing. Against this backdrop, the most credible candidate for a first difference cause of subsequent developmental differentiations between populations are the different geo-climatic conditions under which these populations evolve. The reason for this first-difference status of geo-climatic conditions is their temporal endurance, for which reason geo-climatic conditions reach back in time long before the West's liberal institutions and ideologies even started to take shape.

In line with Douglas North[75], many economists argue that the rise of the West originates in its invention of "liberal" institutions, from property rights to the rule of law, civil liberties and political representation. But stressing the West's liberal institutions is a description of a specific manifestation of the West's emancipatory orientation, but not an explanation of its origin.[76] Likewise, scholars in the tradition of Max Weber[77] have long argued that the rise of the West originates in the adoption of liberal ideologies, from Humanism to the Reformation to the Enlightenment.[78] Yet again, this is a description of a specific manifestation of the West's emancipatory orientation, not an explanation of its origin.[79] Liberal institutions and liberal ideologies are endogenous *symptoms* of the West's emancipatory orientation and do not illuminate where it came from.

A credible explanation of the origin of the West's emancipatory orientation must be *exogenous* to this orientation itself. And since this emancipatory orientation is an evolved cultural feature, we cannot invoke other cultural features to explain it. Otherwise, we explain cultural features by cultural features and, hence, remain entrapped in endogenous cultural circularity. The exogeneity requirement of the origin puzzle points to features that are definitely *prior* to any evolved cultural characteristic. Hence, it is mandatory for a first difference explanation to identify variations among societies that are *pre*-cultural in timing. In a nutshell, prior temporality is key. Clearly, this requirement highlights geo-climatic conditions as a possible first-difference cause of subsequent developmental differences between human populations.

Supporting this conclusion, global developmental differences of all kinds (economic, psychological, institutional) are strongly structured by space, while this spatial structuration is much more strongly pronounced between than within countries (for evidence see Chapter 10-4). And these

between-country differences in developmental achievements map on an astoundingly systematic geography. Indeed, the world's CW-areas, which all are located in high (absolute) latitudes in relative proximity to coasts, have been the pioneers of the Emancipatory Turn in human history and are, until this day, more advanced in literally every indicator of societal development, including consumer technologies, life expectancies, household incomes, schooling years, physical safety, economic security, social trust and diversity tolerance, civic engagement, subjective well-being, human rights, minority rights, gender equality, liberal democracy, elite integrity, government quality and environmental protection (clear evidence to this point is provided in Figures 9-3 and 9-4 in Chapter 9 as well as in SOM-Section S4). By the same token, societies located in summer-hot areas or areas with extended dry seasons lack behind in all of these indicators of human wellbeing.[80] Exceptions for this pattern exist and tend to grow slowly in number. Singapore, for instance, is a hot place on the equator, for which reason it exhibits a low score on our CW-index. Nevertheless, the city state is affluent and efficiently managed. Vice versa, North Korea's isolated planned economy keeps the population entrapped in poverty, in spite of the country's decent CW-Condition.

Still, such deviations from an otherwise powerful geographical pattern remain rare to date. These exceptions owe their existence to very specific circumstances that derail the respective countries from the usual pathway of their geo-climatic condition. Singapore is a city state whose affluence is, like that of Hong Kong, based on the strategic position of its harbor on sea trade routes. North Korea's poverty, by contrast, is the result of its communist terror regime, which would never have come into existence and would not continue to persist without massive foreign support, first by the Soviet Union and then by China's communist regime.

As always in a probabilistic relationship, the existence of a few exceptions from an otherwise powerful regularity does not invalidate the regularity. To rule out the regularity, one needs to demonstrate that the deviations are so numerous that they render the regularity insignificant. Just a handful of cherry-picked outliers from the overall pattern among the world's roughly 200 countries does not suffice to prove such insignificance. Hence, the latitudinal-coastal CW-geography of global development is present and powerful ever since developmental differences of today's magnitude first emerged with the beginning of the industrial era.

A Reversal of Fortunes?

Throughout human history, empires have been rising and falling. Likewise, the centers of power and the hubs of developmental dynamism have been shifting from one place to another. Recognizing this pattern suggests that history is just a recurrent ebb and flow without any meaningful direction of progress. In other words, history is merely a cycle of spring and fall, like the seasons.

Contradicting this view, there definitely is perceptible progress in history once we allow the location of the frontier to change places. If we do so, it becomes obvious that—over time—human societies have (***1***) grown larger in size; (***2***) have become ever more inter-connected through migration, travel, trade, cross-border communication and political alliances; and (***3***) ever more complex in the sophistication by which societies orchestrate their members' activities.[81] With each step upward in the knowhow requirements of our subsistence activities—from foraging to agriculture to industrial production to the use of artificial intelligence—organizational complexity in

coordinating human activities has reached new heights. Modern societies are actually so complex that the myriad of specialized daily activities that keep them going operate entirely beyond the comprehension of any single individual, although all of us contribute miraculously with our own activities to the system's functioning.[82]

Like physical, chemical and biological evolution, social evolution can be understood as a continuous and accelerating progression of organizational complexity. Like for species, organizational complexity is evolutionarily advantageous for societies, too. The reason is that organizational complexity expands the repertoire of operations that an entity (be it an organism or society) can perform—in other words, the scope of things that the entity can get done for the sake of its own livability. Among societies, growing organizational complexity expands systemic technological, fiscal, military and regulatory capacities and, thus, societies' collective control over reality—which is the driving engine of evolution writ large: namely, imposing control on entropy.[83]

Understood as progressing organizational complexity, societal development boils down to state capacity growth. State organization is the quintessential regulatory frame through which societies coordinate and reproduce themselves at will. The idea that "free" markets, instead of state organization, are civilization's greatest evolutionary achievement only seemingly contradicts the state-centered view of societal development. The reason is that safeguarding free markets is entirely a question of state capacity, which requires the effective protection of property rights, the enforcement of contracts, cartel regulations and other matters of legal oversight and jurisdiction. In a nutshell, state capacity growth is the essence of societal development from an evolutionary point of view with a focus on social complexity.[84]

Recognizing the centrality of state development informs a view of history known under the header "reversal of fortunes."[85] Accordingly, the summer-hot/semi-dry areas alongside Eurasia's axial civilization belt from the Mediterranean to East Asia have been leading humankind in the development of societal orchestration, and for a long time so, by launching the Neolithic Revolution, thus giving rise to the first manifestations of highly organized statehood and erecting the world's most splendid agrarian empires, including Sumer, Accad, Pharaonic Egypt, the Persian and Roman Empires, the Caliphates, the Ottoman and Mughal Empires as well as the Han Empires of China. Very suddenly though, starting with the Great Discoveries in the late 15th century, the late but quickly emerging colonial powers of Europe conquered the world, launched the Industrial Revolution and developed military, fiscal and regulatory state capacities of an unprecedented scale. In other words, the evolutionary lead position in propelling civilizational progress suddenly switched from Eurasia's summer-hot/semi-arid alluvial regions to Northwestern Europe's CW-areas and its territorial extensions into similar CW-climates overseas. This seeming reversal of fortunes is apparently in reverse again since the era of decolonization, which is ending the Western-dominated world order and shifting the centers of economic dynamism to South and East Asia, especially India and China, hence giving back these older civilizations their once lost prowess as world-leading powers.

Due to this view, the dynamic of societal development has no lasting geo-climatic anchor. Instead, history is shifting the center of developmental dynamism back and forth from one place

to another, no matter whether the locations' climatic conditions are predominantly summer-hot/semi-arid or cool and wet, as in the CW-areas. The latter have been a backwater of developmental dynamism throughout the entire Neolithic era, turned suddenly into the center of developmental dynamism during the Industrial Revolution and are now about to lose again their lead position to other places in the world. In light of this recurrent reversal of fortunes, geo-climate does not pay any lasting developmental premium to specific places. Given the inherent contradiction between the *constancy* of geo-climatic configurations, on the one hand, and the *temporality* of spatial differences in societal development, on the other, geo-climate offers no credible explanation for the time-specific spatial differentiations in societal development across the globe.

However, a morally qualified—*humanistic*—view on societies' developmental dynamic radically challenges the idea of a reversal of fortunes. To make the point, we reinvoke Amartya Sen's "human" development approach by which he defines *Development as Freedoms*.[86] Adopting this notion involves an emancipatory standard in judging which gains in organizational complexity during the evolution of societies count as *human* progress and which do not. Viewed through this emancipatory lens, not every advance in societies' fiscal, military and regulatory capacity means human progress. Only those advances in state capacity that bring a human "impairment-to-empowerment" shift in *mass*-scale living conditions and that improve the lot of ordinary people, especially their opportunities to exercise freedoms in their daily decisions and life planning, can count as human progress.

Tying our judgment of societal progress to this emancipatory norm is morally mandatory under a humanitarian ethic that focuses on societal development with a human face. In humanitarian thought, the cognitive capacity to exercise freedoms is an evolved part of human nature and a manifestation of our species' most highly evolved gift: human agency. Infused by evolution into our nature for reasons of greater reality control, human agency is an inherently meaningful gift whose very existence suggests the right of individuals to utilize their agency. The natural right of individuals to utilize their agency and, hence, to base their actions on their own choices also includes the individuals' entitlement to have a voice and vote in their societies' collective decisions. No stage and version of state capacity growth that progresses in coercive terms—that is, under violation of people's agentic rights and oppression of their original freedoms—counts as human progress from an emancipatory point of view.

Consequently, humanitarian thought guides our attention to developmental outcomes with an emancipatory signature. These are outcomes through which ordinary people are liberated from external domination over what they are expected to think and do, which means receding discriminatory constraints on human lives. Developmental outcomes with such an *emancipatory signature* include advances in people's material living standards, life expectancies, access to education and career opportunities, civic rights and social entitlements. Strikingly, when viewed through this emancipatory lens, none of the advances in state capacity growth during the entire agrarian period produced any human progress, not until the Double Emancipatory Turn towards industrialization and democratization, which only started some two-hundred-and-fifty years ago. Throughout our species' entire agrarian history, societies showed hardly any differences in the development of

ordinary people's living standards, life expectancies, education access and civic rights. Compared to people in foraging tribes, the people in agrarian empires certainly lived in societies with greater regulatory capacities, manifest in advanced forms of state organization. But in all agrarian empires, ordinary people were poor, illiterate and vulnerable, lacking even the most rudimentary rights in protection of their life, integrity, property and voice. From this point of view, the term "reversal of fortunes" is a mistaken description of human progress—at least when we define development in emancipatory terms, that is, by how prosperous, educated, entitled and free ordinary people live.

Under emancipatory terms, history did not shift the geo-climatic center of human progress. On the contrary, developmental outcomes with an emancipatory signature have been strictly limited to the world's CW-areas from the very beginning when the Emancipatory Turn at the eve of modernity produced such outcomes for the first time.

To repeat it, developing civilization is always and everywhere synonymous with erecting well organized forms of statehood that level up communities' military, fiscal, regulatory and—overall—their orchestrating capacities. However, depending on the geo-climatic condition under which state formation sets in, the process followed a different logic in a quintessential aspect of the human condition: ordinary people's material wellbeing, educational opportunities, legal entitlements and—more generally—their individual freedoms. Indeed, early state formation in the summer-hot/semi-arid agrarian empires of the Middle East, India and China erected coercive orders under which ordinary people's individual freedoms were altogether eliminated. In sharp contrast, the later beginning state formation in Northwestern Europe's CW-area shaped contractual orders, which launched the Double Emancipatory Turn towards industrialization and democratization, thus greatly enhancing ordinary people's material wellbeing and safeguarding their individual freedoms. Consequently, if we define societal development in emancipatory terms as the progression of human freedoms, the early civilizations of Eurasia's non-CW areas were actually never ahead of the late civilization in Northwestern Europe's CW-area. Under an emancipatory standard, there was no reversal of fortunes in the history of civilization because—under this standard—directing state formation towards coercive orders in the early civilizations was no fortune for humanity to begin with. Despite a record of historic recurrence in remodeled fashion, coercive orders are evolutionary dead-ends whose very coercive character is mistailored to a species consisting of intelligent individuals, each equipped with agency. Imposed on a species consisting of intelligent individuals, coercive orders inevitably block most of their population's talent pool, which is a developmental disadvantage of critical relevance, especially in competition with liberal orders and their contractual institutions.

Yet, the question remains why the civilization process led to industrialization and democratization *first*, and for a long time *only*, in the CW-world. The question of why the CW-world initiated this Emancipatory Turn in human history is all the more urgent because the CW-areas were the *last* regions in the world's arable zones to reach the mature urban stage of pre-industrial development.

Essence:

> *Because reaching the urban stage of pre-industrial development is necessary to launch industrialization and democratization, the fact that the globe's CW-areas reached this stage last and nevertheless launched industrialization and democratization first, lends credibility to the assumption that something in the CW-Condition itself is inherently favorable to an industrial-democratic dynamic. And because industrialization and democratization are emancipatory dynamics that liberate human lives from material and legal limitations, we suggest indeed that something inherent in the CW-Condition as such is favorable to the emancipatory dynamics by which economic and political freedoms advance.*

Keeping this in mind, asking why the CW-areas did not launch the Emancipatory Turn towards industrialization and democratization much earlier is just the wrong question. For it ignores that the CW-area of Northwestern Europe was the last agrarian civilization to reach the urban stage of pre-industrial development.

Essence:

> *Therefore, the question needs to be asked in reverse: Why did the much older civilizations outside the CW-areas not launch the Emancipatory Turn long before the CW-world did so? This question is all the more pressing when one recognizes that the non-CW-civilizations adopted agriculture and gave rise to urban societies and organized statehood several thousand years before any area of the CW-world did so. Why, despite such a gigantic lead in civilizational experience and learning, did none of the world's splendid agrarian empires launch the industrial-democratic breakthrough?*

Mainstream scholarship still neglects the obvious fact that, *first* of all, the industrial-democratic breakthrough was initiated only in CW-areas and that, *second*, fully fledged industrialization and democratization remained strictly limited to the CW-areas of our planet for the next two hundred years after the initiation of the Emancipatory Turn in history.

Essence:

> *What underlines the significance of the CW-Condition even more is the fact that, among non-Western civilizations, the first to industrialize and then to democratize was Japan—precisely the one among the non-Western civilizations with the most pronounced CW-Condition, as we will see.*

Widespread ignorance of these facts goes together with a dismissal of the possibility that the Emancipatory Turn's link to the CW-areas could have anything to do with these areas' very defining geo-climatic features: the combination of cool and wet summers with coastal proximity. If scholars address at all the possibility that certain geo-climatic features influence societal development, then usually only to dismiss this very possibility altogether, arguing that geo-climatic features, like the CW-Condition, are *constant* over time and are therefore inapt to explain the obvious *temporal* variation in *spatial* differences of development. In other words, spatial differences that lack temporality cannot account for spatial differences that vary over time.[87]

EXCURSION: UNDERSTANDING TEMPORALITY

Intuitive as this line of reasoning might appear at first sight, it is informed by a misconception of development itself. By definition, development is a process by which an embodied potential comes to fruition, like a seed that germinates—which is something that takes maturation *time* even under *unchangeably* favoring conditions. Therefore, the permanency-temporality difference that characterizes potentials (which are permanent) and their gestations (which are temporal) is inherent to all developmental phenomena. Once in place, a given seed is constantly present, for which reason its presence lacks temporal specificity. By contrast, the seed's germination is time-specific because the germination starts at a particular point in time and because each sequence in the germination process comes to its conclusion at a certain point in time as well. Hence, the fact that a seed's presence is time-invariant, while the germination of the seed is time-specific, does not invalidate the causal role of the seed's presence for its subsequent germination. If only a particular environment embodies the seed for a certain germination process, the favoring role of this environment will remain invisible until the seed's germination comes to its conclusion for the first time.

For instance, the hypothesis that the presence of liquid water embodies the potential for life to evolve is not disproven by the observation that life was not already there at the very beginning of water's presence. Consequently, *the argument that unchanging differences in societies' environmental conditions cannot account for suddenly appearing differences in societal maturation is logically false*. With respect to the CW-Condition, this book will show that the argument is also empirically wrong. The CW-Condition embodies the seed of emancipatory dynamics but this embodiment became obvious only when the seed completed the initial stage of its gestation for the first time, which happened in the late 15th century when societies in Northwestern Europe launched the rise of pre-industrial capitalism, the Copernican Revolution, the Great Discoveries, the Renaissance, the Reformation and the transformation of feudal kingdoms into contractual nation states with overseas colonies.

Some readers may suspect that our argument is not falsifiable, even if it is compatible with the historical record, because history only happens once and cannot be replicated under experimental control of its framework conditions. Hence, any type of historical evidence—no matter how strong—is inherently inconclusive. This rigorous position sees causal value only in experimentally controlled evidence. However, the logic of comparison is a valid non-experimental means to control variation. And history provides a true universe of comparable observations whose diversity in space and time offers enough variation to sort out hypotheses that are compatible with the historical record from those that are not.

Under these premises, our argument that the CW-Condition embodies the seed for emancipatory dynamics is perfectly falsifiable. One only has to collect observations showing that civilizations in non-CW-areas also followed emancipatory dynamics within the terms of our definition. And several millennia of civilizational record in the vast non-CW areas of the world provide a rich universe of spatial and temporal observations to demonstrate that this logical possibility is indeed an empirical reality. Despite its richness, however, history refuses to offer these observations, which does not prove that the falsification of our claims is logically impossible but that observational data do not deliver the material to support this falsification empirically. Consequently, we maintain that human civilization did nowhere pursue an emancipatory dynamic, in the absence of

the CW-Condition. We also maintain that this insight deserves way more attention than it has received so far.

Biology versus Ecology

After all, we have to recognize that there is a pronounced geography of development that is non-random. This developmental geography is compatible with both a biological and an ecological explanation. Both types of explanation emphasize attributes that are truly exogenous to culture because the attributes in question are temporally prior to any civilizational achievement.

To begin with biology, it is at least a hypothetical possibility that the CW-areas crossed the threshold into the industrial-democratic era first because the populations in these areas evolved a higher level of genetically anchored intelligence, which might have been a necessity to fuel the bottom-up outburst of economic initiatives and civic activism driving the industrial-democratic breakthrough in our history. If CW-located populations indeed evolved higher aggregate levels of innate intelligence, one may assume that human agency is more strongly pronounced among CW-populations, which might have enabled these populations more than others to establish, defend and expand the freedoms needed to utilize their agency. In this case, populations in CW-regions benefited from a greater potential to industrialize and to democratize already before they actually started to industrialize and democratize.[88] Whether one likes this kind of explanation or not, it is at least a logical possibility in offering a *first* difference explanation of developmental achievements.

Yet, this genetic explanation has little credibility in our eyes. If it were true, it would mean that there are significant differences in aggregate intelligence between ethnicities and, more importantly, that these differences are *naturally* rooted in these ethnicities' different gene pools. Although one has to admit that population averages in standardized intelligence tests do differ between ethnicities, nationalities and other social groupings, these differences vanish once we introduce proper controls. Compelling evidence to this effect (presented in Chapter 12) leads us to conclude that geographical differences in the societies' development have nothing to do with innate differences in the respective populations' aggregate intelligence.

Instead, we claim that the human talent pool is equally diverse and equally rich among all populations of our species, as soon as they reach a critical mass in terms of the sheer number of people. In other words, the human potential for societal development is an anthropological constant that does not vary between the different ethnicities of our species. What varies is the ecological conditions that bring this potential to fruition. Accordingly, we favor group differences in ecological conditions over those in biological characteristics as the origin of group differences in societal development, including the origin of the emancipatory dynamic in the development of Western civilization. The philosophical implication of this perspective is clear: Western civilization has no good reason to adopt a self-congratulatory attitude about its emancipatory achievements; but it also has no reason to be ashamed of them. Western civilization just was lucky to evolve under the geo-climatic condition that is most conducive to the human drive for emancipation.

What we have in mind with ecological conditions is the natural environment that defines the habitat in which a population lives and matures over the generations. Most basically, these habitat conditions include seasonal temperature and precipitation patterns and a location's proximity to the oceans with their maritime resources. These natural conditions both pose challenges and offer opportunities for how to make a living; they exert a direct influence on the type of fauna and flora from which humans can feed themselves as well as on the tools, technologies, practices and knowledge needed to sustain populations in a given habitat. Therefore, human culture takes shape through the techniques and repertoires that populations develop to utilize the opportunities of their environment and to cope with its challenges.[89] Especially in the agrarian phase of development, during which populations remain directly exposed to nature, the natural environment is of utmost importance. The natural environment determines whether agriculture is possible to begin with and, if so, what crops can be grown and which animals can be domesticated. The natural environment also determines what additional efforts and investments are necessary for which type of cultivation.

In *Guns, Germs and Steel*, Jared Diamond made these points most plausible, arguing in a compelling fashion why agriculture emerged first in the Middle East but only in a few places in Sub-Saharan Africa, despite the fact that humans settled there for much longer. The simple reason is that the Middle East's natural endowment included many more tamable animals and cultivable crops, in addition to better soil quality.[90]

Diamond's work focuses on the Neolithic Revolution. Therefore, it does not offer a detailed answer to the *Why the West* question, which relates to the industrial-democratic revolution of the Double Emancipatory Turn. Still, we believe that there is also an ecological answer to the *Why the West* question, although the environmental features are quite different from those explaining the early emergence of irrigation-managed agriculture in the Middle East and other early civilizations.

So what could the ecological factors be like that might have paved Western civilization's emancipatory trajectory? We already mentioned that the Emancipatory Turn in civilization originates in cool-summer areas with continuous rainfall in relative proximity to the sea.[91] As we will see, the Protestant countries in Europe's Atlantic Northwest that initiated the Emancipatory Turn all share to an exceptional extent the typical characteristics of the CW-Condition. And even though Northwestern Europe is not the only area in the world exhibiting a pronounced CW-Condition, the correlation between historical and contemporary emancipatory outcomes (including longevity, prosperity, education, human rights, liberal democracy and impartial government), on the one hand, and the CW-Condition, on the other, was and still is strikingly strong across the globe, as we will demonstrate.[92]

Human emancipation means people's liberation from material, motivational and legal restrictions on their freedoms in pursuing a purpose of their choice. In a nutshell, emancipation centers on freedoms; therefore, emancipation unlocks our species' most highly evolved quality: human agency—the ability to exercise freedoms. The strong correlation between the CW-Condition and a multitude of emancipatory outcomes, hence, reveals a tendency among populations under the CW-Condition to enculture freedoms. This association of the CW-Condition with freedoms is

most obvious in its correlation with both material prosperity and liberal democracy, which involve economic productivity and political activism and, hence, economic and political freedoms. Back in time at the eve of the industrial-democratic revolution (i.e., around 1765 and 1789, respectively) as well as nowadays, the global cross-country correlation between the CW-Condition and these two (material and legal) manifestations of freedoms is significant, positive and strikingly strong (for proof, see SOM-Figure 6-1a). Thus, the link between the CW-Condition and institutionalized freedoms has been an enduring matter of fact since the first emergence of the modern contractual form of statehood.

Strikingly, as we will see, among all the regions in the world suitable for agriculture, those with a pronounced CW-Condition adopted intensive agriculture and developed organized statehood significantly later than those without the CW-Condition. Partly, as we will also see, this is true because foraging populations arrived considerably later in the world's CW-areas than in the non-CW-areas. But even if we take the later peopling of the CW-areas into account, they still transited to agriculture suspiciously later than the non-CW areas, especially those with irrigation-dependent forms of farming (for proof, see Figure 5-3 and SOM-Section S9).

Essence:

We argue that precisely the CW-areas' delay in adopting agriculture testifies to the CW-Condition's inherent affinity to freedoms. In avoiding the transition from foraging to agriculture as long as possible, the CW-areas preserved the original freedoms of pre-agrarian societies. Indeed, despite the fact that CW-areas are generally suitable for agriculture, in none of these areas did people invent agriculture independently. Instead, people in CW-areas adopted agriculture only after demographic pressures from neighboring agricultural communities made this transition necessary for group survival. But even then, CW-populations channeled further agrarian development onto a pathway that translated the original freedoms of the pre-agrarian era into the multiple autonomies of the feudal period and finally into the institutionalized entitlements of the post-feudal age under the emerging contractual state order—the precursor of today's liberal democracy. In summary, then, the CW-Condition allows people to pursue with greater vigor and success the emancipatory drive that the evolution of agency has anchored in human nature.

The European Legacy Thesis

Why could it be that the CW-Condition favors the human quest for freedoms? One possibility is that the CW-Condition embodies a mixture of challenges and opportunities that have incentivized people inhabiting CW-areas to direct their efforts on securing and expanding freedoms. The other possibility is colonial legacies: It could also be the case that the CW-areas in the world are freer today because they were colonized by people from the most liberal parts of Europe at the time, most notably Britain, the Netherlands and other regions of Northwestern Europe. It is the

inhabitants' liberal ancestry then, and not the fact that they settled and evolved in CW-areas, that explains the greater presence of freedoms in CW-areas. We call this possibility the European legacy thesis.

Time and again, economists juxtapose the colonial histories of formerly British and Hispanic America as a case in point for the causal power of institutional legacies. Supposedly, different institutional legacies explain that, in comparison with the people in Hispanic America, those in British America enjoyed from the beginning greater economic and political freedoms, like property rights and assembly rights, which fuel more bottom-up human initiative in economics and politics, visible in consistently higher levels of prosperity and democracy in British America than in Hispanic America. Obviously, this divergence in developmental trajectories is in line with the liberal legacy of British colonizers and the illiberal legacy of the Spanish or Portuguese colonizers.[93]

Yet, illiberal-vs-liberal colonial legacies map way too tightly on the absence-vs-presence of the CW-Condition to dismiss this fact as a mere coincidence in the development of freedoms. This becomes obvious when looking at the two different types of colonialism that Daren Acemoglu, Simon Johnson and William Robinson distinguish.[94]

Both types of colonialism had catastrophic consequences for the victimized indigenous peoples. Still, the two types of colonialism sent countries on divergent trajectories of development, especially as concerns the enculturation of freedoms. The North American path generated a model of society in which freedoms are firmly encultured and allow people to take advantage of broad educational opportunities to enter the prospering middle class. This middle-class centered, "open-access" type of society coincides with a plutocratic economy and naturally favors liberal democracy.[95]

The South American path, by contrast, created a type of society in which freedoms are largely curtailed and in which lack of educational opportunities shields the upper caste of landed aristocrats, industrial barons and financial magnates from the working population. To protect their privileges against revolutionary ambitions from below, the upper caste in South America supported military autocracies in alliance with an oligarchic economy.[96]

We label the first type of colonialism, which was more prevalent in North America, "replacement" colonialism to signify the destiny the indigenous people had to face: being expelled from their territory to make room for European settlers to take it over as farmers. By contrast, we label the second type of colonialism, which occurred more strongly in South America, "enslavement" colonialism: Here, natives and slaves imported from Africa were forced into backbreaking work on plantations and in mines, only to give away their crop and ore yields to colonial rent-seekers. From the colonizers' perspective, replacement colonialism is equivalent to "settlement" colonialism and enslavement colonialism to "extraction" colonialism. In this context, it is noteworthy that the pre-Civil War division of the US into the slavery-defending South and the slavery-abolishing North reflects almost perfectly the divergence between the two types of colonialism—a reflection falling in line by no coincidence with the North's strong and the South's weak CW-Condition.

Replacement colonialism means that ordinary Europeans came in large numbers to settle as farmers, working their own land. This type of colonialism did not depend on slavery or forced labor, at least not primarily, because the settlers became owners of their own farmland, which they worked on themselves. For the settlers, the free-farmer/open-market economy, which was accompanied by a lack of government intervention, benefited from various economic opportunities that were the starting point for trade, innovation and growth. Replacement colonialism further left the respective colonies with a liberal legacy that bred democracy, the rule of law and fundamental rights. Replacement colonialism only happened in territories so thinly populated that the indigenous people could easily be outnumbered, decimated and marginalized. Replacement colonialism was also largely confined to the territories of the British Empire before American westward expansion began in the late 18th century. In the earliest waves of settlement, these colonies attracted mostly people from Northwestern Europe (i.e., English, German, French, Irish, Dutch and Scandinavian settlers). Replacement colonialism only targeted overseas areas with a similar CW-Condition as in Northwestern Europe, including Southeast Canada, the Northeast US, Southeast Australia and New Zealand. People from Northwestern Europe could tolerate physical work under the CW-Condition and knew what to grow in the corresponding climates.[97]

Enslavement colonialism meant that—apart from missionaries, explorers, sailors and adventurers—European colonists came in rather small numbers as rent-seekers to oversee the operation of plantations and mines and to confiscate their yield. They did not do the hard work themselves but enslaved the indigenous population for that purpose. Once the indigenous population was decimated (largely upon contact with European diseases to which the indigenous population had no immunity in combination with inhumane working conditions), the colonizers imported slaves from Sub-Saharan Africa to fill the void. Enslavement colonialism left behind an illiberal legacy that fed authoritarian rule, nepotism and corrupt government. Enslavement colonialism inhibited universal schooling, thus keeping the circle of the educated strictly limited to protect the privileges of the exclusionary upper caste. Enslavement colonialism was dominant among the Spanish, Portuguese and French empires and prevalent in subtropical and tropical climates in which Europeans would deny to perform hard physical work.[98]

No question, the two forms of colonialism and their illiberal-vs-liberal legacies correlate with the illiberal-vs-liberal traditions of the respective colonial powers, mapping replacement colonialism in North America on the liberal tradition of England and the Netherlands and enslavement colonialism in South America on the illiberal tradition of Spain and Portugal. Yet, this correspondence is not as tight as one might suspect at first glance, whereas the correspondence of the two types of colonialism with the absence-vs-presence of the CW-Condition is simply too perfect to be ignored.

To see the holes in the European legacy thesis, one only needs to recognize that, where the British and the Dutch sustained colonies in the tropics (where the CW-Condition is absent), as in the Caribbean, parts of Africa and Indonesia, they pursued the same extractive forms of enslavement colonialism as did the Spanish, Portuguese and French in their (sub)tropical colonies. Vice versa, the French's oppressive regime in (sub)tropical colonies did not repeat itself in their

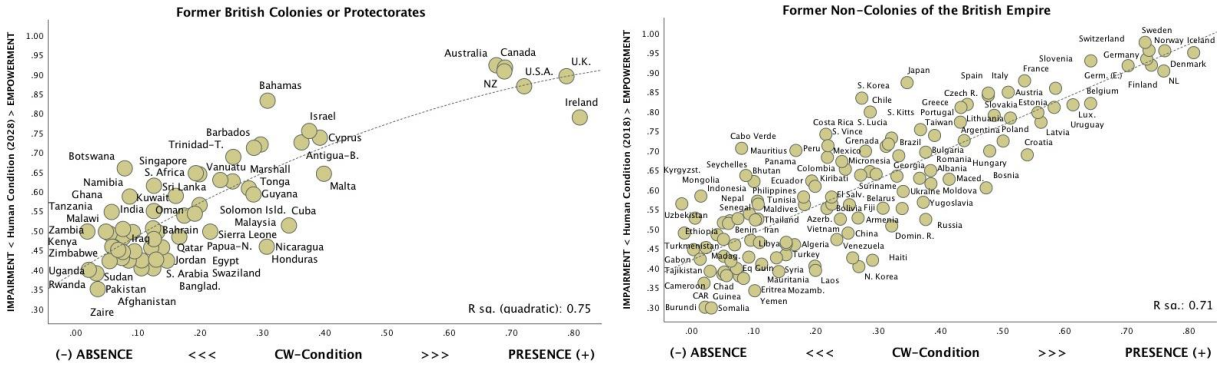
treatment of French settlers in Canada's Quebec region—a formidable example of the CW-Condition's presence. Thus, geo-climatic conditions, and more precisely the presence or absence of the CW-Condition, correspond as much with the prevalent type of colonialism as do the colonizers' liberal or illiberal legacy.

At any rate, it is too obvious to be ignored that the absence of the CW-Condition in colonized territories coincided with enslavement colonialism, while replacement colonialism only occurred in colonized territories with the CW-Condition in place. Recognizing this pattern, it appears as no surprise that slavery lasted the longest in precisely those parts of the US that lacked the CW-Condition: the cotton belt in the sub-tropical South. In a nutshell, whether European colonists came as settlers who worked their own land with liberty charters in their baggage or whether they came as rent-seekers of plantations and mines who enslaved the indigenous population depended on the presence-vs-absence of the CW-Condition: The New World got replacement colonialism where the CW-Condition is present and enslavement colonialism where it is absent. In areas, like Argentina and South Africa, where the CW-Condition is partly present and absent, various mixtures of both forms of colonialism appeared.

Replacement colonialism carries the ugly scar of having decimated the indigenous populations and marginalized their descendants. Yet, it eventually created societies that cultivate freedoms and offer broad educational opportunities to enable people to escape economic hardship through merit. Enslavement colonialism, by contrast, ended up in societies with the most rigid curtailment of freedoms and limited access to education, with the purpose to cement the existing economic inequalities.

There is another hole in the European legacy thesis that becomes obvious from a simple fact. The colonial powers with the most liberal institutional legacy, namely England and the Netherlands, were located precisely in Europe's most pronounced CW-region—the Atlantic Northwest. By contrast, the colonial powers with the least liberal legacy, Spain and Portugal, are situated in Europe's less pronounced CW-region—the Mediterranean South. And Europe's foremost land powers with an outright illiberal legacy, namely Prussia, Austria-Hungary and Russia, were based in another of Europe's less pronounced CW-region—the continental East. In other words, the close correspondence between the CW-Condition and freedoms is not only evident in those parts of the world that have been colonized by Europe but also among European powers themselves.[99] Hence, the close correspondence between the CW-Condition and freedoms is a structuring principle that connects both the Old and the New World, that is, the worlds of the colonizers and the colonized. The colonial legacy thesis leaves this *double correspondence* unexplained. The double correspondence, thus, remains a riddle unless we find reasons to attribute to the CW-Condition an inherent incentivization of human efforts directed at freedoms.

Figure 2-1. The CW-Empowerment Link among Former British Colonies (left-hand side) and Former Non-Colonies of the British Empire (right-hand side)



Horizontal Axes: Scale measures the gradual absence-vs-presence of the CW-Condition, with scores growing alongside cooler summers, more seasonal steadiness of rain and greater coastal proximity among countries' historic population centers and their ancestral universes, as explained in Chapter 3.

Vertical Axes: Scale measures degrees of impairing-vs-empowering human conditions among country populations, with scores growing towards the empowerment end alongside more abundant **life resources** (material domain), more widespread **emancipative values** (mental domain) and more generous **civic entitlements** (legal domain) for societies' individuals, as explained in Chapter 4 (Table 4-1) and SOM-Section S4.

Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

As said, the literature stresses that freedoms, democracy and other emancipatory outcomes derive from a liberal colonial legacy.[100] Scholars emphasize this argument the most with respect to the British Empire. Yet, the British legacy argument cannot explain why the CW-Condition and freedoms also correlate among nations that never have been colonies of Britain or never had significant proportions of British settlers. Indeed, if liberal dynamics are a unique legacy of former British colonies, then the CW-Condition should exhibit no effect on freedoms under control of the absence-vs-presence of British legacies. Contradicting this assumption, the two diagrams in Figure 2-1 measure on the vertical axis how free the people in different countries are today across the material, motivational and legal domains of freedoms, using an encompassing human empowerment index, which combines populations' economic resources in the material domain of freedoms, emancipative values in the motivational domain of freedoms and civic entitlements in the legal domain of freedoms, as documented in SOM-Section S2. On the horizontal axis, the two diagrams in Figure 2-1 measure the CW-Condition by our final 0-to-1 scored CW-index, as explained in all detail in Chapter 3.

It is obvious from the two diagrams in Figure 2-1 that the link between the CW-Condition and contemporary emancipatory outcomes (focusing on the multiple freedoms depicted by our encompassing human empowerment index) is significant, strong and of equal size, no matter whether countries do (left-hand diagram) or do not (right-hand diagram) possess a British legacy.

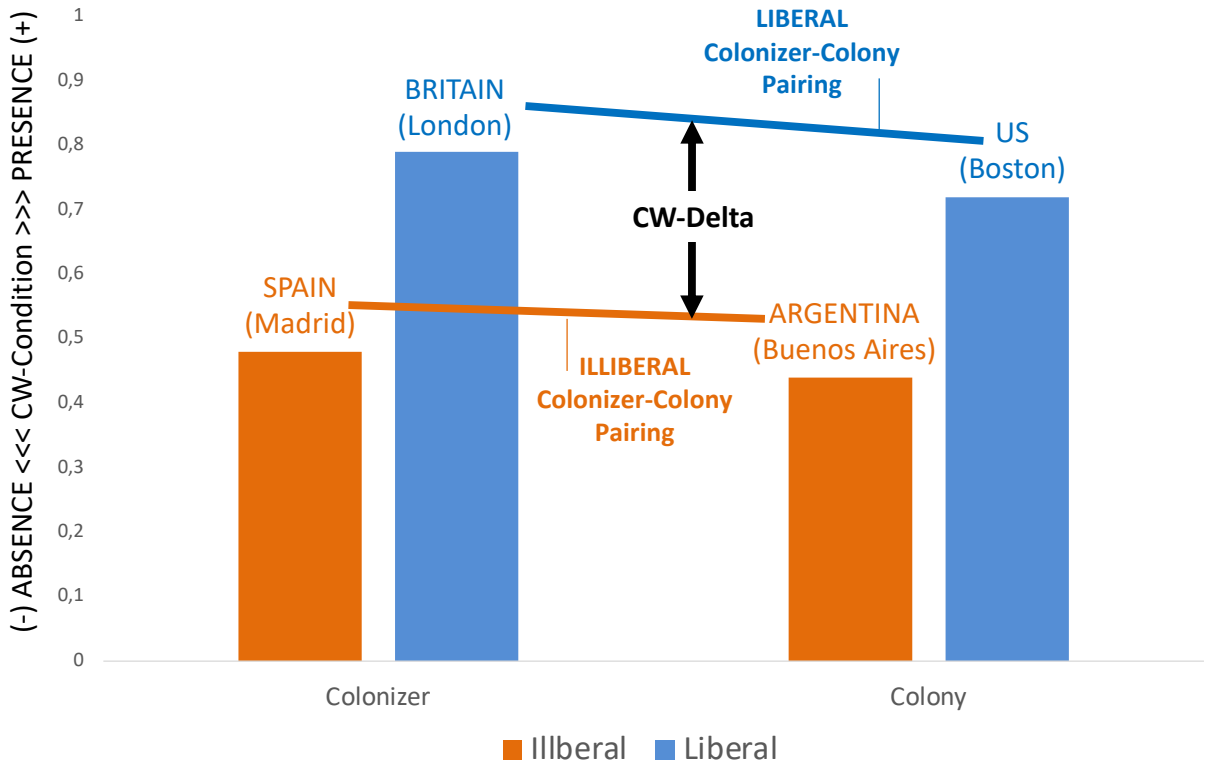
More generally, the correlation between the CW-Condition and freedoms does not vanish or substantially deteriorate under control of any colonial legacy factor, as will become obvious in greater detail in Chapter 7. In fact, colonial legacies that seem to exert a powerful effect on freedoms turn insignificant under control of the CW-Condition.[101] We take this evidence to conclude that (*1*) the CW-Condition within Europe shaped the cultural and legal legacies of the European colonizers, and at the same time that (*2*) the CW-Condition in the areas outside of Europe determined what kind of European colonizers they attracted. Specifically, colonial areas with a pronounced CW-Condition attracted settlers from European regions with a similarly strong CW-Condition whose cultural legacy was liberal because of this condition's strength. By the same token, colonial areas with a weak CW-Condition attracted colonists from European regions with a similarly weak CW-Condition whose cultural legacy was illiberal because of this condition's weakness.

Insight:

> *In a nutshell, the CW-effect is not an artifact of different patterns of colonialism; it actually explains colonialism in its two different manifestations: "replacement" and "enslavement" colonialism. Indeed, replacement colonialism became prevalent in colonial territories with the CW-Condition. These territories attracted mass migration by European farmers, artisans and merchants who occupied sparsely populated stretches of land to pursue their business without resorting to forced labor or slavery. The resulting free farmer/open opportunity setting was instrumental for democratic institutions, rule of law and civic rights. Enslavement colonialism, by contrast, dominated in territories without the CW-Condition, with enslaved indigenous people and deported Africans forced to work on large-scale plantations and in mines, only to turn the crop and mineral yields over to colonial rent-seekers, thereby reinforcing authoritarian rule, corrupt government and rights deprivations of a drastic dimension.*

Using a difference-in-difference logic, we can make our argument more illustrative. To do so, we distinguish a *liberal* colonization path comprising the British colonizers (a CW-score of .79 for London) and their North American colonies (a CW-score .72 for Boston), from an *illiberal* colonization path comprising the Spanish colonizers (a CW-score of .48 for Madrid) and their South American colonies (CW-score .44 for Buenos Aires). As these numbers clarify, the differences in the presence of the CW-Condition are big *between* the two colonization paths, with a large delta in CW-scores of .31 separating Britain and Spain on the colonizer part, and an almost equally large delta of .28 separating the US and Argentina on the colonized part. By contrast, the differences in the CW-Condition are tiny *within* the two colonization paths, with a small delta in CW-scores of .07 distinguishing Britain and the US inside the liberal path, and a delta of .04 distinguishing Spain and Argentina inside the illiberal path. Thus, the *between*-differences in colonization paths exceed the *within*-differences by at least a factor of four, which exemplifies that in terms of settlement colonizer-colony pairings were often shaped by similar CW-Conditions—something that has been largely ignored. Figure 2-2 visualizes the evidence.

Figure 2-2. The CW-Condition among Illiberal-vs-Liberal Colonizer-Colony Pairings



Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

In the development of freedoms, there is no "reversal of fortunes" from the ancient empires to the European colonial powers of the industrial era. The pre-industrial civilizations of the non-CW areas have *never* been ahead in safeguarding the freedoms of ordinary people. Over the millennia of their existence, there is no record of written constitutions and chartas that codify the rights of ordinary people (like life, liberty and property) among the civilizations of the non-CW areas. If anything, they have specialized in systematically suppressing freedoms.[102] CW-areas, by contrast, were always ahead in freedoms; in fact, they were the first to translate freedoms from their original pre-state form into their modern state-protected form.

Essence:

> *Populations in the CW-areas have long existed as hunter-gatherer bands and warrior tribes—a stage of development in which freedoms prevail in their original pre-state form. Where populations in the CW-areas left behind the warrior tribe stage, they transformed into feudal kingdoms and then into contractual states and eventually into liberal democracies, in which freedoms are state-protected. Throughout all these stages, populations in CW-areas retained more freedoms than any of the ancient agrarian empires, which all lacked the CW-Condition. If we follow Amartya Sen in defining "Development as Freedoms"[103], CW-areas have actually never been truly behind—thus, there was "no reversal of fortunes," at least not in the enculturation of freedoms.*

It was not the type of colonial power (illiberal or liberal) that decided which type of colonialism (enslavement or replacement) was established. Instead, the absence-vs-presence of the CW-Condition in the colonies determined which type of colonialism, enslavement-vs-replacement, with enslavement (extraction) colonialism mapping on CW-poor colonial territories and replacement (settlement) colonialism mapping on CW-rich colonial territories. Hence, the causal arrow between the CW-Condition and the type of colonialism runs from the former to the latter, not the other way around. This insight is also supported by the fact that Dutch and British tropical colonies in the Caribbean, Africa and Asia operated as much under the terms of enslavement colonialism as the Spanish and Portuguese tropical colonies in South America. After all, the link between the CW-Condition and emancipatory outcomes is no artifact of the dominant type of colonialism, for the CW-Condition itself explains which type of colonialism became dominant in a colonized area.

The European legacy thesis can either be couched in institutional terms referring to the British liberal legacy or in ideological terms stressing the Protestant liberal legacy. But neither version of the legacy thesis escapes empirical disapproval under control of the CW-Condition. Aprt from its empirical invalidity, the legacy thesis suffers from another problem: It hiddenly embodies an ethnic supremacy premise. The reason is that both the British and the Protestant liberal legacies are confounded by an ethno-linguistic ancestry originating in the predominantly Germanic tribes that have populated most of Northwestern Europe since the Great Migrations on the eve of the Medieval age. Especially when the origin of Northwestern Europe's liberal legacies in this region's particular geo-climatic condition is openly denied, no first origin of the liberal legacies is left other than Northwestern Europe's particular ethno-linguistic ancestry. Even if not made explicit, by canceling out geo-climatic origins, this obvious ethno-linguistic confounding of the liberal legacies implicitly suggests some sort of supremacy of the Germanic peoples in enculturing liberal institutions and ideologies. Consequently, the denial of geo-climatic origins supports between the lines a racial theory of the origin of liberal legacies.

Openly expressed, the racial undertone implicit in the European legacy thesis would flagrantly violate political correctness, for which reason few advocates of the European legacy thesis dare to point out this message explicitly. Yet, the uncomfortableness of a fact does not make it untrue, for which reason we need to confront the racial connotations of the legacy thesis empirically. Evidencing the geo-climatic origins of liberal legacies in juxtaposition to these legacies' racial confoundations is the best way to do so. Following this premise, the evidence just presented already pokes some holes into the European legacy thesis. Further evidence presented in Chapter 7 ("The CW-Condition and Colonialism") debunks the European legacy thesis completely.

The CW-Theory Writ Large

The CW-condition bestows on its inhabitants certain grassroots autonomies, most notably autonomy in access to freshwater and its derivative resources, such as valuable land. The CW-condition also harbors a lower disease burden and greater hydration and nutritional security, as we will

document. For this reason, the CW-condition exposes its inhabitants to lower fertility pressures, which enhances female reproductive autonomy, thus sustaining nuclear family arrangements with their rather egalitarian-individualistic and less patriarchal features. As social organization grows more complex, these grassroots autonomies translate into multiple higher-ordered autonomies, including local, sectoral, corporate and legislative autonomies.

Exercising these autonomies makes evolving social entities experienced in self-governance. This experience infuses into social groups an emancipatory spirit that is directed against authoritarian curtailments of their autonomies. Practice in self-regulation equips social groups with the skill of organizing effective resistance against rulers with overly autocratic ambitions. Thus, when the monetization of the feudal economy gave rulers for the first time the option to engage in state building, they had to negotiate their intentions with the independent segments of society, which resulted in a social contract, epitomized by the slogan of the Boston Tea Party: "no taxation without representation!"

The Boston Tea Party's motto did not fall from the sky on December 16, 1773. Its underlying logic, instead, already guided earlier bottom-up boycotts and self-coordinated resistance acts of various kinds, all of which aimed at easing the terms of subjects' fiscal and service obligations towards monarchical authority. England's *Magna Carta Libertatum* of 1215 CE is a prime example. This and similar constitutional documents, such as the *Habeas Corpus Act* of 1679, which were enforced by recurring episodes of grassroots opposition, gave rise to a unique form of state, the *contractual state*. In the contractual state, elected assemblies check the executive authority of monarchs. In the absence of universal suffrage, the contractual state is not yet a democracy. But it embodies the potential to evolve naturally into a full democracy, by gradually extending the franchise to all segments of the population in exchange for income taxation and other civic obligations, such as law abidance, military service and school attendance. From then on, representative institutions harmonized state actions with aggregate societal preferences, thus directing state activities towards an increasingly indiscriminate provision of the common good.

Compared to the coercive states of the agrarian empires in Eurasia's summer-hot/semi-arid civilization belt, the emerging contractual states of Northwestern Europe's CW-area pursued the protection, rather than the oppression, of multiple societal autonomies. These autonomies provided a setting better prepared to unleash the outburst of grassroots creative energies and civic activism needed to launch an industrial-democratic take-off. The CW-Condition, hence, contributed significantly to the Double Emancipatory Revolution towards industrialization and democratization.

Summary

Humans are a species equipped with the potential for agency, that is, the faculty to pursue purposes of our own choice. In fact, nothing else defines human nature more distinctly than our agentic potential. Therefore, individuals' and societies' "human" development must be defined in terms of the achievements that unlock our agentic potential on the broadest and most indiscriminate scale

possible. Quite clearly, this means that development boils down to societal achievements with an emancipatory signature, by which we denote any mass-level accomplishment that liberates ordinary people's lives from external domination over what they are supposed to think and to do.

The signature of Western civilization is not that it has finally *achieved* human emancipation but that the *struggle* for emancipatory goals, with recurrent defeats and victories, sets its pulse. The *Me Too*, *Black Lives Matter* and *Fridays for Future* movements all are glaring testimonies to the West's emancipatory drive but also to the fact that much still needs to be done to achieve an indiscriminate provision of the common good—beyond sexism, racism and ecocide.

First-difference explanations of contrasting developmental outcomes must be exogenous to their object of explanation, which disqualifies both institutions and ideologies (of whatever kind) as first-difference candidates for causality. For institutions and ideologies themselves represent evolved developmental outcomes that are, hence, inherently endogenous to developmental differences. Geo-climatic conditions, by contrast, are a valid candidate for a first-difference explanation of developmental trajectories because they are temporally prior to subsequent developmental differentiation. In reverse, there is no developmental differentiation among human populations preceding the geo-climatic conditions of the habitats in which they evolved.

Lending credibility to the CW-Condition's first difference status, there is a clear and statistically significant CW-geography underlying literally all scholarly acknowledged indicators of development, progress, life quality and human wellbeing—no matter whether these indicators cover societal aggregations of individuals' material flourishing (like prosperity, longevity, health, and education), people's psychological wellbeing (including trust, tolerance, self-esteem and happiness) or systemic indicators of state-level functioning (in matters of order and stability, rule of law, elite integrity and liberal democracy), or whatever else comes to mind as a measure of societies' evolved qualities.

As a geo-climatic feature, the CW-Condition is temporally prior to any other factor suggested in the "deep roots" literature as a remote driver of societies' contemporary developmental differences. Because of the CW-Condition's inherent temporal primacy, none of the suggested remote drivers qualifies as a *confounder* of the CW-Condition's developmental impact, for later occurring phenomena can logically not confound their preceding conditions. At the most, suggested remote drivers emerging after the CW-Condition's presence can operate as *mediators* of the CW-Condition, that is, as mechanisms or filters through which the CW-Condition exerts its developmental impact. The credibility of such a mediating role depends on the extent to which the supposed mediator actually absorbs the CW-Condition's effect. However, as we will see in Chapter 9, such an absorption of the CW-Condition's effect on contemporary outcomes with an emancipatory signature is hard to find.

Scholars like to portray the history of civilization as a "reversal of fortunes," stressing that the West was for the longest time lagging behind the splendid civilizational achievements that the old agrarian empires of the Middle East, India and China have been exhibiting to the astounding admiration of Western travelers, such as Marco Polo. The notion of a late-booming West is true insofar as the agrarian empires adopted intensive forms of agriculture and highly organized forms

of statehood much earlier than the CW-areas of Northwestern Europe. However, the agrarian empires erected rigidly coercive state orders and repressive labor regimes that deprived ordinary people of their original freedoms and did nothing to improve ordinary people's material wellbeing (living standars were not above foraging communities), psychological autonomy (mating and career decisions were not free) and legal protection (guarantees of life, liberty and property was inexistent). Consequently, if we define societies' development in emancipatory terms and focus on achievements that liberate ordinary people from material, psychological and legal constraints on how to shape their lives, the agrarian empires in the summer-hot/semi-arid Eurasian civilization belt were never ahead of the CW-areas. In emancipatory terms, Northwestern Europe's CW-areas pioneered societies' "human" development, by translating ordinary people's pre-state freedoms into the state-protected form of freedoms that we know since modern times, enshrined in constitutions, chartas and laws.

In a nutshell, the CW-Theory of societal development comprises five serial propositions, whose sequence we label the ***SGDTD***-Theses:

(**1**) The ***S(eed)-Thesis*** suggests that the CW-Condition embodies the potential for emancipatory dynamics in that it bestows some of the most vital grassroots autonomies on nuclear families, most notably local autonomy in water access, land management, food production and reproductive investment.

(**2**) The ***G(ermination)-Thesis*** maintains that the emancipatory potential begins to gestate at the time when more complex social organizations—from private corporations to civic associations to state administration—start to emerge because then the original local autonomies reproduce themselves as sectoral autonomies in newly surfacing, higher-level institutional aggregations, all the way up to the nation state in which the separation of powers establishes legislative, judicial and other domain-specific autonomies.

(**3**) The ***D(elay)-Thesis*** claims that the foraging-suited ecology of the CW-Condition releases little pressure to adopt intensive forms of agriculture, until its arrival in neighboring populations emits a demographic push towards the agrarian transition. Therefore, among regions with a similar suitability to agriculture, CW-areas enter the intensive phase of agriculture and its consequences, like cities and states, later.

(**4**) The ***T(ragedy)-Thesis*** posits that—merely because of larger migratory distance from the human origin in East Africa—the *New* World's few CW-areas in the Americas and Australasia have been populated too late by modern humans and remained spatially too scattered and geographically too disconnected to develop in time into agriculturally advanced and densely populated civilizations with complex urban networks and capacious states. Instead, at the eve of colonial times, human populations in the *New* World's CW-areas still lived at the foraging and horticultural level of subsistence, which—next to lesser immunity to contagious diseases—put these populations

at a dramatic disadvantage upon confrontation with an endless influx of settlers from the *Old* World's most pronounced CW-area: Northwestern Europe.

(**5**) The ***D(iffusion)-Thesis*** states that the ongoing global "births"-to-"brains" shift in humanity's lifetime investment fuels a mass-scale cognitive mobilization, mindset expansion and aspirational ascension that gives rise to emancipative values practically everywhere. The ubiquity of this psychological empowerment increasingly detaches emancipatory societal dynamics from the CW-areas and transplants them into literally of the globes's non-CW areas, thus slowly generating a shared human story of emancipation—in dissociation from initial geo-climatic differences.

3 The CW-Condition Measured

The CW-Condition represents a particular geo-climatic configuration that is absent or present to varying degrees on planet Earth's natural environments. Within planet Earth, we limit the measure of the CW-Condition to habitable areas, in ignorance of territories with climates too hostile for human societies to survive.

Overall, the CW-Condition constitutes a distinct geo-climatic constellation. Its climatic aspect includes a hydrological and a thermal component. Hydrologically speaking, the CW-Condition embodies steady rainfall throughout the seasons on a decently, yet not extremely, high base level of rain. Consequently, lasting dry periods (especially during summers) are *a*typical under the CW-Condition. As concerns the thermal aspect, the CW-Condition involves continuously, albeit not outrageously, cool seasons, including rather cool summers and temporarily (though not permanently) frosty winters. In a nutshell, the climatic signature of the CW-Condition boils down to cool-wet (CW-) summers.

In terms of geography, this climatic signature is confined to locations in (***a***) rather large distance from the equator and (***b***) relative proximity to the nearest coast. To be more precise, geography limits the CW-Condition's cool-wet summer signature to be pronounced only in a distance range from the equator between roughly 3,500 and 7,000 kilometers (i.e., 30 to 65 degrees of absolute latitude) and not much more than 500 kilometers distance from the nearest coast. Still, the CW-Condition is not a categorical either-or phenomenon. Instead, the absence-vs-presence of the CW-Condition varies by degree, depending on how a space's equatorial distance and coastal proximity combine.

Territorially, the CW-Condition is most pronounced in Europe's Atlantic Northwest, Asia's Pacific Northeast, North America's Atlantic and Pacific North and the Great Lakes region, South America's coastal South, the coastal tip of South Africa, Australia's Pacific South East, Tasmania, New Zealand and the small Pacific islands in its vicinity. In total, areas with a strongly pronounced CW-Condition cover a minor proportion of our planet's land mass, although their share in the world's agriculturally suitable territories is considerably larger.

The hydrological, thermal and geographical aspects of the CW-Condition each embody their own benefits for developmental outcomes, especially those with an emancipatory signature such as material flourishing (like prosperity, longevity, health, and education), psychological wellbeing (including trust, tolerance, self-esteem and happiness) and institutional functioning (in matters of order and stability, rule of law, elite integrity and liberal democracy). To begin with, the hydrological aspect of the CW-Condition—steady rain—makes freshwater permanently and ubiquitously available. The diffuse abundance of freshwater supports a decentral management of water,

land and labor once agriculture is established. Decentral labor organization infuses local autonomies into the social fabric, starting with nuclear family households at the grassroots of society. Nuclear farming households, typically consisting of a married couple and their few children plus a contracted servant and maid, work their own land as independent production units with little need for extended kinship support, child labor or slavery.

Cool seasons, for their part, place the decentral social fabric of the CW-areas into a thermal environment that avoids the tranquilizing challenge of enduring and debilitating heat, which otherwise forces people to spend most of their time in unproductive downtimes. Instead, the CW-areas expose their inhabitants to coldness, which is a productive thermal challenge because it forces people to tinker, plan and work for clothing, shelter, heating, housing, maintenance, construction, storage and commodity exchange—all of which requires thought, inventiveness, industriousness, technologies and the knowhow incorporated in them. But the temporariness of winter frost at the same time means exposure to cold-stress at an only moderate level of intensity, without the calamity of a lasting non-growing season in which no crops at all can be harvested.

Finally, coastal proximity is—next to equatorial distance—one of the geographical determinants of the CW-Condition's climate pattern because rather cool summers in combination with mildly cold winters in the presence of steady rain only exist in maritime regions relatively close to the oceans. Far inland and away from the sea, equatorially distant places instead generate continental climates with their extreme seasonality, including long and deeply frosty winters contrasted by short summers with extreme heat peaks. Apart from its determinacy of the CW-Condition's climate pattern, coastal proximity enriches the advantages inherent in the CW-Condition with additional benefits that exist in their own right. Specifically, coastal proximity constitutes a geographical access factor that opens the door to marine resources and naval routes for travel, migration, transportation and trade, thus making available otherwise absent options for nutrition, mobility, exchange and subsistence.

Essence:

> *In combination, the local autonomies originating in the CW-Condition's steady rain (1), the productivity incentives inherent in the CW-Condition's cool seasons (2) and the access options given by the CW-Condition's coastal proximity (3) all work together in favoring individual creativity and initiative as means to take advantage of the CW-Condition's triple opportunity endowment. Through the incentivization of individual creativity and initiative, living under the CW-Condition naturally predisposes people to struggle for the freedoms they need to utilize their personal agency. Consequently, the CW-Condition provides an ideal mix of environmentally anchored opportunities and challenges—ideal in the sense that this particular mix is most optimally suited to fuel the emancipatory drive originating in humans' agentic nature.*

We anticipate that each of the three components of the CW-Condition embodies its own advantage for developmental outcomes with an emancipatory signature. Accordingly, we also anticipate that the best of all worlds for such outcomes exists where all three components come together in one

package. We have just outlined that this conjoint constellation truly exists in the territories listed above, although its combined presence varies by degree and culminates where places' equatorial distance within the planet's plant-growing zone meets coastal proximity. We know, too, that the cool-wet summer signature of the CW-Condition always occurs in conjunction, thus reflecting an overarching pattern that we label "cold rain." Coastal proximity, on the other hand, is a separate component that is typical of CW-climates but exists independently of them and their rather large equatorial distance, because tropical and sub-tropical climates closer to the equator also exist close to the oceans.

Given the partial independence of cold rain and coastal proximity, the question arises as to whether the supposed advantages inherent in these two features work together additively or multiplicatively. In other words, do the advantages of cold rain and coastal proximity *complement* each other, so that a favorable position in one element compensates a disfavorable position in the other? Or do the advantages *condition* each other, such that the favorability in one element declines by a disfavorable position in the other?

Which of these two possibilities comes closer to the truth cannot be known until the matter is examined. Accordingly, in measuring the gradual absence-vs-presence of the CW-Condition we treat this issue in an exploratory manner rather than making an empirically uninformed decision beforehand.

In the following, we explain how we combine climatic and geographic information to summarize the absence-vs-presence of the CW-Condition for each of today's countries in a single number, as a matter of degree between a minimum of 0 (weakest observed CW-Condition) and a maximum of 1 (strongest observed CW-Condition), with multiple gradations in between these observational extremes.

In doing so, we follow a best measurement approach. This means that we connect information about the CW-Condition's characteristic features in a fashion that captures these features' most impactive combination—most impactive in terms of developmental outcomes with an emancipatory signature. When moving beyond countries as our main unit of interest, we need to drop this best measurement approach and must adopt a second-best approach. The reason is that for other spatial units, like sub-national provinces or historic tribal communities, not all information about some of the CW-Condition's defining features is available, which forces us to rely on proxies or leave some information out. Inevitably, this second-best approach increases imperfection and certain inconsistencies in the CW-measure. Yet, the main logic of the CW-measure is always the same in capturing the combined presence of cool seasons and steady rain in coastal proximity. If the CW-Condition's supposed developmental impact surfaces throughout all types of spatial units under study, despite these imperfections and inconsistencies in measurement details, the credibility of our CW-Theory should rise.

EXCURSION: CULTURAL EVOLUTION AS GROUP-LEVEL COMPETITION

Humans are a cooperative species. Our success, achievements and developmental progression depend on calibrated teamwork and the collective coordination of individual actions within orchestrated communities of varying size and complexity. In no human habitat does any individual—no matter how self-reliant—escape this community principle.

The community principle has psychological repercussions in that individuals develop a corresponding sense of community: As people grow up, they develop deep-seated feelings of belongingness to the communities in which they make their living. This way, a collective self emerges that unifies the members of a community and infuses into each individual a sense of loyalty to the respective community's evolved group norms. Human communities, thus, evolve through a process of psychological collectivization of their members' individual mindsets. As a result, communities create collective identities that take root in each member's individual mindset and which make members susceptible to their community's normative group pressures, visible in group-specific central tendencies of individual beliefs and behavior.

Collective identity formation of this sort is never complete because hominid intelligence is intimately linked to self-awareness, which prevents humans from *entirely* losing their ego and sense of individuality. Nevertheless, collective identity formation always happens to some extent and is pivotal both as an ingredient and consequence of culture, which—despite its manifestation in individuals' mindsets—is fundamentally a group-level phenomenon. In tying individuals' loyalty to their respective communities, culture operates as a potent tool of inherited group distinction that enhances *within*-group *homogeneity* and *between*-group *heterogeneity* in how people think and behave.

Evolutionary competition is always a competition for greater reality control. This competition plays out among variations of inherited characteristics that determine different degrees of reality control by the carriers of these characteristics. In *biological* evolution, the carrier in question is organisms and their *genetically* inherited architecture. Due to the community principle, in *societal* evolution the carrier of characteristics exposed to selective pressures is human collectivities and their *culturally* inherited traits, which determine the communities' varying regulatory capacity in shaping reality to their needs. Because of this shift of evolutionary competition to variation in culturally inherited group-level traits, it does not make sense to study developmental progression among individuals. Instead, group-level entities that form collectives with a shared and distinct culture are the appropriate unit of study in the analysis of humans' evolutionary progression.

Since humans and the groups they form are territorial, the evolution of culture progresses among spatially distinguishable collectives. And because spatially separated group-level units with distinguishable cultural traits exist in various territorial extensions (from local communities to districts and provinces to countries and geopolitical alliances) a question follows suit: At what order of size in the spatial distinction of human groupings does the differentiating power of culture operate most forcefully in generating dissimilar developmental outcomes? As the following section points out, the answer to this question is countries and the ancestral population families that cluster countries into distinct trajectories of development.

Countries as the Playing Field of Societal Evolution

We maintain that nations, states or countries constitute the most important human collective to study developmental variation and progression. These three terms address the same phenomenon:

Populations that form a unit by virtue of their shared norms, which are made binding for all individuals living within the respective population's area of jurisdiction, known as territorial sovereignty. The term "nation" addresses the psychological glue of these populations in terms of their collective identity. The term "state" denotes the populations' organizational frame, while the term "country" refers to the territorial space of a population, plus the population itself. Since the CW-Condition is a geo-climatic feature, "country" rather than "nation" or "state" is its most direct reference point. For this reason, we use the term country more frequently than nation or state when describing a population's geo-climatic condition.

Geo-political evolution has operated towards making today's countries the unit in our species' earthly habitat with by far the greatest regulatory power and, hence, reality control. Binding laws are only made by countries and their federations, which exert a "monopoly over the legitimate use of violence," to use Max Weber's famous words.[104] And even though progressing globalization and regional integration make supra-national organizations more important than they used to be, countries remain by far the most powerful unit in regulating people's lives. Attributing regional autonomies to sub-national provinces as well has somewhat diminished, but by no means challenged, the role of countries as the spatial unit with by far the greatest regulatory power over people's lives.

Moreover, a country is not only a regulatory unit in the form of the state; it is also an imagined community that binds together its members psychologically through the enculturation of national identities, which are deeply felt by most people—a fact that becomes immediately obvious in international sports events and, unfortunately, in warfare. In fact, no social aggregation beyond the family has a greater command over people's loyalty, both legally and psychologically, than countries.[105] In a nutshell, countries are the units within which the living conditions of most people are most strongly determined. Therefore, countries represent the social aggregation with by far the greatest configurational and acculturating power over human populations. Accordingly, countries are the most important spatial frame within which societal development plays out. This means that in comparison with other spatial aggregations—including sub-national provinces and supra-national alliances—it is countries that exert the greatest power in shifting variation in developmental outcomes towards major *between*-group variation relative to minor *within*-group variation.[106]

For all these reasons, we examine the link between the CW-Condition and developmental outcomes mostly among countries and their populations, and to a lesser extent among other social aggregations (which happens in Chapter 10 as a robustness check of the country-level findings). As we will see, the CW-Condition itself has been a configurational force in shaping the territorial spaces of today's countries: The evolutionary growth in the number of sovereign states made country-territories internally ever more homogenous in their CW-Condition, for which reason by far most of the spatial variation in the CW-Condition is *between*, rather than *within*, countries. The same holds true for developmental outcomes, especially those with an emancipatory signature—underlying once more that countries are the most appropriate unit to analyze the CW-Condition's emancipatory effect.

Over millennia, centuries and decades, political geography evolved to form today's countries in their current territorial shapes. Because of that, we look at the relationship between the CW-Condition and developmental outcomes from the contemporary endpoint of geo-political evolution. And even though countries have not existed continuously within their *political* borders of today, their territories, with their present CW-Conditions and other characteristics, have existed *physically* for much longer—actually, since the end of the last Ice Age. As we will see, geo-political evolution has shaped the borders of countries in a fashion that increased their homogeneity in the CW-Condition over time. Thus, looking at the relationship between territorial CW-Conditions and developmental outcomes on the basis of today's countries means going with the flow of geo-political evolution and looking at history from the viewpoint of its most recent conclusion, which—in the face of an uncertain future—is still the best we can do to figure out in which direction time is flowing.[107]

Local CW-Conditions

The causal mechanisms that we attribute to the CW-Condition reach back to colonial and even pre-colonial times. Back then, the countries of today's world order existed physically but not as sovereign territories in their contemporary borders. In recognition of this fact, we assign each of today's countries a CW-score that is entirely *in*dependent of the current territorial extent of its sovereignty. We do this by zooming into the CW-Condition of the countries' historically most populous urban centers.[108] In contrast to the countries' territorial extensions today, their urban centers have existed in their given geography since much longer, reaching back for centuries and in most cases all the way back to the eve of the colonial era, if not earlier. Hence, we attribute each country a score in the CW-Condition that is *invariant* to the respective country's political sovereignty and legal borders at a given time. In so doing, we eliminate any territorially related recency from our measure of the CW-Condition, which stresses the CW-Condition's temporal priority over its supposed developmental outcomes. For a causal interpretation of any climate-development connection observed, the temporal primacy of the CW-Condition is key.

Most countries in the world have a particular city that was the main population center back in history. And in most cases, this historic center is identical to today's capital city. There are, however, a number of obvious exceptions. In Brazil, for instance, the capital city is Brasilia but the historic and contemporary population centers are Rio de Janeiro and Sao Paolo, so we use data for these two cities instead of Brasilia. There are other exceptions: For Australia, we rely on the geo-clmatic features of Sidney and Melbourne instead of Canberra; and for the Netherlands, we rely on Amsterdam instead of Den Haag. In a few other instances, the location that once was the country's historic population center is no longer its largest city. Such is the case for Kyoto in Japan, Nanking in China, Boston in the US, Bruges in Belgium and Cologne in Germany. In such cases, we experimented with both options—historic versus contemporary population centers—and usually, this did not make much of a difference, and for a good reason as we will see: Certain

exceptions notwithstanding, the majority of countries took shape alongside relatively homogenous CW-Conditions. Therefore, the CW-score difference between countries' historic and contemporary urban centers is negligible in the small minority of cases in which the two depart. At any rate, the bottom line is that we assign each of today's countries the CW-score of its historic population center, which in the overwhelming majority of cases is the capital city.

This way, countries obtain CW-scores that are entirely independent of their precise territorial shape today, which avoids the problem of operating with the CW-Conditions of territorial units that had shifting political borders over time. Using city data not only solves this technical problem. Moreover, it is inherently plausible to assume that a country's development depends more strongly on the CW-Condition where most of the population lives than on the CW-Condition of largely uninhabited areas. This consideration is particularly relevant for territorially large countries with huge stretches of barren land, like Siberia in Russia, the Amazon in Brazil, the Great Plains in the US or the Gobi Desert in China. Australia is another case in point; the Outback is a huge area of dry and hot land with a low CW-score. Because of that, the continent's overall CW-score is considerably lower than the CW-score of its most populated region in the Southeast where Melbourne and Sidney are located.[109] These urban areas are Australia's historic population centers since colonial times. The fact that these urban centers have a pronounced CW-Condition should have been more important for Australia's development than the entire continent's average CW-Condition.

As a robustness check we nevertheless use an alternative CW-index based on the countries' entire territories in today's political borders, using country-level data from John Gallup, Jeffrey Sachs and Andrew Mellinger's project *Geography and Economic Development* as well as from Phillip Parker's book *National Cultures in the World*.[110]

When we compare CW-scores based on the countries' capital cities with those based on their entire territories (both measured on a scale range from 0 to 1), the mean difference amounts to a significant 0.15 points. This means a sixth of the entire scale range in favor of the capital cities' CW-score. In fact, in 168 of the 186 countries in the world for which we have data, the CW-score of the capital city is higher than that of the entire country territory. In only twelve countries, it is the other way around. But all these exceptions—apart from Bahrain, Kenya and Gabon—are territorially small island states: Antigua-Barbuda, Cabo Verde, Comoros, Grenada, Malta, St. Kitts, St. Lucia, St. Vincent, and the Solomon Islands. And for all of them, the somewhat higher CW-score of the entire territory compared to that of the capital city is in a difference range below 0.05 scale points, which is within the margin of measurement error. The highest difference at all in favor of the country territory relative to the capital city is just 0.08 scale points in the case of the Solomon Islands.

Apart from these few exceptions, the rule is that the CW-score of a country's major population center is higher than the average for the entire country. The size of the difference in CW-scores between the capital city and the country-territory writ large correlates positively with the size of the country's territory.[111] This is logical because a larger territory makes it more likely for a country to include uninhabitable regions (like deserts and savannas) where CW-scores are close to zero. Large areas with a low CW-score, of course, lower the average CW-score of a country's entire

territory, which in turn makes it more likely that the difference between the capital city's CW-score and the average CW-score for the entire country territory is large.

Accordingly, we find particularly sizeable differences between the capital cities' CW-score and the average CW-score for the whole country territory in Russia (a difference of 0.28), Canada (0.32), the US (0.46), Australia (0.32), China (0.26), and Brazil (0.33). Territorial size aside, countries exhibit a large difference in CW-scores between the capital city and the entire territory if the territory has (*a*) a considerable North-South extension and (*b*) a lot of change in elevation because of mountain ranges. Thus, we find large differences between the capital cities' CW-score and that of the entire country-territory in Sweden (0.44), Norway (0.36), Switzerland (0.34), Argentina (0.44) and South Africa (0.34).

A key lesson from these findings is that a locally strong CW-Condition has been an attractor of population settlement and, hence, a factor in societal development ever since today's capital cities began to become major population centers. This conclusion justifies from yet another angle a focus on the CW-Condition of capital cities instead of entire country territories, even more so as country averages hide over variation in the CW-Condition within countries. Furthermore, as we will see, the countries' territorial extensions are unrelated to developmental outcomes with an emancipatory signature. But countries' territorial extensions correlate negatively with the average CW-scores across these territories: As noted above, the larger a country's territory, the lower the overall CW-score across its entire territory.[112] This observation reflects the fact that the globe's CW-areas are limited in location by equatorial distance and coastal proximity, which increases the likelihood that large countries include wide areas without the CW-Condition. By contrast, city-based CW-scores, for their part, are unrelated to the territorial size of a country.

Contextual CW-Conditions

As human communities grow in size, their performance depends on how efficiently they organize cooperation between remote individuals. Hence, cooperation between remote individuals to mutual benefit is a success formula of societal evolution. Yet, the "selfish gene" drive in the evolution of life sets limits to the cooperation between remote others in that it hardwires into human nature the principle of ingroup favoritism. As a principle of societal evolution, ingroup favoritism shapes community building in such fashion that people develop a sense of solidarity with remote others more easily when the "other" appears more similar in kind, by both vision and speech—hence, the importance of ethnicity and language as markers of familiarity in community formation.[113] Due to the power of ethno-linguistic similarity in community building, contemporary country populations usually evolved from an original ethno-linguistic core whose history continues to predominate the collective memory of the respective nation.[114] In Africa, most nation states include more than just one ethno-linguistic core because territorial boundaries are artificial creations of colonialism. But even in Africa, most countries rarely contain more than two main ethno-linguistic cores, like Rwanda's Hutus and Tutsis or Zimbabwe's Shona and Ndebele. In Africa's most populous

country, Nigeria, three major ethno-linguistic cores—the Hausa, Yoruba and Igbo—constitute about two thirds of an otherwise ethno-linguistically fragmented population.

At any rate, ethno-linguistic groups do not match in a perfect one-to-one relationship on country territories. Instead, ethno-linguistic ancestries pool the world's roughly two-hundred countries into a much smaller number of roughly a dozen population families. Apart from their joint ethno-linguistic ancestry, these population families are territorially connected through migration histories, visible in supra-national identity layers that make people of different countries feel to belong to the same cultural lineage, in as far as they share the same ethno-linguistic ancestry. From heron, we refer to this supra-national clustering of ethno-linguistic identities as *ancestral universes, population families* or *culture zones.*

The spaces covered by ethno-linguistic population families reflect their migratory history and normally place countries of the same culture zone as territorial neighbors into the same geographic region. The obvious exceptions from this pattern result from colonial out-migration into remote areas overseas. Most notably, colonial mass migration has placed Britain, Northwestern Europe and their former overseas settler colonies in North America, Australia and New Zealand into the same culture zone, based on their shared "Anglo-Saxon/Germanic" ethno-linguistic ancestry. A similarly striking case of a country's cultural ancestry being divorced from its geographic neighborhood is Israel. Indeed, migratory history has created a residential Jewish population in biblical Palestine with dominant cultural roots in Western Europe. Thus, althgouh Israel is geographically located in the Middle East, ancestry-wise it is unquestionably part of the West.

To avoid misunderstandings, this legacy perspective is historic in the sense that it focuses on ethno-linguistic ancestries that were formative at the origin of countries' nation building. Therefore, the ancestral perspective does not deny that global migration flows of recent history have greatly increased many countries' ethno-linguistic diversity today. Despite this increased diversity, countries' contemporary cultures and developmental trajectories continue to reflect their ethno-linguistic ancestries.

The ancestral perspective is of fundamental importance when we consider societal evolution from the viewpoint of the geographies into which the spatial boundaries of cultural identity channel cross-country learning flows. If we think of societal evolution as a process by which human communities improve perfection in the ways in which they shape realities to their ends, this is altogether a cumulative process that builds on social learning. Social learning means adding newer pieces of shared knowledge to older ones, or updating obsolete pieces of knowledge. Social learning in this sense involves serendipitous discoveries, deliberate searches for better technical and organizational solutions to given problems, or—more simply—looking at what recipes work better at other places in achieving desired outcomes. This "observation $\rightarrow$ evaluation $\rightarrow$ adoption-vs-rejection" sequence is the essence of social learning and, hence, the engine of progress in societal evolution.

Ancestral population families kick in here most powerfully in shaping the spatial boundaries of learning flows between societies. The key principle is that shared ethno-linguistic ancestries make it easier for people to accept as a model for their own way of life what they observe as a

successful ideological or institutional device in ethno-linguistically related populations, much more so than how populations of a different kind handle things. Consequently, cross-cultural learning happens more easily and quickly *within* than *between* ancestral population families. Therefore, geographic neighborhood alone does not necessarily ease cross-country learning flows; it only does within the confines of culture zone boundaries. In other words, territorially neighboring countries borrow less from each other when a cultural identity division separates them. Europe, for example, adopted the Arabic numeral system rather late, in spite of this system's obvious superiority to the Roman numerical system—merely because of the Arabic system's alien ethno-linguistic ancestry. Ethno-linguistic alienness also delayed European acceptance of superior Islamic knowledge in astronomy and medicine.

If geo-climatic conditions favor particular developmental outcomes, the geography of ethno-linguistic ancestries establishes a key spatial principle in how this happens. This spatial principle can be summarized as follows: In as far as geo-climatic conditions influence developmental outcomes, countries' actual developmental outcomes are shaped not only by their own geo-climatic conditions but also by those of the other countries within their ethno-linguistic ancestry, especially if the respective country's own geo-climatic condition differs from the norm of its ethno-linguistic relatives. This spatial principle follows suit from the ancestry-bound diffusion of civilizational achievements.

Essence:

> ***Geo-climatically induced civilizational achievements*** *diffuse to all places of the same ethno-linguistic ancestry—even if migration history has transplanted some of these places outside the typical geo-climatic environment of their ancestral relatives. Recognizing this* ***generative principle*** *in how we measure a place's geo-climatic determination requires to incorporate into this measure not only the respective place's own geo-climatic condition but also the prevalent geo-climatic condition of its ancestral universe.*
>
> *In a nutshell, every place's* ***overall CW-determination*** *is, measurement-wise, a mixture of its own* ***local*** *CW-Condition and its ancestral universe's* ***contextual*** *CW-Condition. Thus, if migratory history has located a place outside its ancestral universe's typical CW-Condition, the resulting upward and downward deviations in this place's developmental outcomes are cut half in size by factoring in the prevalent CW-Condition of the respective place's ancestral universe. In this sense, our measure of country populations' overall CW-determination is* ***ancestry-adjusted in ethno-linguistic terms****.*

Ancestral population families lack a clear-cut organizational frame that would make them distinguishable in a formal sense. Yet, population families and their related culture zones do exist and are identifiable by informal characteristics, above all country families' shared ethno-linguistic ancestries, migratory histories and imperial legacies from which they inherited similar religious and legal traditions. Countries of the same ancestral universe are often tied to each other in regional alliances, such as the EU, ASEAN, MERCOSUR, OAU or the Arab League. Populations of the same ancestral universe usually perceive themselves as a population family and recognize with

greater awareness developments among their ethno-linguistically related populations. These sibling populations also share common geo-political identities that supersede their national identities as an additional, higher-level layer of community sense.[115]

Again, for all these reasons, ancestral universes operate as transnational diffusion spaces within which cross-border flows of norms, institutions and ideologies happen more easily and at greater speed within than between countries of separate ancesctral universes. As a consequence, countries of the same ancestral universes are more similar to each other in terms of their values, institutions and developmental trajectories than countries of different ancestral universes. Therefore, population families and their ancestral universes are real—real in the sense that they account for major proportions of the global variation in key developmental outcomes, including living standards, cultural norms and political regimes. Indeed, to which ancestral population family countries belong accounts for as much as eighty percent of the entire cross-national variation in these and other indicators of overall societal development. At the beginning of Chapter 7, we outline in detail our classification of ancestral population families.

Once more, population families are diffusion spaces within which developmental achievements transpire across borders. This cross-border cultural flow runs from trend-setting to trend-trailing societies—a premise that prompts us to assume that the contextual CW-Condition of a county's ancestral universe matters as much for this country's development as its local CW-Condition. For instance, a country's local CW-Condition might be rather weak, while the contextual CW-Condition of its ancestral universe might be quite strong. In this case, we expect the CW-stimulated emancipatory outcomes to be less pronounced in the country under consideration than in its ancestral universe as a whole. Yet, diffusion within ancestral universes will to some extent transmit emancipatory achievements into the country with the weaker local CW-Condition—through the processes of reception and adoption by which the trend-trailing societies follow the trend-setting societies of their ancestral universe. If so, our particular country's developmental performance in emancipatory terms will be trailing behind other countries of its ancestral universe but at the same time it will be ahead of countries from other ancestral universes with a similar local CW-Condition. In general, a country's contextual CW-Condition shifts this country's developmental performance above or below the level that its local CW-Condition alone predicts.

Essence:

> *A country's **overall CW-determination** is the combination of its own **local** CW-Condition and the **contextual** CW-Condition of its ancestral universe. In other words, each place's overall CW-determination consists of a **geographic locality** aspect and an **ancestral contextuality** aspect, both of which are space-bound by the migratory history of ethno-linguistic population families.*

Israel provides the most illustrative case in point. Its local CW-Condition (i.e., a CW-score of 0.22 for Jerusalem on our 0-to-1 index) is way below the contextual CW-Condition of its ancestral universe, the "Romanic West" in our classification, whose capital cities' CW-score is 0.41 on average. Thus, we measure Israel's overall CW-determination as the average of its own local CW-

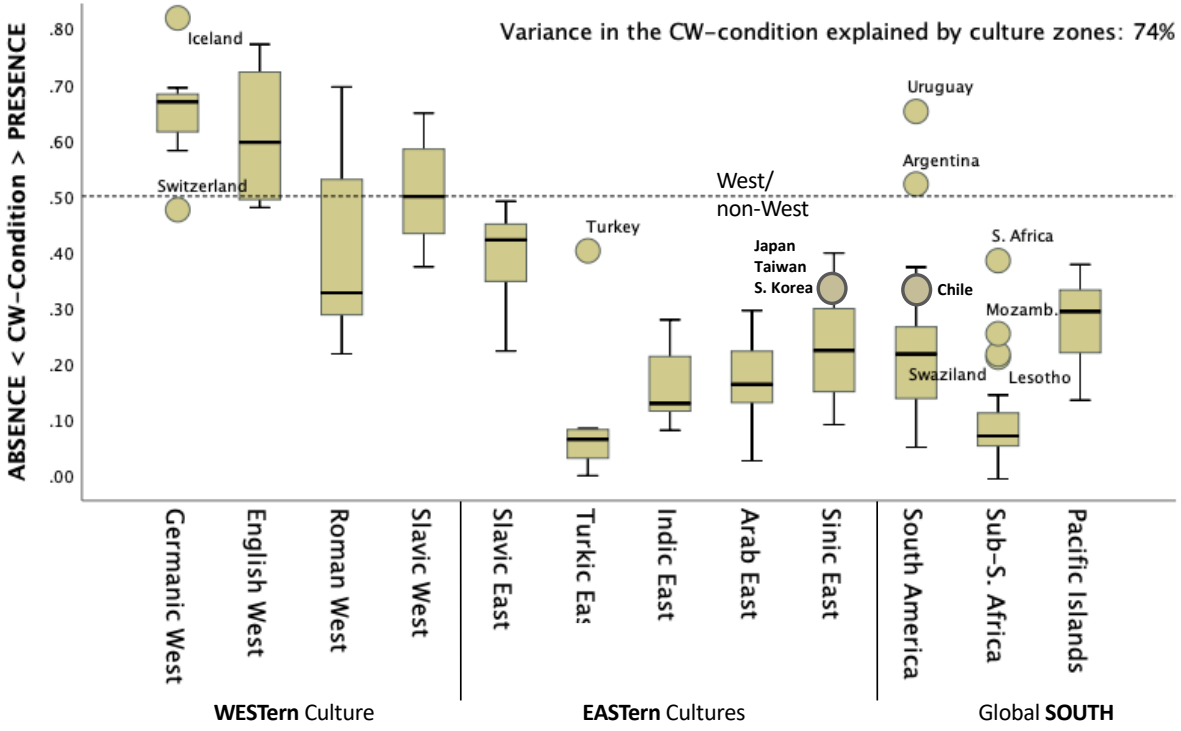
Condition (i.e., 0.22) and the contextual CW-Condition of its ancestral universe (0.41), which yields a score of roughly 0.32. With this score, Israel's overall CW-determination is below that of most other countries in its ancestral universe because of Israel's weaker local CW-Condition. At the same time, Israel's overall CW-determination is stronger than that of the countries in its direct geographic neighborhood because of Israel's stronger ancestral CW-Condition. In close correspondence with Israel's intermediate position with respect to its overall CW-determination, we expect an equally intermediate position in terms of Israel's performance when it comes to CW-induced emancipatory achievements, such as industrial productivity in the economic domain and liberal democracy in the political domain. Specifically, CW-induced emancipatory achievements should be less strongly present in Israel than in most other countries of its Western ancestral universe but more pronounced than among most other countries of its geographic neighborhood, like Jordan or Lebanon.

Looking at Jordan as a direct neighbor with roughly similar territorial proportions as Israel, we measure a local CW-Condition of comparable strength as Israel's, namely a score of 0.20 for the capital city Amman (almost the same as Jerusalem's 0.22). But unlike Israel, Jordan belongs to a non-Western population family—the "Arab East" in our classification—in which the CW-Condition is less pronounced: On average, the capital cities of the countries belonging to the Arab East score at 0.17. Averaging Jordan's own local CW-Condition (0.20) and the ancestral CW-Condition of Jordan's population family (0.17) settles Jordan's overall CW-determination at a score of 0.19—which is a significantly 0.13 score points below Israel's overall CW-determination of 0.32. In correspondence with this difference in overall CW-determinations, we expect CW-induced emancipatory achievements to be considerably more pronounced in Israel than in Jordan, in spite of an equally weak local CW-Condition in both countries.

To illustrate the point in numbers, we rely on the most encompassing measure of emancipatory achievements, the "human empowerment index" (as explained in SOM-Section S2). This index covers "impairing-vs-empowering" human conditions across the material, motivational and legal domains of societal existence. It does so by summarizing ordinary people's individual resources (material domain), their emancipative values (motivational domain) and civic entitlements (legal domain) in a single index. The index has a score range from 0 for the most impairing human conditions ever observed (i.e., scarcest individual resources, weakest emancipative values, most restrictive civic entitlements) to 1.0 for the most empowering human conditions (i.e., richest individual resources, strongest emancipative values, most generous civic entitlements).

Now indeed, reflecting their different ancestral CW-Conditions, Jordan's performance on the human empowerment index in 2018 (i.e., a score of 0.17) is closer to the average of its population family (0.16 for the "Arab East") than to Israel's performance (0.66), which in turn is closer to the average performance of its population family (0.68 for the "Romanic West")—in line with the difference in Jordan and Israel's overall CW-determination (0.19 compared to 0.32 score points). In a nutshell, ethno-linguistic ancestry makes a significant difference (endnote 117 presents more examples to illustrate this principle).[116] Consequently, the CW-Condition impacts countries' developmental performance through the condition's local presence as well as its ancestral presence

Figure 3-1. The West's Uniqueness in the CW-Condition



Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

across population families. In measuring countries' CW-determination in its most impactive manner, this matter of fact must be recognized in the measurement recipe.

Essence:

> *The **contextual** CW-Condition of a country's ancestral universe heightens or lowers its emancipatory performance relative to countries **outside** its ancestral universe. At the same time, the country's **local** CW-Condition heightens or lowers its emancipatory performance relative to countries **inside** its ancestral universe. This interplay makes local and contextual CW-Conditions **equally important** in shaping countries' **overall CW-determination** with respect to emancipatory dynamics.*

Interestingly, it is very rare that the local CW-Condition of a country's capital city deviates largely from the contextual CW-Condition of the country's ancestral universe, which testifies that migratory history has shaped ancestral universes via similar CW-Conditions. The few deviations are nevertheless noteworthy. Apart from the downward deviation of the local from the ancestral CW-Condition in the case of Israel, just a few exceptional upward deviations exist in which the local CW-Condition of a country's capital city is considerably above the contextual CW-Condition of its ancestral universe. These upward deviations include (*1*) the Baltic countries relative to other countries within the population family that we summarize as the "Slavic West," (*2*) Uruguay

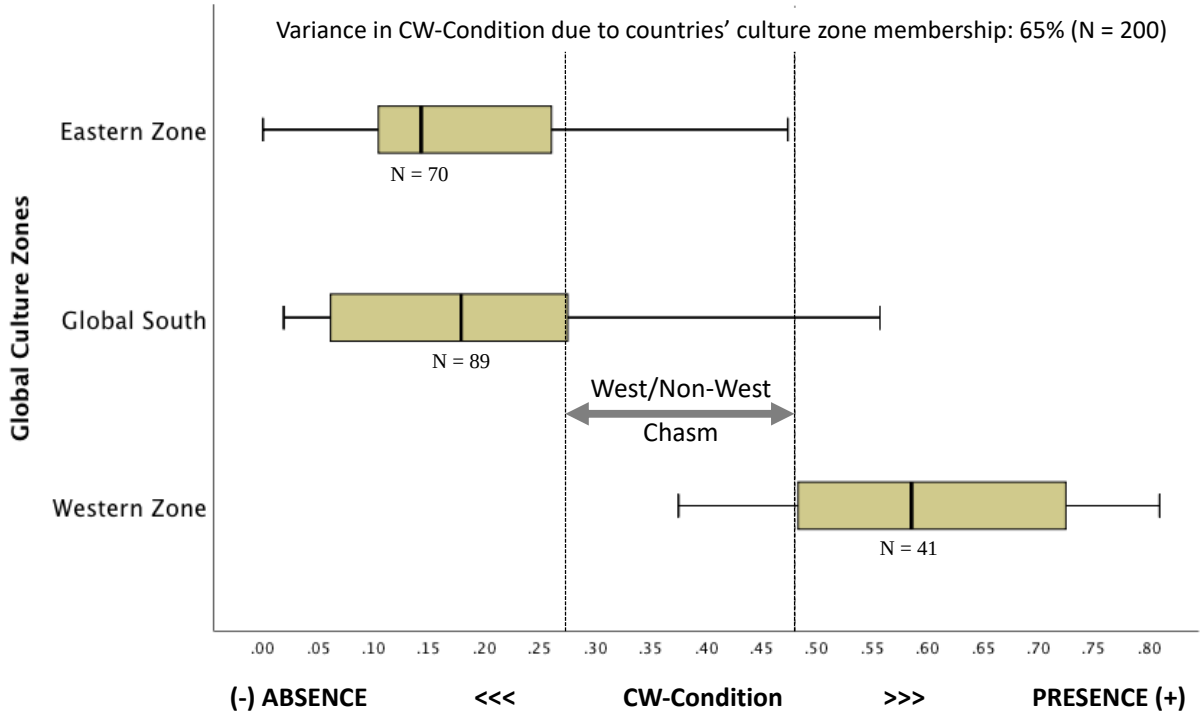
relative to other countries in South America, (*3*) Singapore relative to other countries of the "Indic East," (*4*) Japan, Taiwan and the two Koreas relative to other countries of the "Sinic East," (*5*) South Africa, Madagascar and the Comoros Islands relative to other countries in Sub-Saharan Africa as well as (*6*) Vanuatu, Tonga, Kiribati and the Marshall Islands in the South Pacific. For this reason, Figure 3-1 shows that an astounding seventy-four percent of the entire cross-national variation in countries' overall CW-determination is due to the capital cities' membership in the world's ancestral population families (which amount to a number of twelve in our classification, as outlined in Chapter 7). Population families, accordingly, have evolved along similar CW-Conditions. Put differently, the CW-Condition operated as a configurational force of cultural evolution in spatial terms—an observation that has received surprisingly little attention.

The West's Distinction

To a considerable extent (66% to be precise), differences in the capital cities' CW-Condition are due to a simple division of the world into Western civilization, on the one hand, and Eastern civilizations plus the Global South, on the other. As Figure 3-2 shows, both the South and the East exhibit a suspiciously weak CW-Condition (mean scores of 0.17 and 0.18, respectively). In stark contrast, the West sticks out profoundly with a strong CW-Condition of 0.60 scale points on average. Most capital cities' CW-Condition in the South and East score below 0.25, whereas most capital cities in the West score above 0.50. Hence, a gap between the interquartile ranges of 0.25 scale points separates the West from both the East and the South. We can confidently conclude from these numbers that a pronounced CW-Condition is the defining geo-climatic feature of Western civilization.

Despite the chasm in the CW-Condition that separates the West from most other parts of the world, there is still a considerable distinction among the four branches of Western civilization. To be specific, although most Western capital cities exhibit a pronounced CW-Condition, the capital cities of the "English" and "Germanic" West still stick out with an even more pronounced CW-Condition (on average 0.70 score points), compared to the capital cities of the "Romanic" and "Slavic" West (on average slightly below 0.50 score points). We believe that it is by no means coincidental that the two lower-scoring groups (i.e., the Romanic and Slavic West) are, historically speaking, predominantly Catholic, whereas the two higher-scoring groups (i.e., the English and Germanic West) are predominantly Protestant. In fact, we suggest that the obvious distinction in the CW-Condition between the Catholic and Protestant branches of Western civilization actually explains where in Europe the Reformation originated and triumphed and where the Counter-Reformation was successful in blocking Protestantism's further progression.

Figure 3-2. The CW-Condition by the Tripartite Division of Global Culture Zones



Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

The reason is evident in our eyes: The stronger CW-Condition in Europe's Northwest and the individualistic-egalitarian impulse emanating from this exceptionally strong CW-Condition predisposed populations in Northwestern Europe to find appeal in the Protestant doctrine, which—according to Max Weber—embodies indeed a predominantly individualistic-egalitarian spirit.[117]

Insight:

Protestantism posits that each individual is equally capable to sustain her own relationship with God, independent from the authoritative guidance of an ecclesiastic elite. To sustain her relationship with God, the individual believer only needs to study the Bible. To enable ordinary people to study the Bible, Martin Luther spent time on Wartburg castle in Eisenach (Eastern Germany) to translate the Bible from Latin into German. That in turn created a tremendous incentive for the general population to learn reading. Consequently, steeply rising literacy among the Protestant regions led to a speedy diffusion of Johannes Gutenberg's printing press in the CW-areas of Northwestern Europe. Apart from doctrinal elements, the individualistic-egalitarian character of Protestantism is also visible in church organization. In the various branches of Protestantism, especially the Presbyterian church, laypersons—including women—play a more prominent role than in the Catholic church. It is also no coincidence that Protestantism allows priests to marry, opens priesthood to women and refuses to obey a supposedly infallible representative of

> *God, whereas Catholicism insists on celibacy, denies priesthood to women and continues to believe in an infallible Pope until the day of this writing.*[118]

Coming back to our measurement recipe, we collect data on the CW-Condition that we attribute to today's countries based on two different spatial frames:

(***1***) ***Geographic Locality***: each country's main urban center in history, which in most cases refers to the CW-Condition of the capital city.

(***2***) ***Ancestral Contextuality***: each country's ancestral universe, which refers to the average CW-Condition of the other countries of the same ethno-linguistic population family.

Since neither the capital cities' local CW-Condition, nor their ancestral family's contextual CW-Condition, depend on the shape of today's countries' political borders, our final CW-index is *in*-dependent of the temporality of the countries' current territorial extensions. This is of crucial importance: When using the CW-index as a predictor of contemporary outcomes, our measurement avoids inducing any recency into the CW-index, thus preventing endogeneity. Starting from the capital cities of the world, we collect information on three aspects of the CW-Condition:

(*1*) *cool seasons*,

(*2*) *steady rain*,

(*3*) *coastal proximity*.

Cool seasons capture summers that lack extensive periods of extreme heat and recur in exchange with moderately cold winters during which frost periods are temporary and modest rather than permanent and cruel. *Steady rain* covers a base level of rain that is decently high throughout the year, without a dry season, in the presence of ubiquitously accessible freshwater reservoirs, like rivers, brooks, lakes, ponds and springs. *Coastal proximity* measures the inverse of a capital city's kilometer distance to the nearest ocean and, hence, access to naval trade, travel and migration routes as well as maritime resources, including seafood, shell lime and other oceanic goods.

Starting from the *locality* perspective, we first collect information on the three aforementioned aspects of the CW-Condition for each country's historic population center, which in most cases is the country's capital city. Then we move on to the *contextuality* perspective by averaging the city-based information on each of the three aspects of the CW-Condition across the entire ancestral universe of each country. In so doing, we obtain for each country (1) *local* as well as (2) *contextual* information on (1) *cool seasons*, (2) *steady rain* and (3) *coastal proximity*, which yields a 2-by-3 matrix consisting of six geo-climatic variables that we finally combine into a single index to measure each country's combined (i.e., local *plus* contextual) CW-determination.

To collect city-based data on the three geo-climatic components of the CW-Condition, we rely on information provided by the non-profit organization Climate-Data.org (available online at https://en.climate-data.org).[119] The information on the capital cities' latitudes provided by this source is, of course, time-invariant. By contrast, information on temperatures and rainfall derive

from the records of local weather stations and are averaged over the period 1982-2012, thus representing conditions typical of the past thirty years. Technically speaking, our climate data have, thus, a limited temporal range when it comes to seasonal temperatures and rainfall. Yet, substantively speaking, the basic temperature and rainfall patterns reach much farther back in time, that is, centuries and even millennia. In fact, they reach back all the way to the end of the last Ice Age some 12,000 years ago. The reason is that major climate changes follow the earth's glacial cycle, with transitions between glacial and inter-glacial periods only occurring every 100,000 years. Therefore, the basic thermo-hydrological features of a given place are stable over very long stretches of time on the scale of human history.[120] The excursion below substantiates this claim.

EXCURSION: CLIMATE CHANGE AND STABILITY

There is no question that minor climate changes also occur *within* a glacial cycle of our planet. Examples in Europe include the Medieval Warming Period between 900 and 1300 CE, followed by the Little Ice Age between 1550 and 1850 CE, which is estimated to have been about one degree Celsius cooler than the Medieval Warming Period, and about two degrees in northern Europe.[121] But climate changes *within* a glacial cycle, such as the regularly occurring El Nino and La Nina, are too minor in magnitude to change a place's most basic thermo-hydrological features within the same inter-glacial period. Nor do climate changes within the same inter-glacial period affect the relative position of places in terms of where it is hotter-vs-cooler and where it is drier-vs-wetter. Consequently, the basic thermo-hydrological features captured by our final CW-index are typical of given places over the last several hundred years, if not much longer.

For instance, the CW-Condition that we assign to Germany is based on Cologne, with a CW-score of 0.77. A two degrees Celsius difference in average annual temperature translates into a change in our CW-index by 0.04 scale points. This means that Cologne's CW-score was at 0.81 (i.e., the level of Copenhagen today), if it is true that the Little Ice Age cooled down average annual temperatures by two degrees Celsius. If global warming continues and brings a two degrees Celsius increase in average annual temperatures in Cologne, the city's CW-Condition will deteriorate by 0.04 scale points to a score of 0.73 (i.e., the level of Wellington, New Zealand, today). Climate change can also affect CW-scores by rising sea levels, which causes an increase in coastal proximity. A sea level rise of ten meters translates into a 0.001 scale points increase in our CW-index, as long as the affected place does not drown. At any rate, one basic insight surfaces from these numbers: The climate changes that occurred after the end of the last Little Ice Age (and before the human impact became a significant factor in driving global warming) were simply too small in magnitude to substantially change a location's CW-Condition. Chapter 10-2 demonstrates the temporal constancy of CW-Conditions over the past fifty years for some 320 sub-national regions in Europe. Because temperature changes have been more rapid since the early 20th century, our observed temporal constancy of CW-Conditions over the past fifty years suggests that CW-Conditions were even more constant in the centuries before the 20th century, when temperature changes were less severe.[122]

These considerations do not deny that the human-caused global warming of today means decreasing climate stability at an accelerated pace. Furthermore, in the course of accelerated global warming, the CW-Condition will deteriorate in most places of the world and the location of strong CW-Conditions will slowly shift further away from the equator among both hemispheres of our

planet. But the historically recent global warming notwithstanding, our point of departure is the CW-Condition's relative stability over the *past* several hundred years *before* the human impact became a significant factor in driving climate change.

Cool Seasons

To estimate *cool seasons*, we start from the capital cities' latitudes. Absolute latitudes increase linearly with distance from the equator both northwards and southwards, so that one degree difference in latitude corresponds with 111 kilometers of aerial distance from the equator. Given the curvature of the globe's surface and the Earth axis' skewness relative to the sun, latitude directly determines the angle of all sunlight falling on our planet's surface, turning this angle increasingly acute northwards and southwards from the equator—an effect that is most pronounced during the two opposite winter terms of the Northern and Southern hemispheres of our planet. For these reasons, latitude correlates extremely strongly (in fact, more strongly than any other existing variable) with the winter temperatures of capital cities. Consequently, higher latitudes directly indicate colder winters.[123] However, while the lows in winter temperature vary in magnitude across minor climatic cycles, latitude does not. For this reason, latitude is a preferable measure of *constant* differences in winter cold, because winters are always colder at higher latitudes, regardless of the Earth's climatic cycle.[124]

Since we measure the latitude of capital cities, we do not have to worry about winter cold so extreme that it makes a territory uninhabitable or unsuitable for agriculture. Indeed, the polar regions are outside the scope of our measure, as there are no cities in the Arctic or Antarctica.[125] Even for Northern countries like Canada, Iceland, Norway and Russia, the capital cities are outside the permafrost regions. Admittedly, industrial technology makes it possible today to sustain cities in sub-polar and even polar regions, Norway's Spitzbergen being the most extreme example. But these places are not the major population centers of any country in the world. Therefore, our measure gives a premium to thermal coolness only in as far as we remain within the habitable and, for the most part, also in the plant-growing zone of our planet.

Interestingly, latitude is a much weaker indicator of the second thermal aspect we wish to capture: cool summers. Even though latitude correlates negatively with summer heat peaks[126], this correlation is low in magnitude, corresponding to only a twenty-five percent overlap in variation between latitude and cool summers.

The reason is that higher latitudes involve colder winters in all of the world's longitudinal positions[127], whereas higher latitudes associate with cooler summers in *most*—but by no means *all*—of our planet's longitudinal positions. Indeed, even high latitudes can have very hot summers if the high latitude's longitudinal position is located in a continental climate zone—that is, in landmass-centered positions far away from the sea. In other words, higher latitudes have colder winters everywhere, while their summers are cool in most places but hot in some places, which explains the weakness of the global correlation between latitude and cool summers. The source of this pattern is that the high latitudes of our planet's Northern hemisphere are roughly divided into maritime

climates with cool summers in the coastally proximate regions of the Eurasian and North American landmass, and continental climates with hot summers towards the territorial centroids of Eurasia and North America.

Given that latitude indicates cold winters but not so much cool summers, we apply an alternative approach to capture cool summers. To do so, we use information about seasonality patterns. High latitudes inevitably incorporate sizeable seasonality in temperatures. In moderation, seasonality is conducive to development because it incentivizes planning and preparation for seasonal change, including food storage, equipment maintenance and savings—all of which are productivity factors.[128] But *extreme* seasonality is a different story. When winters are so cold that nothing grows, when waterways become unnavigable because of ice, and when temperature peaks in summers turn so high that the heat drowns people in swarms of mosquitos and depresses motivation to work, productivity declines and societal development slows accordingly.[129] Consequently, extreme seasonality, beyond the range inherent in latitude *per se*, turns a blessing into a curse. Therefore, a measure of the CW-Condition intended to capture its ecological features in their most advantageous combination must adjust the element of cool seasons embodied in high latitudes for the unproductive excess seasonality.

To illustrate the point, we use a historic sequence of emancipatory constellations reaching from (*a*) the pre-industrial to (*b*) the industrial to (*c*) the post-industrial stage of societal development:

(*a*) ***Pre-industrial Stage***: At this stage, the Double Emancipatory Turn towards industrialization and democratization was yet to come. Hence, the domains in which strong societal differences can be observed in emancipatory terms are limited. However, there was a patriarchal-vs-emancipatory constellation in people's demographic behavior that turned out to be an essential pre-industrial harbinger of subsequent emancipatory outcomes. To cover this pre-industrial constellation, we create an index of "heavy-vs-light fertility pressures" (on women). The "heavy pressure" end of this index represents a situation of high natural disease loads, high child mortality and high female fertility combined with patriarchal family and kinship patterns, including prearranged marriages, low marriage ages of women, endogamy and multi-generational households with lateral relatives. At the "light pressure" end, we find the opposite combination of naturally lower disease loads, lower child mortality, lower female fertility and the prevalence of nuclear families based on consensual marriage, high marriage ages of both sexes, strict exogamy with two-generation households in the absence of lateral relatives. We could label the same index as "weak-vs-strong female reproductive autonomy," "tight-vs-loose male control over female sexuality" as well as "extended-vs-nuclear family patterns." But no matter what label we use, the continuum at hand always indicates "patriarchal-vs-emancipatory sex norms," with "light fertility pressures," "loose control over female sexuality," "strong female reproductive autonomy" and "nuclear family patterns" indicating the emancipatory end of sex norms. In a nutshell, what we measure is "smaller-vs-greater" female reproductive

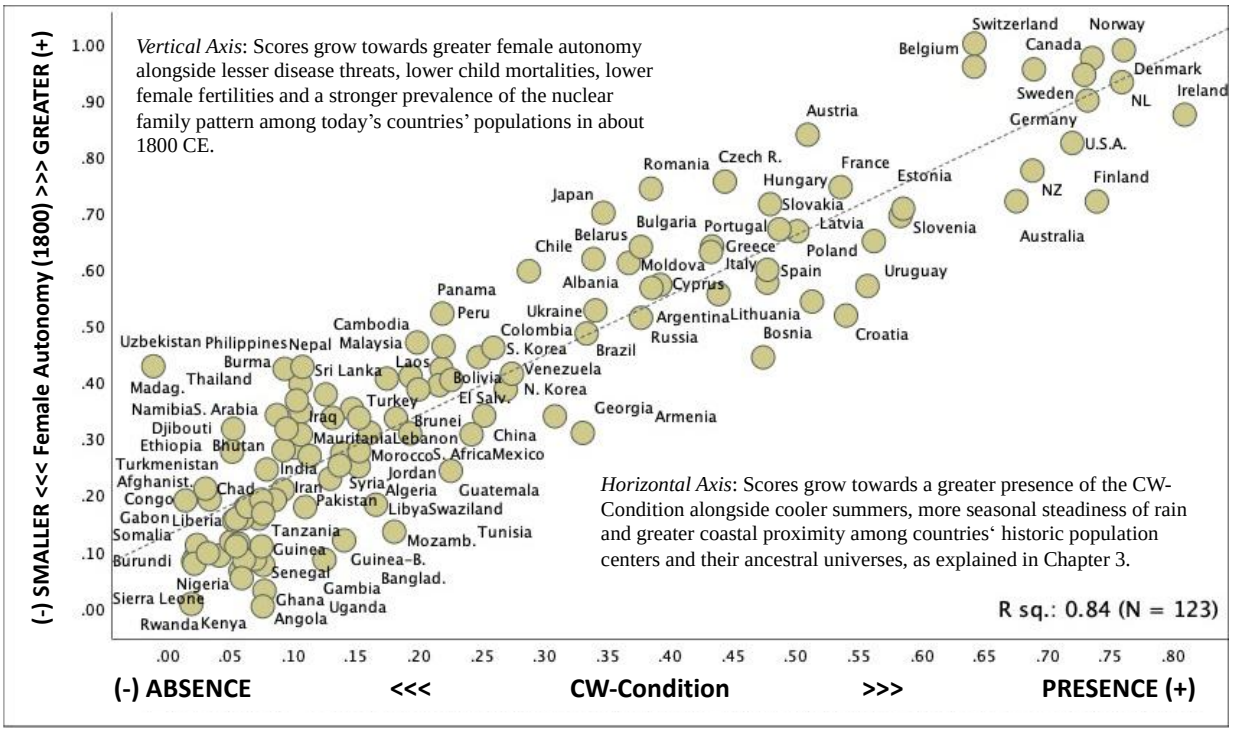
autonomy (in short: *female autonomy*). As documented in SOM-Section S4, estimates of these variables refer roughly to 1800 CE, which is for all countries—except England and Belgium—a time before the Industrial Revolution.

(*b*) ***Industrial Stage***: At this stage, the emancipatory differentiation of societies begins to surface more obviously. From a demographic perspective, education becomes an essential marker of this differentiation, visible in "quantity-vs-quality orientations" in reproductive investment. We can also refer to the same phenomenon as a "breeding-vs-building focus" in lifetime investment. Either way, the "quantity breeding" end of this polarity combines raising many children and placing little emphasis on their education. At the "quality building" end, we find raising few children and placing great emphasis on their education. We could also label this index "fertility-vs-schooling emphasis" in family formation. No matter what label we use, the continuum indicates a "patriarchal-vs-emancipatory orientation" in life planning, with "quality orientations," a "building focus" and an "education emphasis" representing the emancipatory pole in life planning. In summary, what we measure here is "low-vs-high" cognitive investments (in short: *cognitive investments*). As detailed in SOM-Section S4, we use estimates from around 1900 CE when the Industrial Revolution was in full swing in all pioneering countries of Northwestern Europe and its overseas settler colonies.

(*c*) ***Post-industrial Stage***: At this stage, the emancipatory differentiation of societies is visible in its full scope, covering the material, motivational and legal domains of people's lives. Accordingly, we comprehensively capture the emancipatory differentiation across all three domains. To do so, we create an "impairment-vs-empowerment index" of the human condition, which is identical to what we have briefly referred to as the "human empowerment" index. As documented in SOM-Section S2, the index taps constraints-vs-freedoms in the material, motivational and legal dimensions of ordinary people's lives. Thus, the impairment end of the index represents a situation of poor individual resources, weak emancipative values and narrow civic entitlements, whereas the empowerment pole combines rich individual resources, strong emancipative values and generous civic entitlements. Obviously, the empowerment end of this dimension represents the emancipatory constellation.[130]

The logic of emancipation ties together this sequence of emancipatory societal constellations over time, such that greater female autonomy at the pre-industrial stage precedes higher cognitive investments at the industrial stage, which then anticipates an empowering human condition at the post-industrial stage. Since the incipient emancipatory constellation originates in the CW-Condition, the strong inter-temporal link across the whole sequence of emancipatory constellations ties all three of them tightly to the CW-Condition, as Figures 3-3a to 3-3c illustrate.

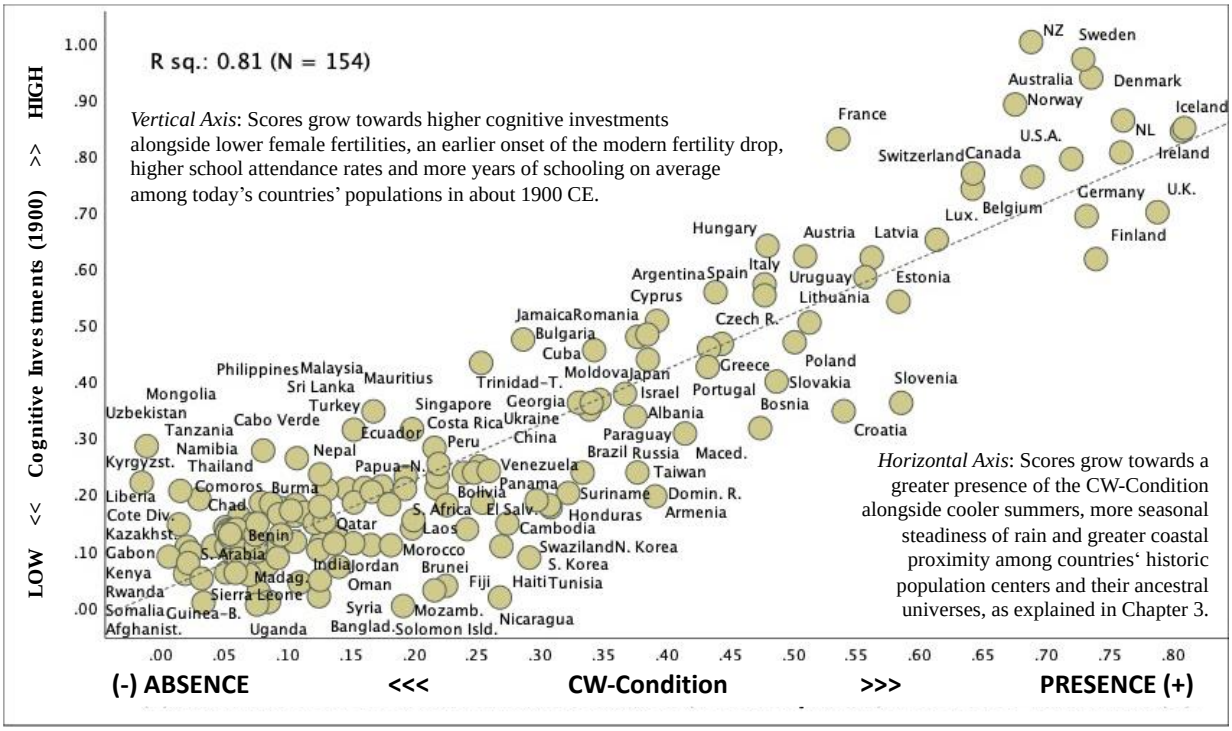
Figure 3-3a. The Emancipatory Effect of the CW-Condition: **Pre-Industrial Era** (ca. 1800)



Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

Looking at these serial emancipatory constellations and relating them to the seasonality issue, we find something unnoticed so far: Although seasonality[131] shows a mildly positive impact on these sequential emancipatory constellations before any controls, the impact of seasonality turns substantially *negative* once we control for latitude.[132] Accordingly, only that part of seasonality that is naturally incorporated in latitude is beneficial to emancipatory constellations, whereas seasonality *in excess* of this incorporation is detrimental. Consequently, if we wish to capture the developmental role of temperature appropriately, we need to isolate the part of seasonality that exists in excess of latitude's incorporation and downgrade the final temperature measure in proportion to this excess seasonality. The excess seasonality varies especially among high Northern latitudes on a continental-vs-maritime climate gradient. To account for the negative developmental role of this excess seasonality, we calculate the final version of our thermal component of the CW-Condition by subtracting from latitude-induced cool seasons the residuals in seasonality that are unexplained by latitude itself.[133]

Figure 3-3b. The Emancipatory Effect of the CW-Condition: **Industrial Era** (ca. 1900)

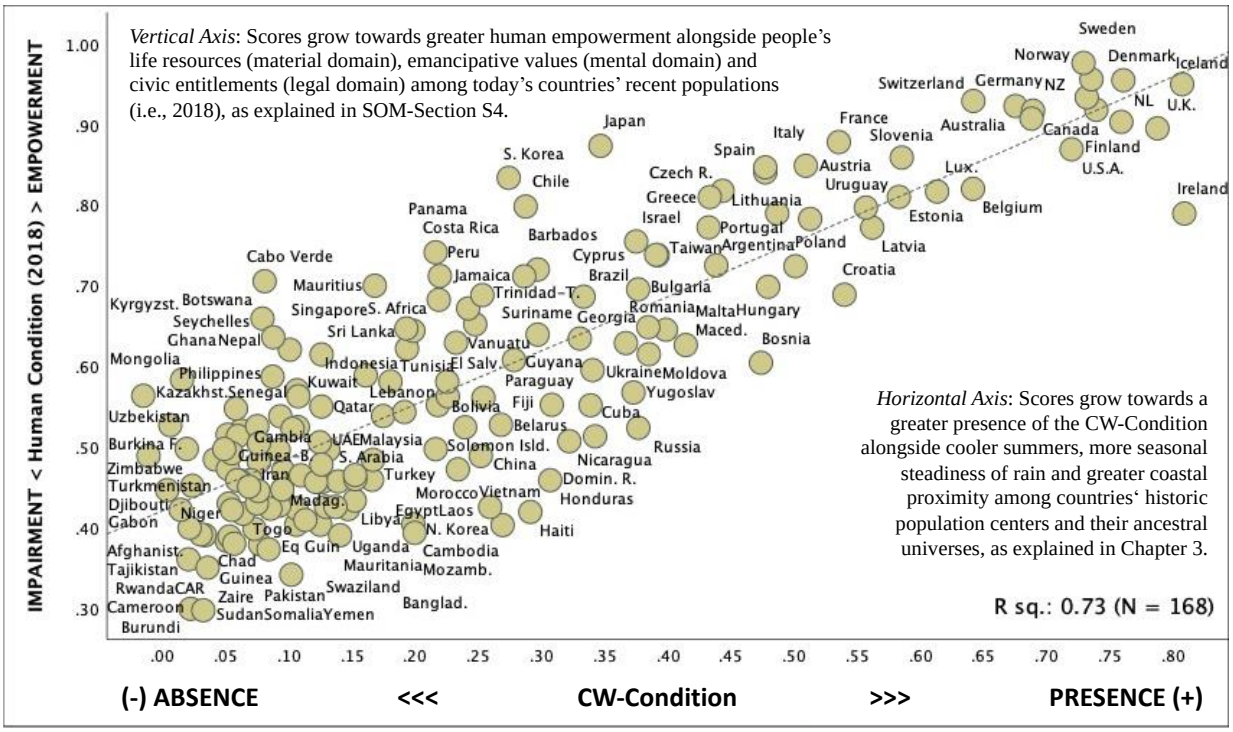


Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

Scores on the resulting "cool seasons" index go up (*a*) as latitude-tied thermal coolness increases and (*b*) as seasonal extremity beyond latitude's coverage decreases. In other words, we measure coolness in an extremity-minimized manner, such that excess seasonality downgrades index scores. This way, we capture the desired thermal combination of mostly cool summers with mildly cold winters. Put differently, our measurement approach generally gives a premium to the cool seasonal temperatures typical of high latitudes but especially to high latitudes in combination with maritime, rather than continental, climates. Hence, our measurement model is ideal for capturing the thermal part of the CW-Condition in its most impactful way with respect to emancipatory societal constellations.

Our extremity-minimized measure of cool seasons resonates with Evert van de Vliert's "thermal stress theory."[134] Accordingly, cool seasons exempt people from the unproductive challenge of heat stress while exposing them to the productive challenge of cold stress, yet at a level of moderation that escapes lasting periods of absent plant growth and at the same time avoids constantly non-navigable waterways because of permafrost in winters.

Figure 3-3c. The Emancipatory Effect of the CW-Condition: Post-**Industrial Era** (2018)



Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

Our measurement model takes care of exceptionally extreme continental climates, which we find in Mongolia, Afghanistan, Kazakhstan, large parts of Siberia and wide stretches of the Central Asian steppes where seasonality is so extreme that these areas' agricultural suitability suffers—a reason why nomadism is still widely practiced there. This is an important point because agricultural suitability is a necessary condition to initiate the civilization process. Areas reached the pre-industrial stage of development, from which an industrial revolution can be launched, only when agriculture matured to a level of productivity sufficient to sustain an occupationally specialized urban workforce. This prerequisite necessitates agricultural suitability, which suffers under too extreme seasonality because bitter frost lasting over a long winter and summer heat peaks combined with droughts hamper plant growth. Since our data are city-based, we automatically exclude areas whose ineptness to agriculture had prevented them from creating and sustaining urban life before the industrial age.[135]

Steady Rain

Since water is a vital resource for agriculture, rainfall patterns determine the prevalent type of land, labor and water management once agriculture establishes itself. Specifically, continuous rain on a decently high base level favors decentral forms of water, land and labor management.[136]

The developmental advantages of rainfall do not reside in the total amount per year. What really matters is a decently high base level of rain that continues throughout the year without seasonal interruption by prolonged dry periods.[137] Only a continuously high base level of rain provides the ubiquitous and permanent water supply that allows nuclear families to settle in any free space of their choice, clear the landscape from trees and swamps, and farm the claimed land on their own, with little need for extended family support. When agriculture matures under these circumstances, it escapes collective irrigation regimes, together with their well-documented repressive consequences under hierarchically centralized forms of water, land and labor management.[138] Moreover, steady rain is an equalizing factor with respect to land's agrarian value: After clearing forests and draining swamps, every stretch of soil is arable under steady rain. This is also true because the boreal and swampy landscapes (typical of CW-areas before human intervention) offer deep, heavy and moist fertile soils that withstand quick erosion through weather when laid open by forest clearing and swamp drainage. The ubiquitous presence of valuable land creates an open-frontier situation that gives people more freedom in choosing where to settle. Douglas North, John Wallis and Barry Weingast characterize such a constellation as an "open access environment" in which vital resources are ubiquitously available—a situation that limits the possibilities of elites to monopolize assets and exercise centralized control over water, land and people.[139] Therefore, steady rain favors diffuse settlement patterns, decentral cultivation management and local subsistence autonomy.

For all these reasons, it is essential to capture the continuity aspect in the base level of rainfall. Under this premise, both total and average annual precipitation are *counter*-indicative of continuous rainfall throughout the seasons. Total and average annual rain correlate *negatively* with latitude[140] and increase with proximity to the equator, culminating in the tropics where total and average precipitation are highest. This observation reflects the monsoon pattern: extremely high amounts of water pouring down in a short rain season with devastating floods, contrasted by a long dry season and its excruciating drought periods. For example, Bangladesh's capital city Dhaka has an average monthly rainfall over a year of some 170 millimeters (i.e., 17 liters per square meter). This is more than three times the average monthly rainfall over a year in England, where London has an average of roughly 50 millimeters (i.e., 5 liters per square meter). Yet, these large differences in average rainfall are entirely deceptive when we wish to see differences in the steadiness of rain's base level: London still receives about 40 millimeters of rain in its driest month of the year, whereas Dhaka obtains just 6 millimeters of rain in its driest months, typically December and January. The latter is the epitome of unsteady rain in spite of exceedingly high total and average precipitation.

These exemplary facts reflect a more general pattern: Low latitudes combine (*a*) negligible seasonal variation in temperature on a constantly high heat level with (*b*) extreme discontinuity in rainfall. For higher latitudes, it is the other way around: They combine (*a*) pronounced seasonality

in temperatures on a cold base level with (*b*) steadiness in rainfall, although the latter feature is more pronounced among high latitudes in relative coastal proximity than among those situated in the center of large continental landmasses.

In line with these insights, average and total annual rainfall show either no significant or even a negative correlation with each stage in our three-phase series of emancipatory constellations. Remarkably, each of these insignificant or negative correlations reverts its sign and turns pronouncedly positive as soon as we control latitude.[141] This happens because controlling for latitude removes much of the seasonal discontinuity in total and average rainfall. In so doing, controlling for latitude isolates the continuous part of total and average rainfall, which is the beneficial part for our three-phase sequence of emancipatory constellations.

To capture in a more direct way the continuity of rainfall, we calculate the ratio of the typical amount of rainfall in a capital city's driest month over the typical amount of rainfall in its wettest month of the year. Since the magnitude of ratios increases alongside both larger numerators and smaller denominators, the rain ratio grows in size as the amount of minimum rainfall in the numerator increases, thus favoring higher base levels of rain. The ratio also increases as the amount of maximum rainfall in the denominator decreases. The latter regularity gives a premium to continuity in rainfall because larger minimum rain in the enumerator means closer proximity to maximum rain in the denominator, as much as lower maximum rain in the denominator implies closer proximity to minimum rain in the enumerator—both of which indicate more even rainfall on a higher base level. This "continuity-maximized" measure of minimum rainfall is *un*correlated with average and total rainfall and—in contrast to the latter—positively correlated with latitude.[142]

To illustrate how measuring the rain ratio works in numbers, consider again Dhaka and London. With 377 millimeters in volume (i.e., 377 liters per square meter), Dhaka's rainfall in the wettest month of the year exceeds London's 61 millimeters by a factor of 6.2. But in calculating the rain ratio, Dhaka ends up with a "steady rain" score of (6 mm/377 mm =) 0.02. In stark contrast, London's "steady rain" score is (40 mm/61 mm =) 0.6. Due to these numbers, London (and more generally Northwestern Europe and its former overseas settler colonies) exhibit a base level of rain whose magnitude is by a factor of 30 (!) steadier than rainfall among the globe's monsoon regions. This steadiness premium is even more pronounced relative to the globe's arid regions, whose steady rain score is just zero because of entirely absent rain in the driest period (a zero in the numerator of a ratio formula turns the ratio into zero).

Since minimum rainfall cannot exceed maximum rainfall but only approach equity, the rain ratio can never exceed but only approach its theoretical maximum of 1.0. This limitation opens the logical possibility that the rain ratio approximates its theoretical maximum of 1.0, merely because rainfall levels are very and equally low throughout both the driest and wettest period of a given place. In this case, a high rain ratio would indicate steady *aridity* instead of steady *rain*—in outright contradiction to the intention of our measurement. However, in practical terms this logical possibility is inexistent because the major urban centers of our world's countries did *no*where arise under conditions so continuously dry that the rain ratio would be high because of permanently low base levels of rain. No question, a number of major cities in the world exist under summer-dry

conditions (i.e., precipitation in the wettest month of the year below 10 millimeters). These places cluster—not surprisingly—in Sub-Saharan Africa, the Middle East, South and Central Asia and South America, amounting to roughly thirty percent ($N \sim 70$) of all capital cities in the world. Examples include Nairobi, Kairo, Qatar, Dhakka, Astana, Lima and La Paz. Yet, in these and many other cases, the amount of rainfall in the driest month is exactly 0 millimeters, which dooms the rain ratio to be exactly zero by mathematical definition—hence, there is no high rain ratio in summer-dry places. Also, none of the world's major cities exists in places with zero rain in the wettest month of the year, which—otherwise—would leave the rain ratio mathematically undefined. In other words, major cities only exist in areas with at least some rainfall in the wettest month of the year (Lima being the extreme low-end case with just 3 millimeters of rain in its wettest month). And where even the highest monthly rainfall level is rather low, zero rain in the driest month depresses the rain ratio nevertheless, and rightly so in indicating a deficient base level of rain. Therefore, in the context of major cities and their hydrological settlement history, the rain ratio turns out to be small when the minimum rain level is (*a*) either very low, (*b*) largely divergent from the maximum level or (*c*) both. In a nutshell, the rain ratio is an excellent measure of steady rain at a decent minimum level.

Coastal Proximity

Complementary to the CW-Condition's climatic aspects, coastal proximity is an important geographical facet.[143] Significantly, coastal proximity contributes to the CW-Condition's climate pattern in making summers at places of high latitude both cooler and rainier, especially when the nearest sea hosts a warm rather than a cold ocean current. In this sense, the extremity-minimized way in which we measure cool seasons and the continuity-maximized way by which we measure minimum rainfall already imply that the respective places exist only in relative proximity to coasts. For this reason, a significant amount of overlap between coastal proximity, on the one hand, and cool rain climates, on the other, is unavoidable.

Yet, this overlap is by no means perfect because coastally proximate places exist throughout the world's entire latitudinal range, including locations at or close to the equator where cool rain climates do not exist. For this reason, the role of coastal proximity as a development factor is at least partly independent of its direct contribution to cool rain climates. Indeed, apart from its direct contribution to maritime cool rain climates, coastal proximity embodies independent advantages related to the benefits of a location close to the sea *per se*. While these advantages are fairly obvious (as we will outline), it is less clear beforehand whether the assets inherent in coastal proximity operate as a mere *supplement* or, more intricately, as a *fertilizer* of the benefits residing in cool rain climates alone. In answering this question, we demonstrate that coastal proximity does not operate just as a supplement but indeed as a fertilizer.

In its role as a fertilizer, coastal proximity eases the translation of a cool rain climate's developmental potential into long-distance trade and a commercial economy with potent manufacturing,

artisan and merchant classes and other autonomous groups capable and eager to claim property rights, civil liberties and political representation—the essential precursors of the modern era's Double Emancipatory Turn towards industrialization and democratization. As we also show, the magnitude of coastal proximity's fertilizing role is not a constant but grows alongside the extent to which the cool rain climate is present. It is easier to translate coastal proximity into commerce, associations, industriousness and representation when this translation starts from decentralized forms of water, land and labor management that the CW-Condition bestows on existing forms of subsistence, whether hunting, fishery, forestry, herding, farming, manufacture or trade.

As said, coastal proximity inheres advantages that exist independent of whether or not coastally proximate locations coincide with a cool rain climate. Thinking about the nature of the advantages of coastally proximate locations, it is obvious that these spaces' vicinity to the sea opens gateways to otherwise unavailable subsistence, travel and trade options. For instance, access to sea trade makes it more likely that an evolving social order gives rise to an independent merchant class whose economic resources effectively check the political authority of a landed nobility. What is more, access to the sea diversifies people's occupational opportunities, allowing them to work as fishermen, sailors, shipbuilders, sail-makers, and (even if more value captors than value creators) pirates—options unavailable to landlocked places with no access to the sea. These occupational opportunities, in turn, facilitate a more diverse and pluralistic economic structure, as opposed to oligarchic economies with high concentrations of power and wealth and their natural alliance with autocratic polities. In the same vein, proximity to the sea offers escape routes to take refuge from confiscation and oppression.[144] All in all, the opportunity endowments inherent in coastal proximity are—in and by themselves—conducive to a more diverse socioeconomic setting and pluralistic political order.

This conclusion holds true, no matter whether coastal proximity coincides with the presence of cool rain climates or not. However, coastal proximity's inherent developmental potential germinates more easily in the presence of cool rain climates. Vice versa, the inverse holds also true: The developmental potential embodied in cool rain climates germinates more easily, the closer the cool rain place is located to the coast.

Insight:

> *Although cool rain climates are always located in relative proximity to the coast, the locations of cool rain still differ in how close exactly they are placed to coasts, which matters for the ease by which the CW-anchored developmental potential germinates into an observable developmental advantage.*

To capture the advantages of sea access, we rely on the capital cities' distance in kilometers from the nearest coastline. Strikingly, fully ninety-three of all capital cities in the world (i.e., roughly 50%) are located right at the coast, which means a coastal distance of literally zero kilometers. Two thirds of all capital cities are within a 150-kilometers reach of the coastline and three quarters are within 300-kilometers. The remaining quarter of forty-six capital cities are spread over a vast distance range from 300 to 2,900 kilometers of coastal distance. Kazakhstan's capital city Astana

is the high-end outlier at 2,900 kilometers from the nearest coast. The next most ocean-remote capital city is Kirgizstan's Bishkek at a distance of 2,070 kilometers, followed by the other capital cities in Central Asia and Central Africa, where we find most of the world's landlocked and land-mass-centric countries.

The clustering of capital cities around the coast is also reflected in the fact that fully seventy percent of all capital cities are closer to the coast than to the geographical center point (i.e. "centroid") of their surrounding country. On average, capital cities are 105 kilometers closer to the coast than their countries' geographic centroids, with particularly extreme differences in closeness applying to Russia (2,540 km), Canada (1,470), the US (1,150) and China (955). Logically, these differences in coastal proximity between capital cities and country-centroids correlate strongly with territorial country size.[145] This correlation coincides with the fact that, in more than ninety percent of the cases, capital cities exhibit a more pronounced CW-Condition than their country-territories at large, with a mean difference of 0.13 scale points on our final CW-index.

Insight:

> *All of this indicates that cool rain climates and coastal proximity attract population settlement and, thus, shape the location of urban centers, which is in and by itself an already striking indication of the CW-Condition's developmental impact.*

To turn the coastal distance measure into a proximity measure, we calculate its inverse by subtracting each capital city's coastal distance from the maximum distance, that is, Astana's 2,900 kilometers. Doing so, the closest capital cities with a zero-distance from the coast now obtain the maximum proximity score of 2,900, whereas Astana as the most distant city obtains the lowest proximity score of 0. Then we normalize these scores into a scale range from 0 to 1, such that Astana remains at 0 for the lowest proximity, whereas all coastal cities obtain the maximum proximity score of 1. All other capital cities end up with a fraction of 1, in exact proportion to their location between Astana's 2,900 kilometers coastal distance and the zero-kilometer distance of coastal cities.

The distribution of capital cities over this normed proximity index is very dense at the high proximity end and very sparse at the low end. Of course, there is nothing we can do about the clustering of fifty percent of the capital cities at the maximum proximity score of 1, as these cities are located right by the sea. However, by exponentiating the scores of the proximity index, we condense proximity differences far away from coasts relative to the same distances close to coasts. At the same time, exponentiating the proximity index still keeps all scores in the scale range between 0 and 1. For instance, the roughly 215 kilometer distance between Kyrgyzstan's Bishkek and Uzbekistan's Samarkand at the far end of coastal proximity (a .07 score point difference on the normalized index) shrinks to a roughly 90 kilometer distance (.005 score points) after exponentiation. At the close proximity end, exponentiation leaves the same distance largely unaffected.

This mathematical treatment also makes sense from a substantive point of view because differences in proximity at the high proximity end should matter more than those at the low end for plausible reasons. Simply put, differences in coastal proximity cease to matter among capital cities

more than 1,000 kilometers away from the sea. For instance, a 200 kilometers difference between a city located in 10 kilometers distance from the sea and another city located 210 kilometers from the coast surely matters in terms of how easily the residents of those places can take advantage of the opportunities offered by access to the sea. But the same 200 kilometer distance between a city 1,000 kilometers away and another one 1,200 kilometers away from the coast is much less important because at such large distances, the places are cut off from sea access anyway. Exponentiating the scores on the normed proximity index incorporates this regularity into the measurement by condensing distances at the low end of proximity relative to those at the high proximity end.

In and by itself, coastal proximity constitutes an opportunity endowment that embodies the potential to generate a thriving, commerce-based economy with potent manufacturing, artisan and merchant associations and other self-organized groups whose members possess the means, skills and willingness to claim property rights, civil liberties and political representation, which is what we call the *emancipatpory potential*. This *emancipatory potential* also resides in cool rain climates because of their tendency to favor economies with decentral forms of water, land and labor management. Given that the two seeds of the emancipatory potential—cool rain and coastal proximity— exist partly independent from each other, we hypothesize that their joint occurrence triggers a cross-fertilizing dynamic, such that the two potentials ease each other's germination—and the more so, as the gradual presence of both goes up. Put differently, we suggest that the emancipatory impulse of coastal proximity increases in strength alongside the gradual presence of a cool rain climate. Vice versa, cool rain climates' emancipatory impulse also increases in strength alongside closer coastal proximity. And even though it is true that cool rain climates only exist in relative coastal proximity, the locations of these climates still differ in exactly how close they are to the coast.

The most encompassing measure to showcase emancipatory outcomes is the human empowerment index introduced previousy. SOM-Figure 3-1 exhibits the relationship between the capital cities' coastal proximity and the respective countries' advancement in human empowerment. The shape of this relationship is telling. As it appears, coastal proximity is in and by itself an incomplete opportunity endowment that needs the additional assistance of cool rain to come to fruition in favor of human empowerment. Specifically, the distribution shows a highly heteroskedastic shape, with the range of variation in human empowerment widening visibly with increasing proximity to the coast. Interestingly, the triangular sail-shape of the distribution shows that coastal proximity does not raise the bottom of human empowerment at all, while it opens the ceiling of human empowerment alongside a steep upward slope. Accordingly, human empowerment is advanced *only* in places in close proximity to the sea; but human empowerment is by no means *always* advanced in such places, especially if they lack a cool rain climate (which they do near the equator). Vice versa, human empowerment *always* trails behind in places at a large distance from the sea where the cool rain climate is never present—not even far away from the equator (countries in Central Asia being the most obvious cases).

These observations reveal an intriguing asymmetry in how coastal proximity and cool rain climates fertilize each other's emancipatory potentials. On the one hand, cool rain climates only

exist in relative coastal proximity; yet, the still existing differences in coastal proximity influence how easily the emancipatory potential inherent in cool rain climates germinates. On the other hand, coastal proximity also exists in the complete absence of cool rain climates but needs the latter as a fertilizer for its emancipatory potential to germinate. This finding informs an essential

Insight:

The cool rain climate is a more critical fertilizer for the emancipatory potential inherent in coastal proximity than coastal proximity is for the emancipatory potential residing in cool rain. This insight suggests that a multiplicative rather than additive combination is more adequate to measure the joint occurrence of coastal proximity and cool rain in a fashion that captures the developmental interplay between these two components of the CW-Condition in its full scope.

EXCURSION: COUNTRY AREA SIZE

In terms of geography, a most striking difference between countries is their area size. The smallest (non-ministate) country for which we have data, the Marshall Islands, covers a territory of 181 square kilometers. The largest country by far, Russia, covers 17,075,400 square kilometers. Thus, the Marshall Islands' territory fits a stunning 94,000 times into that of Russia. Despite this monumental difference, the global distribution of territorial country sizes shows a much simpler four-fold pattern:

(*1*) a single country, Russia, sticks out as by far the world's largest country with seventeen million square kilometers;

(*2*) at a little less than half the size of Russia, we find five countries: Canada, the US, China, Brazil, and Australia, each with area sizes of about eight million square kilometers;

(*3*) then opens a big gap to a small group of still sizeable countries led by India and Kazakhstan with 3.3 and 2.7 million square kilometers, respectively, and just nine other countries above two million square kilometers (in alphabetic order: Algeria, Argentina, Indonesia, Iran, Kongo-Kinshasa, Mexico, Mongolia, Saudi Arabia, Sudan);

(*4*) below these seventeen very large countries, *all* of the roughly 180 remaining countries in the world cluster in one compact clump within which countries appear indistinguishable in size when seen against Russia's outstanding extension. In fact, ninety percent or 163 of our 186 countries cover area sizes smaller than 180,000 square kilometers, which is about the size of Syria.

Surprising as it may seem in the face of such gigantic differences, area size says literally nothing about developmental outcomes in general, nor emancipatory outcomes more specifically. This is evident from SOM-Figure 3-3, which plots the relationship between country area size and the human empowerment index. Clearly, area size bestows no emancipatory advantage at all on countries, visible in Russia and China's mediocre position in human empowerment (due to low scores in emancipative values and civic entitlements). On the other hand, area size is also no disadvantage in emancipatory terms, obvious in Australia, Canada and the US's high-end position in human empowerment (due to high scores in life resources, emancipative values and civic entitlements).

All other countries below the size of China, Canada, the US and Australia are found on all levels of human empowerment, fully irrespective of their territorial size. In fact, at each territorial size, the full range of variation in human empowerment is covered. Hence, area size has no predictive power over the countries' human empowerment today. It also has no predictive power over earlier emancipatory outcomes, no matter whether these are outcomes in the pre-industrial or industrial era. Accordingly, territorial country size is entirely uncorrelated with female reproductive autonomy in 1800 and also with cognitive reproductive investments in 1900. These findings are robust against corrections of the skewed distribution in territorial country size.[146] Given that country area size is entirely unrelated to emancipatory societal constellations, we do not include in the final CW-index any variable that would factor in country area size.

The Overall CW-Index

We assign scores for our three components of the CW-Condition to today's countries separately from two different spatial frames: (*1*) locally, we refer to contemporary countries' *own* historically most important population centers; (*2*) contextually, we refer to the *other* population centers of countries' ethno-linguistic population families. Implementing a 2-by-3 design, we assign each country (1) a local and (2) a contextual score for (1) cool seasons, (2) steady rain and (3) coastal proximity.

As concerns countries' ancestral universes, we calculate exogenous scores, measuring not the capital cities' *own* cool seasons, steady rain and coastal proximity but those that prevail in the *other* capital cities of their respective ancestral universe. In doing so, we ensure that the countries' own CW-Conditions are excluded from the ancestral averages that we assign to them as contextual CW-Conditions. This means that we make ancestral averages extraneous to each country, thus capturing neighborly CW-Conditions in each country's cultural universe.[147] This way, we first isolate *locally focused* from *neighborly surrounding* CW-features and then bring them together as separate sources of the countries' *overall* CW-environment. Doing so, *we contextualize countries' own CW-Conditions within the wider diffusion spaces of their respective ethno-linguistic universes*—which constitute the origin of human civilization's culture zones.

Contrary to the suspicion of some critics, creating our overall CW-index that way does definitely *not* infuse a tautological element into the relationship between the CW-Condition and its supposed emancipatory outcomes. This is true for two straightforward: First, the CW-index only includes purely geo-climatic information and no information whatsoever on emancipatory outcomes. Next, the way in which we distinguish ancestral population families also includes no information at all on emancipatory outcomes but—instead—derives solely from national populations' shared ethno-linguistic ancestry, which in and by itself embodies no information on emancipatory outcomes. Hence, any relationship between the CW-Condition and emancipatory outcomes surfacing across the large-scale spaces of ancestral population families can only exist because this relationship spirals upward from the smaller-scale country territories of which the separate ancestral universes consist. In a nutshell, the design of our CW-index is not "selecting on the dependent variable," which is a widespread concern—albeit unwarranted in our case.

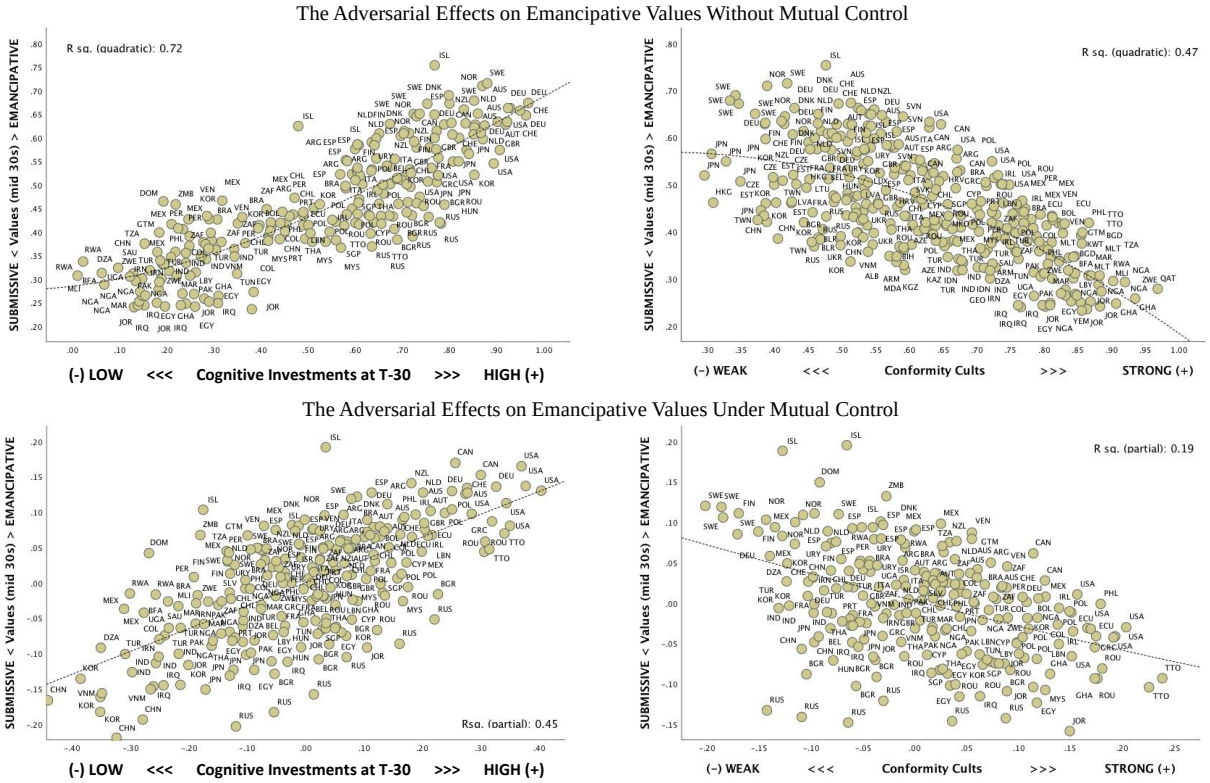
When we look at how our local and neighborly measures of cool seasons, steady rain and coastal proximity are interlinked, it turns out that cool seasons and steady rain are much more closely tied to each other than both of them are tied to coastal proximity. This is logical because cool seasons and steady rain occur mostly in unison, while coastal proximity also exists separately from a cool rain climate. The factor analysis in SOM-Figure 3-4[148] demonstrates this point in all clarity, showing that the local and neighborly indicators of cool seasons and steady rain merge into a single dimension that we label *cool rain*. The local and neighborly measures of coastal proximity, by contrast, constitute a separate dimension of their own, and so we treat it that way. In other words, we summarize the variation embodied in our six-fold measures into two dimensional variables, the first of which reflects cool rain and the second reflects coastal proximity.[149] Since we conduct the factor analysis in an orthogonal manner, the two extracted factors isolate the variance partitions in cool rain and coastal proximity that are unrelated to each other.

Due to this finding, the CW-Condition consists of two separate components, both of which correlate significantly and positively with our sequence of emancipatory constellations from the pre-industrial over the industrial to the post-industrial stage of development.[150] Although cool rain shows consistently stronger correlations in this sequence than coastal proximity does, the point is that these correlations are significant and positive for both CW-components—also under mutual control, which means that cool rain and coastal proximity independently promote emancipatory outcomes.[151] At any rate, cool rain and coastal proximity both contribute distinctively to emancipatory outcomes. Jointly, cool rain and coastal proximity contribute more to emancipatory outcomes than each of the two components contributes alone. And this joint contribution is substantial, accounting for seventy-one, seventy-seven, and seventy-three percent of the total global variation in pre-industrial, industrial and post-industrial emancipatory outcomes. For illustration purposes, SOM-Figure 3-5 visualizes the impact of cool rain and coastal proximity on the countries' contemporary human empowerment before and after mutual control of these two CW-components.

Now, the question is how we combine cool rain and coastal proximity most intelligibly into a single measure of the CW-Condition so that this single measure captures the *joint* emancipatory impact of both components at its full strength.

Two possibilities exist. We either calculate an average across the two components to create the overall CW-index, thus pursuing a *complementary* logic of interplay. Alternatively, we multiply them to create the overall CW-index due to a *conditional* logic of interplay. Which possibility we opt for is not only a technical issue but a substantive question because the two possibilities embody fundamentally different theoretical premises. In calculating an average across cool rain and coastal proximity, we inadvertently assume that the two CW-components operate in a supplementary manner. If so, one component's strength compensates for the other's weakness. By contrast, multiplying the two CW-components presumes that they interact in a mutually fertilizing fashion, such that the impact of one component rises with the strength of the other.

Figure 3-4. The Adversarial Effects of Cognitive Investments and Conformity Cults



Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

Instead of making this decision from scratch, we test which of these two possibilities is more adequate. To do so, we inspect a regression model with two main effects, one for each of the two CW-components, plus a multiplicative term representing their interaction. We examine this regression model for each of the three emancipatory outcomes in our historic sequence, alongside the timeline from the pre-industrial over the industrial to the post-industrial eras.

The result is unequivocal. Upon inclusion of the interaction term, which proves significant in all three models, the main effects turn insignificant and the explained variance increases significantly compared to models that exclude the interaction term. In conclusion, cool rain and coastal proximity condition each other's emancipatory impact, for which reason their interactive combination is the most adequate way to capture their joint developmental influence. As already shown in Figures 3-3a to 3-3c, this overall measure of the CW-Condition exhibits an outstandingly potent effect on pre-industrial, industrial and post-industrial emancipatory outcomes.[152]

Essence:

Our measure of the countries' overall CW-features treats cool rain and coastal proximity as distinct opportunity endowments that mutually magnify each other in generating the optimal CW-Condition. In that sense, the overall CW-feature is a conditional measure of CW-environments, capturing cool rain in as far as it coincides with coastal proximity (and vice versa).

The resulting CW-index is not an artificial creation. Instead, it describes a truly existing and geographically clearly patterned ecological habitat, measuring the absence-vs-presence of this habitat's defining features by degree. This is obvious when we relate the CW-Condition to the Koeppen-Geiger classification of the world's climate zones.[153] To do so, we use a measure indicating how large a share of a country's territory falls into each of the twenty-nine climate zones described by Vladimir Koeppen and Rudolf Geiger. Then we correlate our conditional CW-index with this measure. As a result, it turns out that the CW-Condition correlates tightly with the territorial shares of the climate zones labeled "temperate: no dry season" and "cold: no dry season."[154] A look at the global map shows that these climates prevail in Northwestern Europe, Japan, the Korean peninsula and some other parts of Northeast Asia, the coastal parts of North America's North, the Southern American region around Uruguay down to the Southern cone of the continent, the very South of South Africa, Southeast Australia, as well as Tasmania, New Zealand and neighboring Pacific islands. By no coincidence, this is—apart from Japan and the Korean peninsula—also the map of white settler colonialism and of human empowerment today.

Essence:

Beyond reasonable doubt, the CW-Condition captures something real and the guiding geographic pattern is quite clear: high latitudes within planet Earth's arable land zone in relative proximity to ice-free coasts.

The conditional CW-index is created independently from the shape of contemporary countries' territorial extensions. This is true for two reasons. First, the local (city-based) geo-climatic features that flow into the CW-index do not depend on the countries' territorial extensions, not today and not back in time. Second, the neighborly (ancestry-based) geo-climatic features represent summaries of the respective population families' affiliated capital cities, which do not depend on the borders of the belonging countries at any particular time—hence, no dependence on the countries' time-specific territorial extensions either. In conclusion, the problem of shifting country borders in history leaves the CW-index unaffected.

EXCURSION: WITHIN- AND BETWEEN-COUNTRY VARIATION

A major concern relates to the variation of the CW-Condition within countries and the possible confounding of this variation with territorial country size. To examine this issue, we use the spatial "grid cell" data that Andreas Tollefsen, Havard Strand and Halvard Buhaug from the Peace Research Institute in Oslo (PRIO) provide. The size of these grid cells approximates 55 by 55 kilometers at the equator. Away from the equator southwards, the Southern borders of the grid cells continuously narrow until they condense into a single point at the South Pole. With growing distance from the equator northwards, the same happens with the Northern borders of the grid cells.

The whole Earth's surface contains 259,200 grid cells, most of which cover uninhabited areas, namely oceans and the polar ice shields. The inhabited grid cells of today's country-territories amount to 64,818 in number, of which some 11,600 or roughly eighteen percent (i.e., almost a

fifth) belong to Russia alone. In fact, the six largest countries out of a universe of roughly 200—namely Russia, Canada, China, the U.S., Australia, and Brazil—comprise almost half of these grid cells. These obvious disparities in area size further underline the concern about differences in the CW-Condition's within-country variation. These concerns touch upon the comparability of CW-scores across countries.

In other words, are the same country scores in the CW-Condition comparable if they apply to countries of vastly different sizes? For instance, both Canada and Germany have a CW-score of about 0.70 scale points. But in the case of Canada the 0.70-score refers to a country that is about twenty-two times larger in territorial extension than contemporary Germany. Accordingly, one must assume that the same CW-score glosses over a much bigger within-country variation in the CW-Condition in the case of Canada than in the case of Germany. If so, the two CW-scores would appear to be inequivalent, despite being numerically similar.

The grid cell data from PRIO allow us to examine this issue. There are average temperature measures and indications of the occurrence of droughts per grid cell that enable us to replicate a measure of the CW-Condition among grid cells. This grid-cell measure of the CW-Condition is much less nuanced than the one we use at the country level, which diminishes data quality. If we nevertheless find that country aggregates of the *grid-cell* measure of the CW-Condition and our own *country-level* measure of the CW-Condition map tightly on each other, we have assurance of our own measure's validity. This is indeed what SOM-Figure 3-6 shows: namely, a sixty percent match (sixty-five percent under exclusion of the outliers Australia and Bhutan) between our own measure of the CW-Condition and country aggregates of the CW-Condition from grid cell data.

More importantly, the grid cell data allow us to estimate the within-country variation in the CW-Condition. To do this, we examine the standard deviations around given country averages and the coefficients of variance, which express the ratio of the grid cells' standard deviation to the country mean for each country. This leads to some surprising insights. First, only fifteen percent of the variance in the CW-Condition across the globe's roughly 65,000 inhabited grid cells represents differences *within* countries. In other words, fully eighty-five percent of the inhabited world's total variability in the CW-Condition reflects differences *between* countries. This observation is striking because, when roughly two-hundred larger units (i.e., countries) capture some eighty-five percent of the total CW-variation among roughly 65,000 smaller units (i.e., grid cells), the larger units capture an astounding 274 times bigger variance in the CW-Condition than they should—if the relationship of country spaces to the CW-Condition was purely random.[155] This is a manifest testimony to the fact that country averages in the CW-Condition are significant and meaningful because they depict by far most of the territorial variation in the CW-Condition. This observation provokes the intriguing consideration that the inhabited parts of today's country territories have formed on the basis of relatively similar geo-climatic conditions. In other words, geo-climatic similarities have been a significant force in shaping political spaces—much more so than is generally recognized.

Insight:

> *Countries and the population families into which these countries are pooled evolved from shared ethno-linguistic ancestries. Based on these ancestries' historically grown subsistence knowledge, migratory history guided related ethno-linguistic groupings to settle in similar geo-climatic environments, thus organizing ancestral universes alongside those geo-climatic environments*.

Second, and related to the first finding, SOM-Figure 3-7 demonstrates that territorial country-size has practically *no* influence on within-country CW-variation. As surprising as this finding may seem, the evidence is straightforward. Hence, our initial suspicion that the 0.70 CW-score of Canada is incomparable to Germany's similar CW-score, because Canada's score supposedly hides much more CW-variation within the country than the one Germany, is pointless. Indeed, the coefficient of variance for Germany's CW-Condition is .03, which is negligibly different from Canada's .04 coefficient of variance. Additional examples illustrate the point: Variation in the CW-Condition in China is *not* bigger than in Panama (both at .09); most strikingly, variation in the CW-Condition in Russia is *not* bigger than in Jordan (both at .04).

The real champions in within-country CW-variation are Kenya with a variance coefficient of .40, Ecuador (.33), Somalia (.31), Chile (.29) as well as Ethiopia and Peru (both at .24). By far, most of the world's countries cluster at a rather low coefficient of variance around .05, and that includes Russia and Canada—the world's two biggest countries. These examples already illustrate what causes within-country variation in the CW-Condition: (*a*) mountains and the related variation in a territory's elevation (think of Ethiopia), and (*b*) the territory's North-South extension (think of Chile), which usually involves larger climatic differences than an East-West extension—a point famously highlighted by Jared Diamond.[156]

It is also interesting to note that within-country variation in the CW-Condition co-varies only weakly with the country means in the CW-Condition and, if anything, slightly decreases alongside higher country means. Accordingly, higher country means in the CW-Condition not only indicate a stronger overall presence of this condition but also a more pronounced homogeneity in this presence. Furthermore, within-country variation in the CW-Condition does not appear to be dramatic anyways: Apart from five outliers with higher-than-usual variation—namely Peru, Ethiopia, Chile, Somalia, Ecuador and Kenya (in this order of magnitude)—all other country-territories' inner variation in the CW-Condition is below a variance coefficient of .2 and approximating 0 as the country average increases.

As SOM-Figure 3-8 illustrates, the same conclusion is powerfully reenforced when we relate within-territorial variation in the CW-Condition to the globe's major supra-national regions: As the average CW-Condition of the regions increases, inner-regional variation drops steeply. Hence, the high CW-average of Northwestern Europe does *not* mask wide variation in this condition within the region.

Within-country variation in the CW-Condition hardly affects this condition's emancipatory impulse, no matter if we look at developmental outcomes with an emancipatory signature at the pre-industrial, industrial or post-industrial stages of development. This is obvious when we regress country differences in emancipatory outcomes at each of these stages on (*a*) the countries' overall CW-Condition and (*b*) within-country variability in this condition: For all of these outcomes, the countries' overall CW-Condition retains a highly significant and strongly positive effect, while within-country variability hardly ever adds anything significant to these outcomes.[157] In conclusion, doubts about the significance of the overall country scores in the CW-Condition and concerns about the comparability of these scores across countries of different territorial size, prove unfounded upon closer examination.

Climate and Political Spaces

As we have seen in Figure 3-1, the world's twelve population families vary significantly and pronouncedly over the CW-Condition. Indeed, fully seventy-four percent of the world's entire cross-national variation in the CW-Condition is due to the countries' grouping in larger population families. The tendency of population families to center their settlement areas on similar CW-Conditions is striking. If countries clustered into ancestral population families in a process that is geo-climatically purely *random*, our twelve ancestral universes should at most absorb six percent of the CW-variation across countries. Seventy-four percent, however, is about twelve times above the random capture of six percent.[158]

When we disaggregate the CW-Condition to the world's grid cells (which multiplies the number of units by a factor of 320), the inhabited world's total variability in the CW-Condition splits into sixty-six percent variation *between* and thirty-four percent *within* population families. Since only twelve population families account for two thirds of the total variability in the CW-Condition among 64,000 territorial units, the clustering power of population families over these territorial units' CW-Condition also amounts to roughly two thirds.[159] Should grid cells cluster into population families in a climatically random process, the clustering power of population families over the grid cells' CW-Condition should correspond with the share of these twelve ancestral universes among the 64,000 grid cells, which is a 5,333th or 0.019 percent. In fact, however, the population families' clustering power of sixty-six percent exceeds this random catch of 0.019 by a gigantic factor of roughly 3,500.[160]

Insight:

> *These numbers illustrate a striking fact: Nations and their population families have been shaped forcefully via similar geo-climatic conditions. Specifically, the Western world—and above all its Protestant part—has taken shape under a uniquely and homogenously strong CW-Condition. In accordance with this observation, settler colonialism from the Protestant parts of Europe only targeted those areas of the New World, and no others, that embodied a CW-Condition similar to Northwestern Europe's own strong CW-Condition.*

Our findings accord with Enrico Spolaore and Romain Wacziarg's argument that developmental achievements—be they of a technological, ideological or institutional nature—have a strong tendency to diffuse at high speed *inside* ancestral universes, yet not between them.[161] In other words, diffusion of developmental achievements happens to a much greater extent *within* than *between* population families, which is actually what creates the similarities inside these families as well as the dissimilarities across them.

EXCURSION: GROUP IDENTITY AND CROSS-CULTURAL LEARNING

Primordial Moral Limitations

The organizational principles by which societies structure their institutions and the moral values on which they build their ideologies diffuse more speedily and at greater ease *within* than *between* ancestral universes. In other words, the diffusion of civilizational achievements is space-bound, thus accentuating the distinctness of culture zones. Psychologically speaking, the space-boundedness of civilizational diffusion reflects an intriguing interplay between *social learning* and *group identity*.

For one, humans grow up with an evolved drive to learn.[162] As a brained and cooperative species whose achievements depend on smart teamwork[163], the drive to learn unfolds as a drive to learn *socially*, that is, learning from role models of successful behavior within the groups in which we live. Social learning includes the urge to observe what *others* who benefit from a higher reputation in our reference group do better, with the intention to emulate their success in building our own reputation. This social learning drive is universally human and directs our efforts upwards, instead of downwards, on the ladder of human achievements.

And yet, there is a manifest psychological limitation that forces humans' social learning into the confines of group identity. This identity-tie of social learning explains the space-boundedness of civilizational diffusion. To be concrete, people learn socially only within the limits of the reference groups to which they feel to belong. These feelings of belongingness make people susceptible to normative group pressures and generate the collective loyalty that drives people to sacrifice personal benefit for the sake of their reputation in the group, which is why people are even ready to die if they anticipate an increase in recognition by risking life. Quite clearly, such sacrifices are only seemingly selfless because reputation is the personal gain that drives people to relinquish an obviously selfish benefit. Group identity, therefore, embodies a tendency to build codes of honor that reinforce loyal behavior, especially when people act under the awareness of being monitored by others relevant to them.

In a sense, group identity de-individuates people and narrows their solidarity circle to the confines of what they consider their ingroup. Consequently, people target their social learning efforts toward peers who successfully increase their reputation through exemplary behavior in compliance with the group norms. For this reason, inter-human solidarity is limited in extension to the groups with which we identify.

Consequently, the spatial radius of the human solidarity circle, expands in direct proportion to the territorial extension of our social identities. Thus, generalized inter-human solidarity, known as "universal altruism," requires an encompassing sense of humanity that functions as a boundary-transgressing identity category, strong enough to defy the total absorption of our collective loyalties by territorially divided ancestral groups of limited extension—be it families, clans, tribes, ethnicities or nations.

Emancipatory Moral Liberations

Given the primordial ingroup fixation of humans' social identities, the human empowerment process kicks in as a groundbreaking psychological force that liberates human mentalities from their tribal ingroup fixation. Indeed, in giving rise to emancipative values, human empowerment strengthens an increasingly group-transcendent mentality that unchains people from their all-encompassing loyalty to strictly divided ancestral groups. This process of mental bandwidth expansion operates on a universal human capacity: namely empathy—the ability to put oneself in another person's shoes and feel compassion. As human empowerment diminishes people's feelings

of being threatened by hostile outgroups, mental bandwidth expansion frees human empathy from its limitation to narrowly defined ingroups. As this happens, people's moral horizon widens and the inter-human solidarity circle expands. This mental expansion is a process of cognitive maturation that drives humanity's moral progression towards an indiscriminately benevolent view of others, life, the world and existence. We come back to this point in more detail in Chapter 4.

As much as emancipatory tendencies work against the primordial human fixation on group boundaries, group divisions continue to exist. These divisions are most potent when they derive from easily recognizable social markers, including gender, generation, class, race and space. But whatever the nature of the dividing line is, identitarian group divisions erect psychological barriers that confine the flow of social learning to ingroups. For the same reason, cross-border bridges of inter-human solidarity remain rudimentary, if they exist at all, under divisive group identities. Thus, societies characterized by particularly sharp, static and impermeable group divisions suffocate cross-border learning, disrupt solidarity bridges between groups and, consequently, underexploit the society's overall synergetic potential.

The Ancestry Principle

Asking which group divisions are most divisive and—hence—most impeding as concerns social learning and inter-human solidarity, ancestry is the obvious answer. By ancestry, we denote the idea that individuals are born into their kin-based ingroup. And because "membership" in kingroups is by birth, individuals cannot quit their ingroup or change their affiliation at will. Nor can individuals trade, let alone drop, their tight loyalty obligations to the ingroup.

This ancestry principle reflects humanity's evolutionary origin. Since the dawn of our species, our first acculturation always and everywhere happens in the family circle, creating an intimate bond of solidarity among parents and their children, children and their siblings, siblings and their cousins and then across generations to grandparents, uncles, aunts and so on. Following Richard Dawkins' "selfish gene" principle, human solidarity evolved in concentric circles from people with closer to those with wider genetic distances, making people more likely to behave benevolently toward genetically close others and more likely to behave hostilely toward genetically distant others, following the implicit drive to secure the survival of one's own group's gene pool.[164]

This genetic principle feeds kinship-tied solidarity and provides the evolutionary basis of outgroup discrimination, including racism, anti-Semitism and xenophobia. Cultures capitalizing on this evolved human tendency emulate the genetic proximity logic in portraying the circle of belongingness as an extended form of kinship, emphasizing a people's joint folkish ancestry as the identity bond. Group identity framed in ancestry terms is particularly divisive because it establishes sharp and impermeable "us-and-them" boundaries. Without the force of group identity, organized inter-human violence—most notably, warfare—would be impossible.

Societies that frame their cultural identity in ancestry terms are able to mobilize their members' loyalty in acts of violence, be it in defense against outside enemies or in the service of imperial missions to subdue other peoples and their land. From this point of view, ancestry-based identity constructions provide a powerful psychological resource in the hands of a community's leaders. But ancestry-based identities are also very limiting when it comes to harnessing the synergetic potential of a population. Indeed, societies that shape their individuals' group loyalties primarily by a logic of joint ancestry inevitably make the tribal kinship logic the key organizing principle of solidarity. Therefore, kinship line separations turn into impermeable group boundaries. As a

consequence, in societies that frame their cultural identity in ancestry terms, inter-personal trust and inter-human solidarity are strictly group-bound, which impedes cross-border flows of beneficial human interaction, thus depressing a society's synergetic potential, collective learning flows and innovative energy.

Familistic-vs-Egalitarian Collectivism

Usually, scholars brand societies as collectivistic when they define individuals primarily by their obligations towards extended kin. However, this characterization is misleading. As a cooperative species whose achievements depend on coordinated teamwork, humans and the societies in which they live always entertain *some* form of collectivism. The principle that *all* societies enculture certain forms of cooperation, solidarity and sharing (i.e., collectivism) also includes—without any reservation—societies stereotypically branded as individualistic. In other words, even individualistic societies embody elements of collectivism, for which reason collectivism is *not* the antipode of individualism. Therefore, the usual juxtaposition of "collectivism-vs-individualism" has something fundamentally wrong to it.

Against this backdrop, one conclusion follows suit: As long as we can call a society a society, the question is not *if* there is collectivism or to what extent it is there. Instead, the key question is which *type* of collectivism is prevalent. Hence, societies building solidarity on extended kin-obligations do not represent collectivism in any generic sense of the word but only a very special form of collectivism—in fact, the most primordial from of collectivism, which we might label clanism, tribalism or more simply: *familism*. Familistic collectivism is inherently *discriminatory* because it organizes solidarity along the lines of ancestral ingroup/outgroup divisions. Familistic collectivism impedes an indiscriminate provision of the common good—hence, the prevalence of nepotism, favoritism and corruption. Actually, familistic collectivism is an outright denial of the "common" good that only knows ingroup-centric "club" goods, thus promoting group egoism.

Counter-intuitive as it may seem at first glance, the whole notion of a common good that extends beyond group boundaries is a peculiarity of individualistic societies and their *egalitarian* form of collectivism. Egalitarian collectivism is inherently *indiscriminate* because it is impersonal, kin-detached and tied to anonymous institutions, like universal health care and other re-distributional schemes that define entitlements to benefits by formal rules. Familistic collectivism, by contrast, burdens people with sacrosanct obligations to their extended kin—thus, de-individuating people's thinking, actions and life planning. Edward Banfield calls this kinship-tied form of social cohesion "amoral familism," while Alexandra Maryanski and Jonathan Turner characterize the same phenomenon as the "social cage."[165]

Forms of solidarity that are detached from tight kinship obligations and instead involve voluntary cooperation for an agreed mutual benefit can only evolve in habitats whose dominant economic subsistence modes allow people to make a living independent of extended kinship support. Freedom from extended kin support in economic terms, in turn, roots in natural environments suited to decentral forms of water, land and labor management, which allow nuclear family households to produce what they consume and trade in a locally autonomous manner, free from the need for a central coordination of production activities. Because of the ubiquitous provision of vital resources, most notably freshwater and its derivative assets, the CW-Condition constitutes exactly the kind of environment suited to decentral production management. Further below (Chapter 6), we provide ample evidence about the tight link of egalitarian collectivism (also called

individualism), voluntarism, cooperativism, contractarianism and a generalized civic spirit to the CW-Condition.

Identitarian Learning Blockades

As a social species, humans are susceptible to the normative pressure of their reference group. We acculturate under the imprint of this pressure, which leads most of us to internalize our group's most typical thinking and behavior, thus reinforcing central group tendencies. This gravitational force is most powerful for countries as the spatial grouping unit. Intensely felt national identities, therefore, reduce cross-country learning flows.

Still, social learning also happens to some extent between countries. Here it involves the decisions of elites about how to organize their society institutionally (e.g., autocratic-vs-democratic regimes) and how they program their society ideologically (e.g., authoritarian-vs-emancipative dogmas). Elites often make choices about how to model their country in deliberate imitation of blueprints from other countries if they perceive these blueprints as superior scripts of social engineering. In other words, models of organization (i.e., institutions) and models of orientation (i.e., ideologies) that help certain countries to outperform others in obvious ways—like in economic productivity, technological innovation, military power and state capacity—tend to spread by transnational learning. And yet, the same limitation related to group identity applies again. That is, the cross-border flow of social learning—and, hence, the transnational diffusion of institutions, ideologies and other products of society—proceeds more easily within than between ancestral population families. The reason is that cultural identity erects psychological barriers that hinder cross-cultural learning. Indeed, elites as well as ordinary people consider the institutions and ideologies of other countries as role models, only if they identify with the respective countries and see them as members of their own kind, based on similarities in ethnicity, language, religion, imperial tradition and geo-political identity. In the absence of such identification on ancestral grounds, institutions and ideologies of other countries are not seen as role models but as alien ways of life that are to be rejected in order to preserve one's own cultural identity.[166]

Exceptions exist, but they are rare. For instance, when India's colonial elites received Western education through recruitment into the famous Indian Civil Service, they founded the Indian National Congress, not only to achieve national sovereignty but also to remodel the country due to British ideas about democracy and representation. Likewise, when political elites experience or anticipate their country's military defeat or see their country falling behind in competition with other powers, this might trigger a comprehensive program of catch-up modernization by which the elites remodel their country's institutions and ideologies, adopting the templates of the more successful countries. Such was the case during the Prussian Reforms in around 1812, which was the Prussian state's reaction to its military defeat by Napoleon. The French *Code Civil* and mass conscription to the army then served as role models in reshaping Prussia's legal and military system. An even more impressive example is the Meiji Restauration through which Japan—starting in 1870—remodeled its institutions and law code after European (actually Prussian) blueprints. Of course, such cross-cultural social learning presumes that the power elites have a sense of commitment and see themselves as custodians of their country's fate instead of exploiting their official position as a source of private privilege to enrich themselves and their cronies.

At any rate, apart from these rare examples of a deliberate top-down remodeling of entire countries, the key point is that a cultural identity is a form of self-attribution to an imagined

community. When this self-attribution is exclusive and total, cultural identity blocks empathy with and learning from others outside the circle of one's self-attribution. Therefore, the structuring of supra-national identities along the lines of population families makes cross-border flows of institutions and ideologies easier and faster among countries within the same ancestral universe, which at the same time means a more tenacious and slower flow of learning between countries of different ancestral universes.[167]

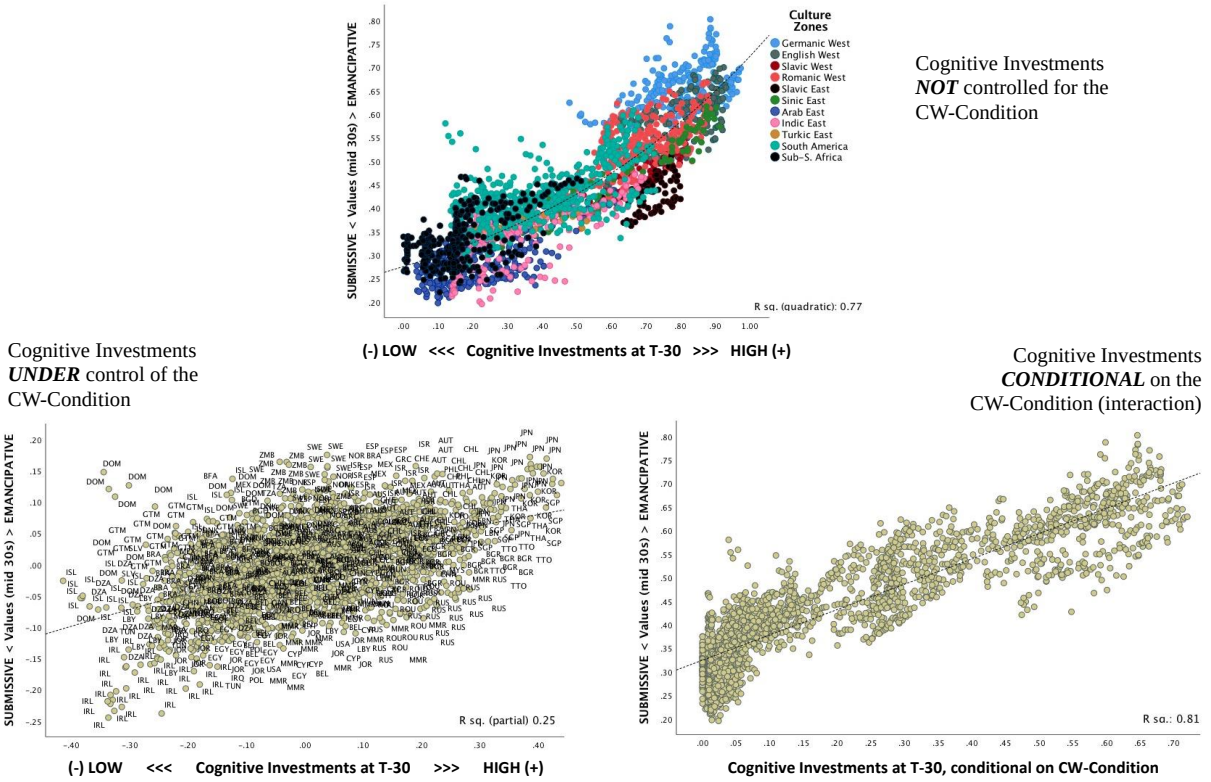
Conformity Cults versus Cognitive Investments

Cultural identities filter the streams of social learning, such that these streams flow more easily inside than across the barriers of cultural identity. The cultural filtering of learning streams explains why the West's emancipatory achievements are not automatically considered as role models among the majority of the world.[168] Instead, an anti-Western cultural identity in large parts of the Islamic world, Confucian Asia and the post-Soviet space blocks identification with Western emancipatory achievements—from gender equality and liberal democracy to the toleration of homosexuality, abortion and divorce.[169] In sustaining autocratic rule, authoritarian leaders have a vested interest in feeding such identity blocks. To do so, autocrats try to create a culture of conformity that aims to unify the population behind the "wise leader" who presents himself as the guardian of the country's national destiny, often portrayed as a geo-political mission to guide the nation to its deserved place in the global order, which requires challenging the West's economic, military, political and cultural dominance. Accordingly, autocratically inspired conformity cults portray precisely the emancipatory core of Western values—most notably sexual self-determination and reproductive freedom—as part of an alien program of cultural domination that needs to be refused. The purpose of these conformity cults—and herein lies their autocratic inspiration—is to command unity behind the leader, which delegitimizes opposition, criticism and dissent. Conformity cults of this sort propagate an extended form of kinship and appeal to people's tribal instincts in erecting sharp "us-vs-them" divisions.

For these reasons, conformity cults provide the most potent psychological tool to justify autocratic rule and to keep humans' emancipatory drive dormant. This is obvious from the cross-country data for the year 2016 (the latest year with available measures at the time of this writing) shown in the two right-hand diagrams in Figure 3-4: the stronger a population's conformity culture, the weaker its emancipative values (for measurement details, see SOM-Section S4).[170]

To foment conformity cults, rulers appeal to national identity and—more often than not—also to religious identity, propagating respect for authority in the family, at work, in the proverbial temple and in public. The efforts at creating and sustaining autocratically inspired conformity cults need to be seen in the context of the massive "births"-to-"brains" transition in people's lifetime investment. This demographic transition is literally ubiquitous and shifts people's life planning from prioritizing fertility to prioritizing education (for proof, see Figures 5-6a to 5-6d in Chapter 5). Expectedly, the demographic shift towards greater cognitive investments emits an emancipatory impulse by empowering people to think for themselves, which fuels resistance against authoritarian guidance in what to believe and to do. The same data for 2016 in the two left-hand diagrams of Figure 3-4 evidence this principle. The pooled country-year data in the upper diagram of Figure 3-5 confirm this evidence on a broader time scale, reaching from 1990 until 2016.

Figure 3-5. The Translation of Cognitive Investments into Emancipative Values



Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

As a caveat, we measure cognitive investment in Figures 3-4 and 3-5 with a lag of thirty years (t_{-30}). We choose this generation-long time lag to demonstrate that emancipative values rise by the cognitive investments that people receive at the time of their upbringing rather than at the moment. Indeed, societies' emancipative values correlate less tightly with cognitive investments at the moment (at t_0), ten years back (t_{-10}) and twenty years back (t_{-20}) than with investments thirty years back (t_{-30}).[171] Following the same generational delay logic, we estimate emancipative values in Figures 3-4 and 3-5 for people in their mid 30s at the given time.

Where conformity cults flourish, the emancipatory impulse of cognitive investments is not completely blocked, but it is at least slowed down. In other words, cognitive investments and conformity cults operate as adversarial forces with respect to emancipative values. This becomes obvious from a comparison of the two lower diagrams in Figure 3-4. For one, in countries where people grew up under similarly strong cognitive investments, those being more heavily under the imprint of conformity cults exhibit weaker emancipative values (lower-right diagram). Vice versa, in countries in which people live under a similar exposure to conformity cults, those growing up under larger cognitive investments exhibit stronger emancipative values (lower-left diagram). Consequently, by fomenting conformity cults couched in non-Western national identities, autocracies considerably slow down the translation of cognitive investments into emancipative values, yet they cannot entirely disrupt this translation.

Submissive Instincts versus Emancipatory Drives

After all, there are two adversarial forces in our nature competing for dominance over our thinking and behavior. On the one hand, our submissive instincts guide us to subdue our individuality to group loyalty. On the other hand, our emancipatory drives lead us to liberate our individuality from group authority. What is more, two different engines feed these competing natures: Conformity cults fuel our submissive instincts, while cognitive investments promote our emancipatory drives. This adversarial constellation raises the question of which of the two forces is more potent in the long run. As the two lower-hand diagrams in Figure 3-4 suggest, under mutual control, the emancipatory effect of cognitive investments is considerably stronger than the submissive effect of conformity cults, although neither of the two eliminates the other. Importanlty, however, the passage of time operates heavily in favor of emancipatory drives and against submissive instincts because the demographic transition from fertility to education increases cognitive investments on a steep slope literally everywhere in the world.

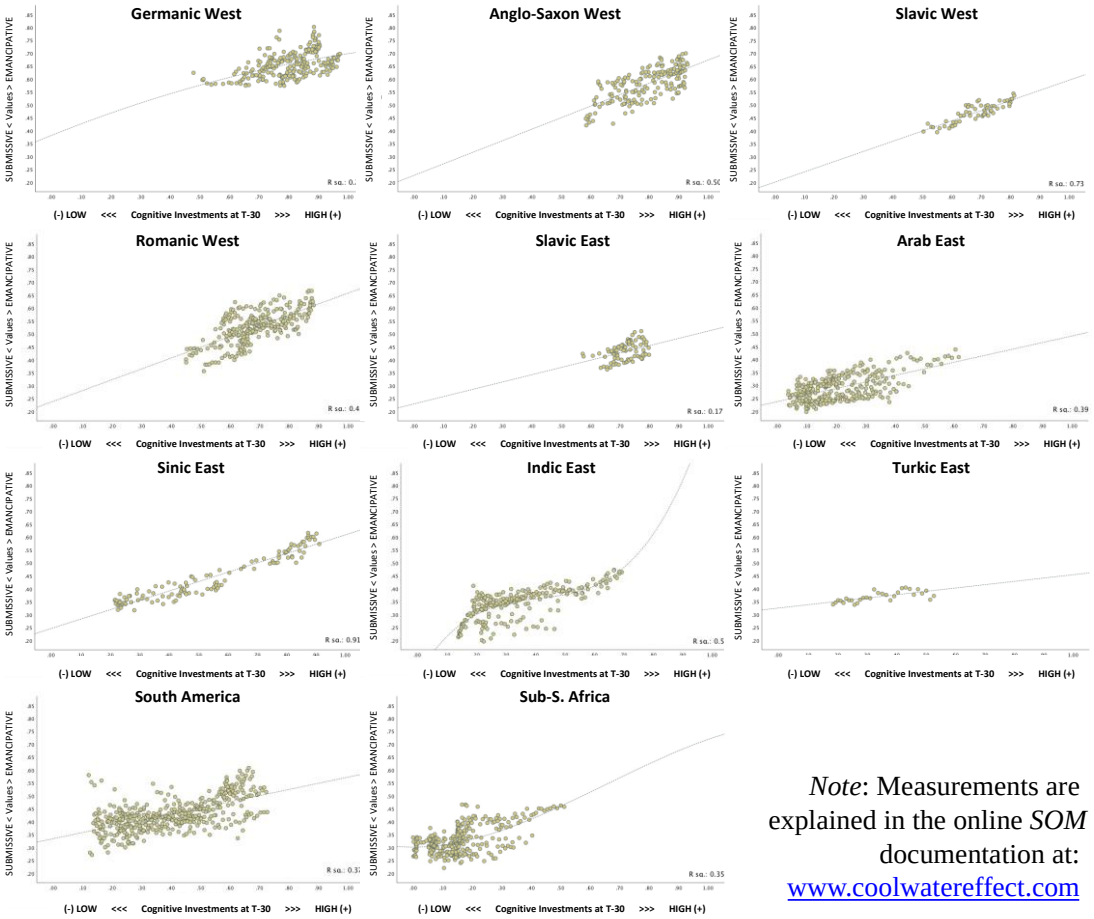
To support this statement, Figure 3-6 illustrates that—fully irrespective of countries' specific cultural ancestry—stronger cognitive investments promote the rise of emancipative values in all corners of the world. In flat contradiction to the Confucian, Islamic and other versions of "cultural exceptionalism," a non-Western cultural legacy does not exempt societies from the emancipatory consequences of cognitive investments, which—once more—are rising everywhere. In this sense at least, there are no "multiple modernities." There is just "one modernity," with different countries only being at different stages in the same awakening process. Chapter 5 provides more details to bring this point home.

Strikingly, the two bottom diagrams in Figure 3-5 show that the translation of cognitive investments into emancipative values is partly conditional on the CW-features. Indeed, the same amount of cognitive investments translates at a lower rate into emancipative values when these investments combine with a weaker CW-Condition. This implies that catch-up economic growth in China and other BRICS-countries, where the CW-Condition is generally weak, does not yield emancipative values at the same strength as it used to among the CW-strong Western countries.

Discomforting as this observation might be, it makes perfect sense through the lens of the CW-Theory. Whether it proceeds under a weak or a strong CW-Condition, economic growth always goes hand in hand with expanding education, information, communication and, hence, increases in cognitive investments. Yet, under deficient CW-features, emerging economies lack the local autonomies, decentral coordination and pluralistic structure that otherwise motivate cognitively enabled people to engage in emancipatory rights struggles—hence, the weaker emancipatory impulse of cognitive investments alongside weaker CW-Conditions.

Nevertheless, populations around the world experience a pervasive ascension of cognitive investments on an astoundingly steep slope. Even in CW-weak environments, the related sea change in reproductive strategies and life planning should make it more difficult for autocrats to weaponize conformity cults to brainwash their citizens. Consequently, emancipative values are rising everywhere globally, albeit on different intercepts and slopes. We come back to this issue in Chapter 12.

Figure 3-6. The Translation of Cognitive Investments into Emancipative Values by Population Families



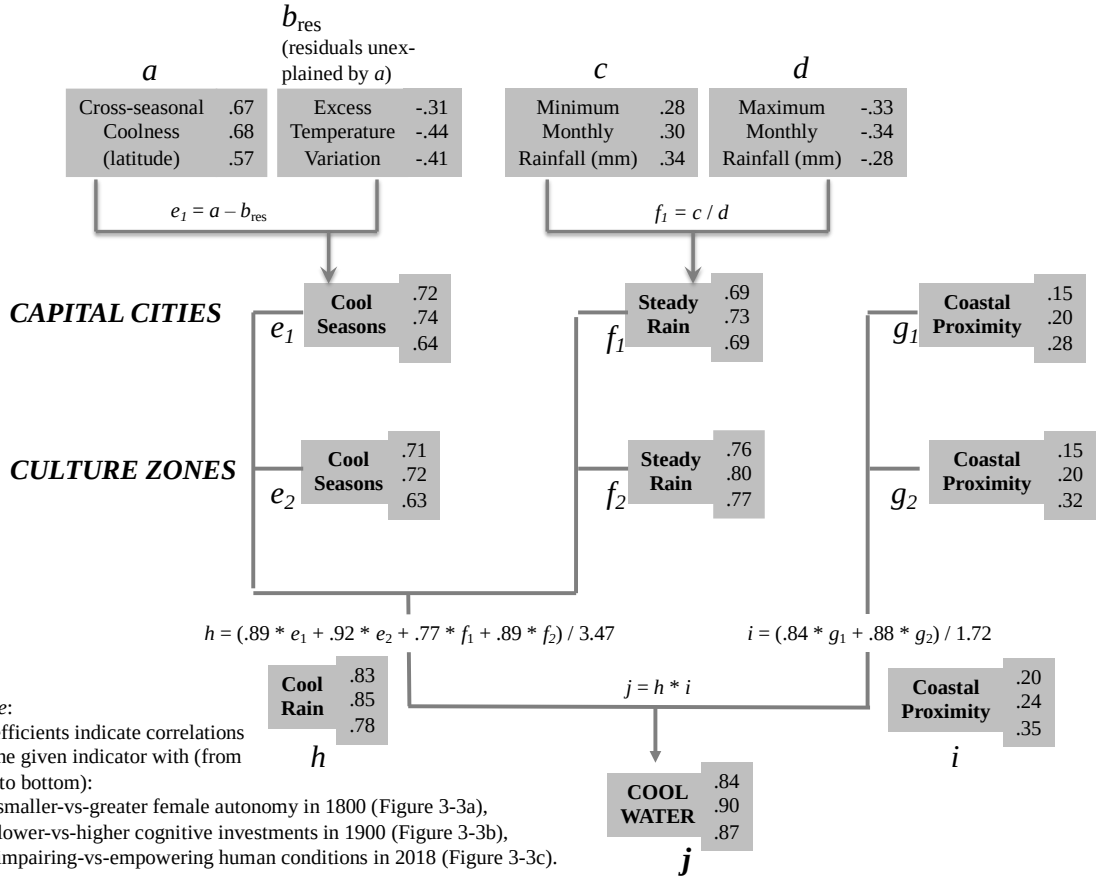
Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

The CW-Measure's Validity

Figure 3-7 summarizes the various steps leading to our final CW-index, which measures each country's overall CW-determination by its combined—*local* and *ancestral*—CW-Condition. Ancestral, to repeat it, is to be understood as the countries' contextual CW-environment referring to their ancestral universes and the related territories that shaped the diffusion spaces of each country's entire population family. For each further step of measurement refinement, we show a column of correlation coefficients, indicating the given indicator's association with our sequence of emancipatory outcomes. From top to bottom, we always see the correlation with (*a*) smaller-vs-greater female autonomy in 1800, (*b*) lower-vs-higher cognitive investments in 1900 and (*c*) impairing-vs-empowering human conditions in 2018.

It is obvious from these correlations that the connection of our measures with emancipatory outcomes shows up in considerably greater strength with each additional step of measurement refinement. Accordingly, these refinements produce added value in explaining emancipatory outcomes. On the same note, our refinements increase the predictive validity of the CW-measure.

Figure 3-7. Steps of Refinement in Creating the CW-Index



Note:
Coefficients indicate correlations of the given indicator with (from top to bottom):
(a) smaller-vs-greater female autonomy in 1800 (Figure 3-3a),
(b) lower-vs-higher cognitive investments in 1900 (Figure 3-3b),
(c) impairing-vs-empowering human conditions in 2018 (Figure 3-3c).

Finally, each step of refinement has a precise theoretical meaning that this chapter laid out in detail, so we enhance not only empirical but also theoretical validity.

In response to criticism claiming that we artificially fabricate strong emancipatory effects of the CW-Condition by purposefully searching for the most impactive combination of this condition's elements, we retort that it is impossible to fake an empirical connection of the CW-Condition to its supposed emancipatory outcomes when this connection is not embodied in the data at hand. It should also be noted that none of our stepwise measurement refinements infuse any information already included in any of our outcome variables into the CW-index. Instead, our CW-index remains purely a measure of geo-climatic features and nothing else. Henceforth, there is no element of tautology in the strong connection of the CW-Condition with its emancipatory outcomes. What is true is that our measurement procedure combines the elements of the CW-Condition in precisely the manner by which they exert their strongest emancipatory impact.

This impact-maximized combination of the CW-Condition's elements is indeed the result of a deliberate exploratory search for this combination. Yet, we do not see this exploratory approach as problematic. On the contrary, exploration is at the heart of the scientific method: searching for the most impactive combination of a set of studied ingredients by systematic trial and error. No one would criticize a medical researcher for trying to find the combination among a set of substances that is most effective in producing a desired health benefit.

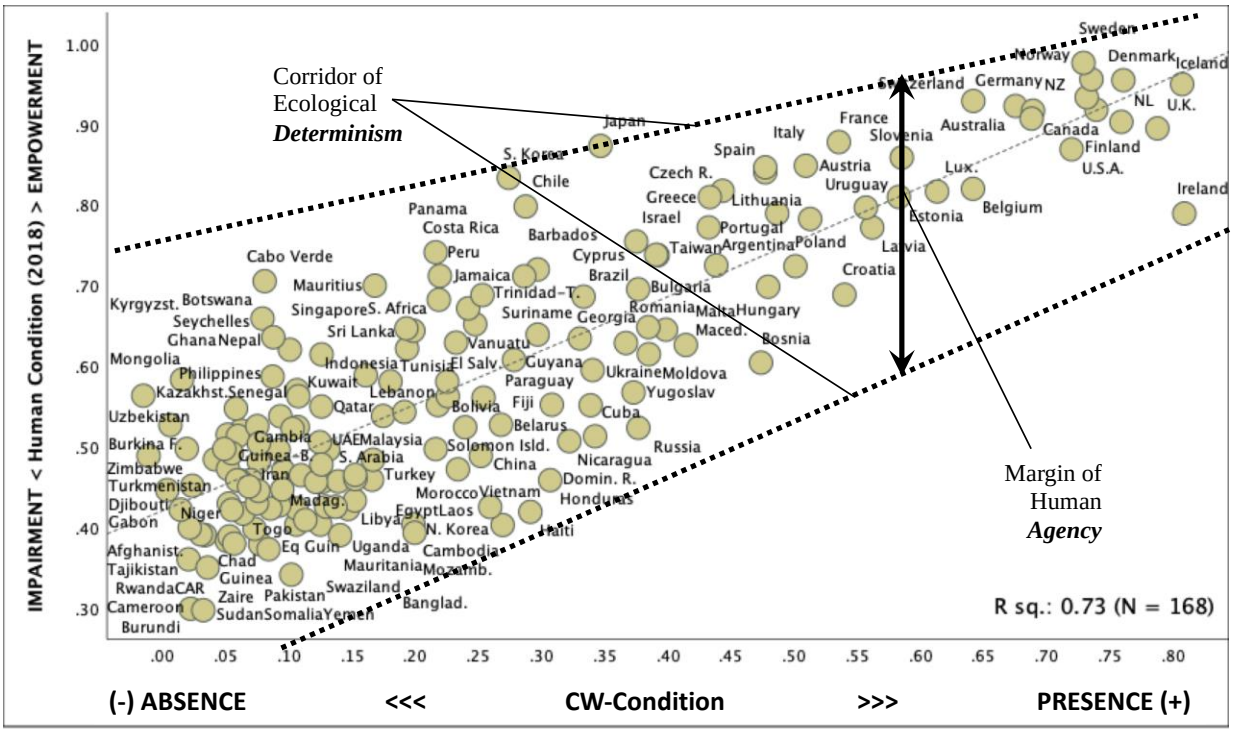
Another critique might be that our CW-measure represents a bewilderingly mixed bag of arbitrary components. We admit that the CW-measure has its complexity, but we finally combine merely four geo-climatic features—latitude, seasonality, rainfall and coasts—about which the development literature has written the most, albeit mostly in separation. Thus, our approach is the first that addresses these features in their very combination. And this combination is real, pinpointing Northwestern Europe's and its overseas settler colonies' particular geo-climatic environment, which maps on specific zones in the Koeppen-Geiger climate classification and largely reflects the combination of high latitudes within our planet's plant-growing zone in proximity to ice-free coasts. This does not mean that we first selected all kinds of geo-climatic idiosyncrasies typical of Northwestern Europe and then lumped them together in a manner that makes Northwestern Europe appear unique. Instead, starting from the premise that geo-climatic features constitute the very origin from which territorially anchored populations begin to develop, we reviewed the geo-climatic features championed the most in the literature as favorable to societal development. Then, we asked ourselves whether and in what way these features exist in combination and what the overall meaning of this combination is—which we came to call the CW-Condition. It only turned out after the fact that Northwestern Europe and its settler colonies score particularly high in this condition, although this particularity remains a matter of degree, both within European spaces as well as between Europe and all the other spaces in the world.

In the end, it turns out that Northwestern Europe and its settler colonies stick out from other regions in the world by a particular geo-climatic environment that is not fabricated by our measurement method but real and inherently meaningful. The fact that the Emancipatory Turn in human history has been initiated and pushed forward nowhere else in the world than Northwestern Europe and other places overseas with the same CW-Condition could be declared a random fluke. However, this would be a highly implausible conclusion, given that human civilization has existed for much longer in geo-climatic environments fundamentally different from the CW-Condition, without triggering the Emancipatory Turn in those much older and much more numerous sites of human settlement.

Our combinatory approach enriches previous scholarship on the developmental effects of the ecological habitats within which populations evolve. No question, there are sizeable literatures on the "lucky latitude effect," the benefits of cold temperatures and seasonality as well as the advantages of continuous rainfall and coastal proximity (as already reported in the introductory chapter). The point, however, is that these literatures discuss the four supposedly most beneficial ecological features—latitude, seasonality, rain and coasts—in isolation. In other words, the literature neglects these features' mutual interplay and fails to theorize the configuration under which they actually come together, which is exactly what our conception of the CW-Condition is all about.

As the numbers in Figure 3-7 reveal, the emancipatory impact of the CW-Condition is not just about latitude because latitude's solitary impact on human empowerment grows from thirty-two percent of an explained variance to seventy-three percent when latitude appears in combination with steady rain and coastal proximity. Likewise, the solitary effects of steady rain and coastal proximity grow, respectively, from fourty-eight to seventy-three percent in combination with the

Figure 3-8. The Corridor of Ecological Determinism and the Margin of Human Agency



Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

other two features. In short, it is the convergence of these features into the very CW-combination that matters. SOM-Section S9 provides further evidence in support of this point.

The geo-climatic features defining the CW-Condition are definitely prior to any emancipatory achievement following the colonial era. The CW-Condition is, thus, *purely exogenous* to every emancipatory outcome in recent history. The very exogeneity of the CW-Condition effectively eliminates all ambiguity concerning the possible causal direction in the connection between the CW-Condition and its emancipatory outcomes.

Of course, the connection itself does not already reveal the causal mechanism that generates its existence. But given the prior/posterior sequential order separating the CW-Condition from its outcomes, there can be no uncertainty that, if anything, the flow of impact runs from the CW-Condition to its outcomes, not the other way around.

Ecological Determinism and Human Agency

Figure 3-8 is a replica of Figure 3-3c, plotting the country-territories' human empowerment in 2018 against their quasi-timeless CW-Condition. But the purpose of the diagram is different this time: It highlights the margin of human agency that societies exert in shaping their emancipatory

trajectory, as well as the corridor of ecological determinism from which they cannot escape. Since both *agency* and *determinism* exist in degrees, *probabilism* is the most accurate term to describe their coexistence.

EXCURSION: CONTINENTAL- VERSUS ISLANDISHNESS

The distribution in Figure 3-7 singles out two distinct country groups. For one, the legacy of communism is obvious in the position of Russia, Belarus, North Korea and other post-Soviet countries. In Figure 3-7, the post-Soviet countries are situated consistently at the lower boundary of the distribution corridor. In other words, relative to a modestly advantageous CW-Condition, these countries are under-achievers in terms of human empowerment. Arguably, the Byzantine-Orthodox-Tsarist legacy and subsequently Soviet-style communism represent an institutional-ideological trajectory that positioned countries at the floor of the distribution corridor into which the CW-Condition channels their development.

Exposure to versus shieldedness from the risk of foreign conquest may partly epxlain why regions fail or succeed to realize the developmental potential inherent in their CW-Condition. Logically, the risk of foreign conquest is higher for territories located in the center of continentally large landmasses, of which the Eurasian continent is by far the biggest example. Historically, the emerging Russian state's placement in the middle of the Eurasian landmass is critical here. The point is that Russia's early political centers in Kiev, Novgorod and Moscow came quickly—and then for a long time—under the control of the Mongol Empire and its consecutive Khanates (by contrast, islandishness shielded Japan and England from foreign conquest for most of their history). During their rule, the Mongols imposed on incipient Russia their imperial tribute system and military bureaucracy. Once in Russian hands, rulers utilized this institutional infrastructure as a means to silence opposition and to foster autocratic rule. This legacy enabled the emerging Tsarist empire to suffocate the liberal seeds in Russian history, visible in the trade center Novgorod, the free Cossack republics and the liberal-minded camp of "Westerners" who stood in opposition to the "Slavophiles" among Russian intellectuals.[172]

In contrast to the post-Soviet space, many island states in Figure 3-7, like Japan, Costa Rica, Mauritius and the Seychelles, are found at the upper boundary of the distribution corridor, which means that—relative to their CW-Condition—most island states appear to be over-achievers in human empowerment. Contrary to the post-Soviet space and other landmass-centered areas, the island states are less likely to be invaded by foreign powers and therefore more likely to develop their inner potential autonomously, without the interference of outside forces and the imposition of foreign-based autocratic rule. This natural protection allows island states to concentrate their energies on more productive purposes than military defense. Rulers lacking a standing land army at their disposal have limited means of coercion to suppress opposition, which is one of the emancipatory avantages inherent in coastal proximity and sea borders (as previously outlined in more detail).[173]

In spite of these two opposite types of countries as concerns islandishness-vs-continentalness, it is remarkable how strikingly close the countries' human empowerment today relates to their CW-Conditions. Indeed, differences in the countries' CW-Conditions explain an astounding seventy-three percent of the total global variation in human empowerment. Obviously, the opportunity

endowments inherent in the CW-Condition lock the countries' emancipatory achievements into a *corridor from which they can hardly escape*. However, this evidence does not indicate geo-climatic determinism because the CW-Condition still leaves twenty-seven percent of the variation in human empowerment unexplained. Hence, there is room for human agency, including elites' policy choices and citizens' responses, which decide whether a country moves along the floor or the ceiling of the corridor into which the CW-Condition forces its trajectory. But countries can apparently not escape this corridor, being limited in their margin of agency by about a 0.40-fraction of the scale range in human empowerment. As we will see in Chapter 12, however, there is another recent twist in this story: Globalization is about to widen the margin of countries' policy leverage.

Summary

We conceptualize the CW-Condition as the combination of temporarily frosty winters and rather cool summers with steady seasonal rain, amplified by coastal proximity. And we postulate that a more pronounced CW-Condition is conducive to developmental outcomes with an emancipatory signature: namely, economic orders, cultural norms and political regimes that liberate ordinary people from material, motivational and legal constraints on how to shape their lives. Against this backdrop, it is important to measure the CW-Condition in a historically invariant manner, such that a territory's CW-Condition is independent of the variable spatial extension of its political sovereignty over time.

Insight:

Societal development is about the overall human condition of entire populations. Since populations and their human condition can only be studied in the aggregate, the question arises what the appropriate spatial unit is to study populations in the aggregate. This question portends to the level of spatial resolution (sub-national, national or supra-national) at which populations are most distinct relative to their internal differentiation. Thus, what is at issue is the level of aggregation at which the ratio of societal variation is tilted the most towards ***between****-unit differences relative to* ***within****-unit differences. In figuring out this issue we shed light on the level of spatial resolution at which culture's power to differentiate territorially settled populations is most pronounced. This spatial consideration is crucial to understand humans' functioning and evolution in culturally distinct collectives.*

Seeing culture as a force that differentiates populations spatially, this force is obviously most powerfully in operation among those units of spatial aggregation that are ***most similar internally*** *and* ***most distinct externally****. We can also say that, because culture is the force that shifts variance partitions among human collectives from within- to between-unit differences, culture has its strongest grip where this ratio is most pronouncedly biased to the between-unit dimension of difference. The data offer a clear answer to this question.*

Spatial variation in populations' geo-climatic conditions and their developmental outcomes are shaped most strongly by countries and their ancestral universes.

We attribute to the CW-Condition a historic impact on emancipatory societal dynamics that spans several centuries, reaching back in time to the eve of the colonial era. To trace this historic impact, we must isolate the temporally constant part of the countries' CW-Condition. In other words, the countries' CW-Condition must be measured in such a way that it is independent of historic variability in the territorial extension of today's countries' sovereignties. For this reason, it would be mistaken to attribute to today's countries the average CW-Condition of their entire current territory.

By contrast, the locations of countries' historic population centers and the spatial extensions of their ancestral universes are temporally invariant since the colonial era. Therefore, it is possible to attribute a historically more or less invariant CW-score to today's countries based on the *local* CW-Condition of their historically most important urban population center and the *ancestral* CW-Condition of their wider population family. A country's *local* and *ancestral* CW-Condition, thus, combine into its *overall* CW-determination.

Four observations stick out when looking at global variation in the countries' CW-determination. First, the within-country variation in the CW-Condition (fifteen percent) is by a factor of 6.5 smaller than the between-country variation (eighty-five percent), which underscores the fact that countries have taken shape based on fairly similar CW-Conditions. Second, and strengthening the latter conclusion, territorial country size has no impact at all on the within-country variation in the CW-Condition. Third, Western civilization is sharply separated from the Eastern populations families and as well as those of the Global South by a particularly strong CW-Condition, thus marking the CW-Condition as the West's defining geo-climatic signature. Fourth, the historically Protestant branch of the West exhibits an even more outstandingly pronounced CW-Condition. These observations fall perfectly in line with the West's, and especially its Protestant branch's, leading position in all developmental outcomes with an emancipatory signature, including most notably people's life resources, their emancipative values and their civic entitlements—as we will see.

PART B: THEORIZING THE CW-CONDITION'S IMPACT

4 Development as Emancipation

Measuring development, modernization, progress—or whatever term one might use to express the idea of mass-scale human flourishing—is an *empirical* task. To meet the task, one needs to rely on observable social indicators. But defining what development actually means is inevitably a *normative* endeavor that requires a defensible ethical standard on which to base one's definition in search for observable indicators. And if we wish to define development as *human* progress, we need an idea of what it means to be "human." That, in turn, demands a notion of what makes humans most distinct as a species; in other words, what defines human nature? Inspired by Renaissance Humanism and Enlightenment philosophy[174], contemporary theories of human needs[175], human nature[176], human development[177] and human emancipation[178] are quite clear on this question. Although these theories diverge on many points, they essentially share the same notion of what defines a "humane" life filled with dignity. These notion can be summarized as follows.

To begin with, humans share their physiological needs with all living beings, their emotions with all sentient beings and their cognition with all sapient beings, insofar as primates have evolved the capacity for thinking, learning and knowing. However, within the sapient realm, our species is unique in that we evolved the greatest capacity for individual *agency*—that is, each individual's potential to imagine alternative realities, to think for herself and to act with purpose and intention toward a desired outcome. If agency is indeed the most distinctive human quality, then the "human" development of societies must be defined as the freedoms that societies give each individual to discover, train and use her agency.

Naturally, autocrats around the world who—by definition—specialize on suppressing human freedoms will reject any definition of development that emphasizes freedoms. This became obvious in the "Asian Values" debate, initiated by the *Foreign Affairs* interview with Singapore's ex-dictator Lee Kwan Yu. In this interview, the autocrat weaponized cultural difference to claim that the emphasis on individual freedoms in international human rights discourse is a Western imposition on other (Confucian, Islamic, African etc.) cultures to which the Western notion of individual rights is fundamentally alien. Hence, measuring non-Western cultures against Western human rights standards is an arrogant act of Western cultural imperialism.

Obvious as this line of arguing instrumentalizes cultural relativism to defend oppression, it is itself an outright expression of cultural arrogance because rejecting a freedom-focused notion of human development is only defensible if one denies non-Western people the universally and uniquely human capacity for individual agency. Such a denial is an untenable position on all accounts: logically, empirically, ethically! In any case, from a humanistic point of view, the most developed, progressive, flourishing, valuable and—hence—"ideal" society is the one that grants

its people the widest and most equally sized room to unfold their individual agencies. Beyond doubt, this notion of human development includes liberal democracy as a developmental indicator—very much in line with Amartya Sen's definition of *Development as Freedoms*.[179]

The humanistic notion of development and progress centers squarely on emancipation, which means people's freedom from external domination over their thoughts, decisions and life planning. The emancipatory notion of human progress is categorically incompatible with totalitarian ideals of development, which repeatedly recur in different attire but similar in substance. Totalitarian ideals seem to be *en vogue* again in the face of China's version of a social credit system and its Orwellian dystopia of a perfectly orchestrated population. Totalitarian ideals of development turn the notion of human progress upside down by judging progress against the standard of control perfection—in other words, how centrally orchestrated a society is. Totalitarian ideals in this sense are inherently autocratic by redefining development as oppression, instead of freedoms. In the emancipatory notion of progress, by contrast, all forms of social cohesion—including family households, business corporations, civic associations and state organization—must derive from consent, instead of coercion, to be considered humane.

From the viewpoint of human agency, therefore, the rise of agrarian empires in the aftermath of the Neolithic Revolution was the exact opposite of human progress. Accordingly, the agrarian empires of the past cannot be considered as more advanced than foraging, pastoral and horticultural societies. Before the Neolithic Revolution, people enjoyed more autonomy, freedom and equality. Surely, the need for cooperation and compliance to group norms also governed behavior in foraging communities. Still, people had more freedom, for instance in mating, bonding, affiliation and time-spending decisions. Their diet was better and more variegated and they were free from rigid work schedules and the tight control of their daily activities by overlords. Against this backdrop, the coercive agrarian empires that emerged in the wake of the Neolithic Revolution deprived people of their original freedoms.[180] This is not to deny that the agrarian empires erected well organized states and perfected societal orchestration. But the point is that this happened by the means of coercion, targeted to the peasant population's maximal exploitation.[181] Even from a purely materialistic perspective, it needs to be emphasized that mass living standards in agrarian empires were by no means better than among pre-agrarian foragers, pastoralists and horticulturalists. Till today, there is not a single performance indicator in terms of mass flourishing on which autocratic orders outcompete liberal societies.[182]

The Emancipatory Turn

The Neolithic Revolution gave rise to the infamous agrarian empires of the Middle East, India, China and Mesoamerica, which continue to be admired as humanity's pristine civilizations and, hence, as the beginning of societal progress. However, this incision in our history qualifies much less for a story of human progress than what happened in the aftermath of the Double Emancipatory Turn towards industrialization and democratization. Indeed, this double turn changed the

civilization process in three major aspects. First, Western civilization, previously a cultural backwater, rose to global dominance over all other civilizations. Second, in the West, the civilization process accelerated to an unprecedented speed of technological, cultural and institutional innovations. Third, and again in the West, the logic of the civilization process itself reverted, from perfecting mass exploitation to advancing human empowerment—driven by emancipatory rights struggles that one discriminated group after the other pursued.

Of these three aspects, the turn towards rights struggles is most significant because it is about to unleash our species' most highly evolved quality: individual agency—which is each person's faculty to pursue purposes of our choice. Unleashing this agentic potential is tantamount to human emancipation, which we define as *people's liberation from external domination over what they have to think and to do in shaping their lives.*

While attributing an emancipatory tendency to Western civilization, we must—once more—spell out a couple of essential limitations. To begin with, emancipatory achievements do never come about easily because there are always top-down vested interests in privileges that discriminate the under-privileged. For emancipation to progress, these privileges must be challenged and eventually broken, which is always a costly bottom-up struggle. Hence, emancipatory struggles are inherently conflictual and happen under the risk to fail. Moreover, successful emancipatory triumphs in terms of rights and entitlements were initially limited to the West's own populations, which implied the discrimination, decimation, replacement and enslavement of the indigenous peoples. Finally, even among the West's own populations, emancipatory achievements remained for long the privilege of limited population segments. The right to vote, for instance, started from white male property owners and only gradually expanded to the working class, women and people of color. The struggles that drive these emancipatory achievements continue to define the pulse of Western civilization, visible in anti-discrimanatory movements, such as *Occupy Wall Street*, *Me Too*, *Black Lives Matter* and *Fridays for Future*.

But despite these limitations, the West's embarkment on an uninterrupted series of emancipatory struggles represents a genuine novelty in the history of civilization, which allowed for the first time at least a significant segment of humanity to escape the poverty and oppression typical of all state-organized societies until then. Yet, emancipatory struggles increasingly cease to be a Western singularity. Instead, the ubiquitous expansion of ordinary people's education and lifetime horizons guides human civilization into a pervasive process of cognitive mobilization and motivational ascension that inspires emancipatory struggles for economic opportunity, social entitlements and political representation in all parts of the world—as we will see.

The Impairment-vs-Empowerment Model

To build a theory of human emancipation, the key point of departure is to recognize that existential conditions vary on a *threat*-vs-*opportunity* continuum, ranging from *pressing* circumstances at one extreme end *to permissive* circumstances at the opposite end. Under pressing conditions, need

dictates what people must do to survive; under permissive conditions, people gain more choice over the activities into which to engage to thrive.

For most of agrarian history, ordinary people's life was "nasty, brutish and short," to recite the famous words of Thomas Hobbes—driven by the proverbial "three horsemen of the apocalypse": famine, pestilence and war.[183] Angus Maddison has expressed this reality in numerical estimates.[184] Based on these etimates, Mark Koyoma and Jared Rubin clarify that until 1800 CE roughly ninety percent of humanity lived in extreme poverty, that is, at about two US-Dollars per day (in today's prices). Throughout the 19th century, the average daily income in England (the richest nation of the world at the time) never exceeded four US-Dollars.[185] Whether in Europe, China, India, Africa or the Middle East, the majority of people in agrarian societies were impoverished. Hunger was omnipresent and depressed people's physical development. In the 1760s, the average height of eighteen year-old males in England was only 160 centimeters.[186] Infant mortality was exceedingly high under today's standards, with estimates for Europe ranging from thirty percent at late Medieval times to twenty percent in the early 19th century. In the non-CW regions of the world, pre-industrial infant mortality was even higher, usually at fifty percent of children not reaching the age of five.

Understandably, such pressing existential conditions make people perceive life primarily as a source of threats and suffering. As a natural psychological reaction to threat, the human mind programs itself into the prevention mode on the *prevention*-vs-*promotion* spectrum of life orientations. The prevention mode of life orientations places rigidity over creativity, uniformity over diversity, security over liberty, obedience over autonomy, and faith over reason. When human mentalities are programmed into this *preventive* mode of orientation, the emancipatory drive in human nature hibernates and remains overshadowed by our *submissive instinct*. The submissive instinct guides people to surrender their freedoms for the unity of the ingroup, which is then defined in exclusionary terms as an inescapable home for those inside and as inaccessible for those outside, thus establishing insurmountable "us-vs-them" divisions of group identity. What people do under existential risks is dictated by the sheer necessity to satisfy their most basic daily needs and to conform to the tight normative expectations of their extended families, their local communities and their authorities at home, work and in public. Edward Banfield famously characterizes the resulting pattern of *ingroup favoritism/outgroup hostility* as "amoral familism," echoing our previous description of familistic collectivism.[187] The construction of exclusionary group identities de-individuates people and dissolves their selfhood in imagined "we-"communities, which function as a form of extended kinship.

In short, the prevention mode of orientation feeds ingroup favoritism and outgroup discrimination. This is part of our tribal psychology, which serves to cultivate the hostilities needed to switch the human psyche into war mode. The war mode of group psychology always includes the same four mentality components: (*a*) depiction of the outgroup in question as a threat to the existence and wellbeing of the ingroup, (*b*) degradation of the outgroup as a collection of inherently inferior, despicable and sub-human beings, (*c*) blind obedience to the authorities of the ingroup and (*d*) intolerance of nonconformists inside the ingroup.[188]

However, individual minds and collective mentalities are not doomed to remain forever entrapped in the prevention mode of orientation. Instead, human perception is sufficiently in touch with reality to make people placing the greatest value on what is most useful under given circumstances. The fact that this utility-value link works allowed our species to survive and thrive and is the reason why collective mentalities and moral systems can and do evolve. Since opportunity seeking is the evolutionary success formula of thriving species, humans are opportunity seekers by nature. Human intelligence has been selected in brain evolution because intelligence is the most successful tool of purposeful opportunity seeking. Because of this opportunity-seeking nature, humans stay in the prevention mode no longer than necessity dictates and always switch into the promotion mode as soon as possibilities allow. Opportunity seeking, thus, directs human striving upward (instead of downward) on the ladder of existential possibilities—again, making us stay in prevention mode no longer than necessary and switiching into promotion mode as soon as possible.

For most of agrarian history, ordinary people's life has been a source of suffering in all three spheres of social reality, characterized by *poverty* in the *material* domain (i.e., the *economic subsistence* sphere), *intimidation* in the *psychological* domain (i.e., the *moral norms* sphere) and *oppression* in the *legal* domain (i.e., the *formal rules* sphere). Indeed, the peasantries in ancient agrarian societies were notoriously poor, have been intimidated by religious doctrines and other codes of conduct to accept their dire condition and they remained deprived of any legal protection of their life, liberty and property.

Only the Double Emancipatory Turn towards industrialization and democratization began to change things to the better for at least parts of humanity, slowly turning poverty into prosperity, intimidation into encouragement and oppression into rights. As this happened, the nature of life began to change from a source of threats and suffering into a source of opportunities and prospect. The natural psychological reaction to such an improvement in existential conditions is a reprogramming of the human mind from the prevention to the promotion mode of orientation. The promotion mode of psychological functioning places creativity over rigidity, diversity over uniformity, liberty over security, autonomy over obedience, and reason over faith—thus, prevention in reverse. When mentalities turn into this *promotive* mode of orientation, the submissive instinct in our nature recedes and the emancipatory drive awakens from hibernation.

These basic modes of mentality differ among individuals within the same societies, in line with the varying living conditions of different social classes. Members of lower classes in more insecure existential conditions lean more towards preventive orientations, whereas people in more privileged social positions who possess more opportunities to shape their lives as they like tend towards promotive orientations.

The same logic distinguishes the prevalent life orientations between entire societies. Societies in which life is generally more threatening have the gravity center of their prevalent mentality located more closely to the preventive end of orientations. Conversely, societies in which life is generally more promising shift the gravity center of their prevalent mentality more closely to the promotive end of orientations. Because the basic living conditions in given societies change only at a glacial pace, threatening-vs-promising existential conditions involve a degree of persistence

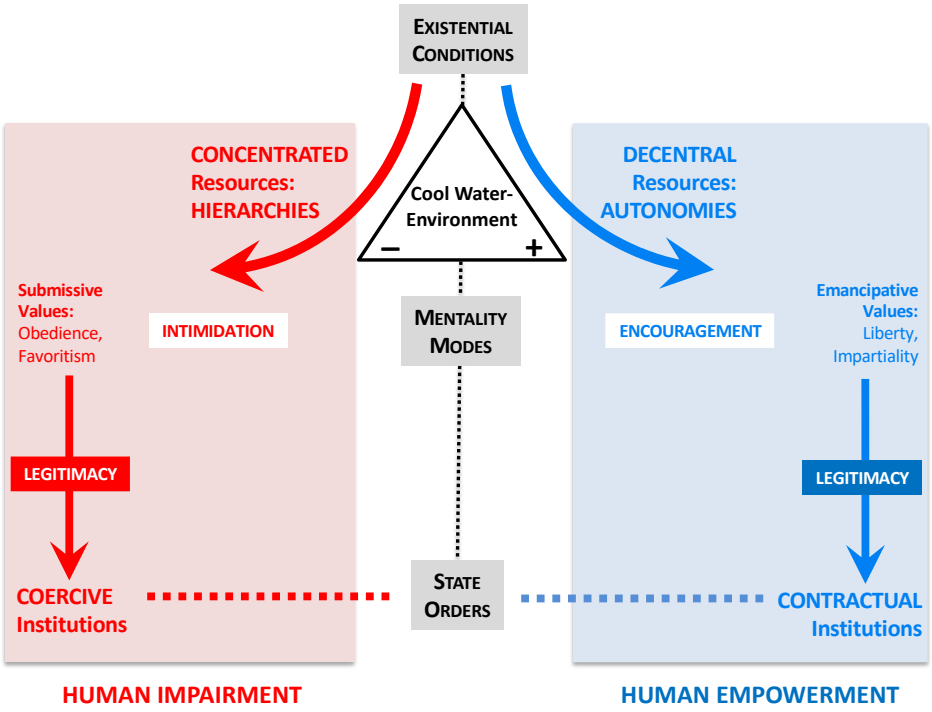
that makes preventive-vs-promotive orientations a chronic element of a society's mental tendency. This tendency reinforces itself through the normative pressures that a group's central tendency always exerts on its members, which is part of a society's cultural reproduction during generational replacement.

Since humans are a cooperative species whose achievements depend on teamwork and social coordination, it is societies that provide the frames within which developmental processes unfold. Therefore, existential conditions differ more strongly between societies than within societies. And even though societies harbor inner divisions along the lines of gender, generation, class, ethnicity and religion, they nevertheless create a common culture in establishing typical patterns in how most people think and behave. The fact that people in the same society are socialized into the same institutions, are governed by the same rules, have learnt the same customs, eat the same food and that most of them usually speak the same language accounts for a crucial part of this homogenizing tendency and creates strong feelings of belongingness that make people extend their egos into collective selfs, thus creating imagined communities for which people are ready to sacrifice even their lives.

A key element of people's evolved acculturability is their capacity and tendency to recognize, merely by intuition, their reference group's central tendency in thinking and behavior and to internalize this central tendency. In other words, humans are susceptible to the normative pressure of their reference group's cultural tendency, which reinforces this tendency, visible in mean-clustered and single-peaked distributions of individual-level orientations within societies. Consequently, one can identify in most societies a modal type of existential circumstance typical for most members of that society. And since mentality modes reflect existential conditions, the typicality in living conditions creates a corresponding typicality in orientation modes, so that most members of the same society share a certain mentality. Individual variation in psychological orientations certainly exists but it gravitates in a limited orbit around the modal mentality, which operates as a gravitational field that exerts the same normative pressures on all members of society.[189] At any rate, what is clear is that the *threat-vs-promise* continuum in *objective living conditions* shapes a corresponding *prevention-vs-promotion continuum* in *subjective life orientations*.

Figure 4-1 portrays in stylized fashion that the three configurative elements of human societies—subsistence modes in the material domain, mentality patterns in the psychological domain and regime institutions in the legal domain—coevolve in a manner that keeps these elements mutually compatible, which gives a society's overall fabric a certain degree of coherence. The corresponding societal configurations are located on a continuum on which, at one extreme end, the three elements play together in such a manner that the result is *human impairment*: that is, the caging of people's agency and individuality. In this condition, people experience material, psychological and legal restrictions on their freedom to pursue purposes of their choice. At the opposite end of the continuum, the overall configuration provides *human empowerment*: Subsistence modes, mentality patterns and regime institutions all take on a shape that unlocks people's potential to make free choices in their daily decisions and their lives writ large. This condition means

Figure 4-1. The CW-Theory of Societies' Impairing-vs-Empowering Human Condition



emancipation—in other words, people's liberation from material, psychological and legal restrictions of their freedoms "to live the lives they have reason to live."[190]

Between these extremes, many gradations of mixed constellations exist, such that elements of both impairment and empowerment are present in variable doses. Hunter-gatherers lived in such a mixed situation. Their existential conditions certainly included threats emanating from predators, natural disasters and raids by hostile neighbors. But every environment that is habitable also includes opportunities to make a living and to thrive through the exciting experience of discovery, invention, companionship, love, artistic expression, sensual pleasure and communal joy.

Essence:

> *Since humans were for the most part of their history as a species confronted with both existential threats and opportunities, the potential to focus on either prevention and to give in to our submissive instincts, or to focus on promotion and to follow our emancipatory drives, are both evolutionary anchored in our mindsets.*[191] *Submissive instincts and emancipatory drives are both part of our nature. Which one comes to dominance depends on the balance between ecologically anchored threats and opportunities.*

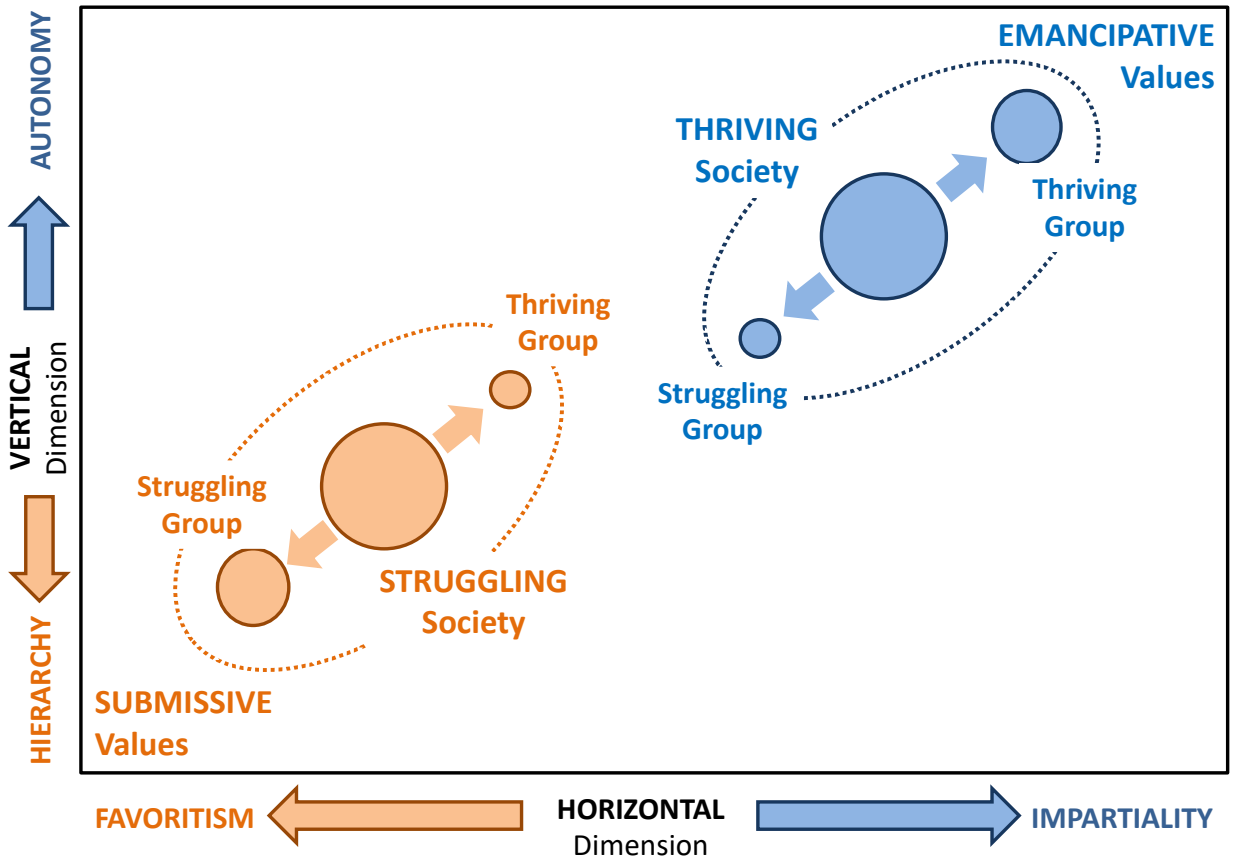
The Neolithic Revolution changed things profoundly, and mostly to the worse—at least, from the standpoint of human freedoms. With the transition to agriculture and the subsequent rise of

agrarian empires, most people's lives were pushed to the extreme end of the human impairment constellation.[192] As depicted in Figure 4-1b, the source of impairment originates in the high concentration of a society's vital resources, especially access to water and its derivative resources, such as arable land. To legitimize the emerging hierarchies in resource control, elites weaponize religion or quasi-religious cults as a form of indoctrination to generate myths about divine imperial destinies, often situated in sacred ethno-linguistic ancestry stories. To make people feel at peace with their inherited subordinate position, religion and quasi-religious cults exploit the psychological tool of *intimidation*, utilizing the threat that people who rebel against their predestined position in the divine order are sacrificing their ticket to salvation in the after-life and end up in some version of hell. Almost needless to say, intimidation tools work particularly well when pressing life circumstances and existential threats already program people's mindesets into the prevention mode of orientation on the prevention-vs-promotion continuum.[193]

Horizontal and Vertical Human Interaction

Pursued through such indoctrination tools as organized religion, intimidation encultures submissive values that praise strongmen rule, group loyalty and deference to the existing chain of command. Submissive values profoundly affect how humans interact in the horizontal and vertical dimensions of social exchange. The *horizontal* dimension of exchange refers to how people of *equal* ranking behave to each other, while the *vertical* dimension addresses how people of *unequal* ranking treat each other. Submissive values strengthen the vertical dimension in human interaction through an emphasis on *hierarchies*. Functioning hierarchies mean a seamless flow of command from higher to lower ranks. At the same time, submissive values weaken the horizontal dimension of human interaction through an emphasis on *favoritism*. Favoritism disrupts beneficial interaction between equally ranked people by fixing impermeable *in*group/*out*group boundaries. Logically,

Figure 4-2. Submissive-vs-Emancipative Values in the Two Dimensions of Human Interaction



by favoring vertical at the expense of horizontal exchange, submissive values lend legitimacy to coercive institutions and autocratic rule.

The pivotal domain in which submissive values' shape the fabric of societies at their grassroots are patriarchal family, fertility and reproduction norms (in short: sex norms). Patriarchal sex norms oblige women to marry and to marry as early as possible. They also prescribe women's obedience to their husbands and their extended kin and women's duty to produce and raise as many children as possible as well as the limitation of women's activity radius to the family household. The key function of patriarchal sex norms is to maximize male control over female sexuality and to ascertain a masculine monopoly over all domains of societal activity outside the family household. By cultivating the submission of women and children to the demands of men, parents and their extended kin, patriarchal sex norms easily emit submissive values into all other domains of society, from the workplace to the temple to the public. By no coincidence, all agrarian empires in history exploited religious and quasi-religious conformity cults as tools of indoctrination to shape and cement patriarchal sex norms. Until this day, religious orthodoxies of all denominations vehemently defend patriarchal sex norms in their fight against emancipatory progress, especially on matters of reproductive freedoms. It also no coincidence that autocrats and right-wing populists all around the world—including Putin, Erdogan, Bolzonaro, Modi, Orban, Kashinski and many

others—ally with religious orthodoxies in treating the defense of patriarchal sex norms as a most important propaganda field.

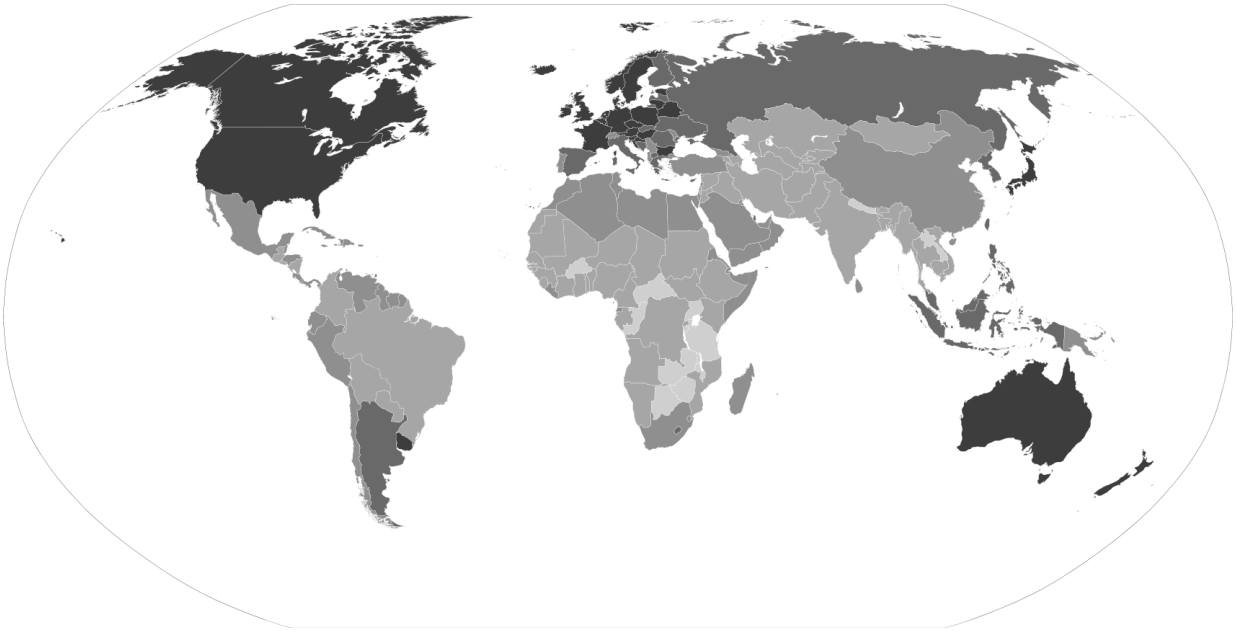
Figures 4-1a and 4-1b portray the role of the CW-Condition in exempting societies from the impairing human condition and guiding them, instead, towards the empowering human condition. In CW-areas, freshwater and its derivative assets, like arable land, are *decentral* resources. Decentral resources shape societies by feeding multiple forms of personal, local, corporate and sectoral autonomy, which block the road toward a centralized coercive empire. At the point when states with bureaucracies and armies occurr in CW-areas, they evolve into contractual, rather than coercive, states—characterized by elected assemblies that check rulers' executive authority. The Double Emancipatory Turn towards industrialization and democratization emerged from the CW-areas' contractual states because these states encultured the freedoms needed to encourage the mass-scale outburst of economic initiative and civic activism from which industrialization and democratization launch. In the long run, the dominant mentality mode in CW-located societies turns towards *encouragement* instead of intimidation—like the encouragement of economic productivity and civic engagement, both of which are by no coincidence essential elements of the Protestant doctrine. Logically, an encouraging psychological climate reprograms people's mindsets from the prevention to the promotion mode of orientation, which in turn predisposes people to find appeal in emancipative values.

Emancipative values affect how people behave in the horizontal and vertical dimensions as profoundly as do submissive values—just in the opposite manner. Emancipative values tame the vertical dimension of human interaction through an emphasis on *autonomies*. Autonomies interrupt the otherwise seamless flow of command from higher to lower ranks by granting lower ranked persons certain protective rights. At the same time, emancipative values strengthen the horizontal dimension of human interaction by emphasizing *impartiality*. Impartiality facilitates beneficial interaction between equally ranked people by defying impermeable *in*group/*out*group boundaries. As much as submissive values lend legitimacy to coercive institutions, the social logic inherent in emancipative values lends legitimacy to contractual institutions. Consequently, submissive and emancipative values are direct psychological opposites on the human impairment-vs-empowerment spectrum, like the preventive-vs-promotive predispositions from which submissive-vs-emancipative values emerge as explicit expressions.

The polarity of submissive-vs-emancipative values unfolds over both the horizontal and vertical dimensions of human interaction, as shown in Figure 4-3. On the horizontal dimension, the submissive-vs-emancipative polarity stretches from emphasizing favoritism at the submissive end to emphasizing impartiality at the emancipatory end. On the vertical dimension, the submissive-vs-emancipative polarity ranges from emphasizing hierarchy at the submissive end to emphasizing autonomy at the emancipatory end. The key point is that both submissive and emancipative values tend to be consistent over the horizontal and vertical dimensions of human interaction. What holds the two dimensions together at the submissive end is a rigid strictness of status and group inequalities, manifest in the absence of protective rights, entitlements and guarantees. By the same token,

what holds the two dimensions together at the emancipatory end is a greater degree of status equity and group equality, evident in firmly institutionalized rights, entitlements and guarantees.

Figure 4-3. The Geographic Distribution of Human Empowerment across the World (scores on the human empowerment index increase from light to dark gray)



Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

Another pair of antonyms to describe the opposing social logics on the submissive-vs-emancipative polarity is *heredity* versus *meritocracy*. On the submissive end, social status is inherited and cannot be escaped, let alone improved, through individual effort. On the emancipative end, social status is something that needs to be deserved through merit. Of course, even in an ideal meritocracy, people still inherit different chances for gaining merit; yet merit remains the key criterion to acquire social recognition.

From a *functional equivalence* perspective, one might argue that neither submissive values nor emancipative values are better than the other, and that instead both differ from each other on equal footing because either type of values is equally adaptive depending on where on the threat-vs-opportunity continuum a society's existential conditions are located. If so, submissive values are as adaptive to the threats inherent in pressing existential conditions as emancipative values are adaptive to the opportunities residing in permissive existential conditions.

From a *moral evolution* point of view, however, the functional equivalence perspective is misleading. It overlooks that the threat-vs-opportunity distinction is not just a flat continuum but a slope of evolutionary progression because permissive living conditions grow out of the successful

mastery of previously pressing conditions and because permissive conditions open up formerly foreclosed developmental potentials. Consequently, emancipative values are evolutionary subsequent to submissive values and represent a mental adaptation to a better life situation that holds more promise for the future. Compared to submissive values, emancipative values are superior in actualizing evolved human potentials, such as initiative, creativity and ingenuity. In other words, emancipative values are better suited to unlock populations' full talent pool, collective learning capacity and synergetic potential.

Essence:

> *The mobilizing quality inherent in emancipative values means a decisive competitive advantage over societies entrapped in submissive values. The reason is that emancipative values capitalize on our species' prime reality-controlling faculty: human agency. Therefore, humanity progresses with increasing speed away from submissive values and towards emancipative values, ever since the first pre-industrial populations started to organize their economies and polities in an emancipatory framework, most notably the contractual state. And as we will see, the evolutionary progression from submissive to emancipative values is in full swing around the world, driven by the ubiquitous "births-to-brains" transition in people's lifetime investments*.

Ronald Inglehart characterizes submissive values and their emphasis on patriarchal sex norms as a necessity for survival under the harsh and miserable conditions of pre-industrial societies.[194] However, this interpretation runs the risk of declaring patriarchal sex norms and their oppressive nature as functionally adaptive and, hence, justifiable under whatever conditions we find them to prevail. We reject this functionalist perspective because it only claims, yet fails to actually prove, that patriarchal sex norms are indeed survival-necessary where they dominate. More realistically, patriarchal sex norms are a welcome tool in the hands of religious and secular elites to control the masses. Therefore, support for patriarchal sex norms did certainly not evolve bottom-up as a means of mass-scale psychological adaptation. In their most natural form of living together—foraging societies—humans did not cherish patriarchal sex norms but entertained mating freedom in a rather individualistic-egalitarian communal fabric.[195] Instead, patriarchal sex norms only occurred under the rigidly coercive orders of the agrarian empires of the past in which these norms have always been propagated from above and infused into the society by an elite-controlled doctrinal apparatus, most notably religion.

The claim that patriarchal sex norms have been necessary for survival under the threatening existential conditions of pre-industrial societies ignores that our species spent by far the longest time span of its pre-industrial existence as hunter-gatherers, which is a mode of subsistence that deviates markedly from patriarchal sex norms. These particular norms are actually an evolutionary deviation that has been invented by the doctrinal institutions of coercive agrarian states, which began to emerge some 5,000 years ago. This happened where an absence or lack of the CW-Condition left vital resources so concentrated that emerging agriculture played control over these resources and, hence, over the people easily into the hands of a small, exclusive and hereditary elite.

The resulting societal orders ended up in the erection of coercive states that were *exploitative* rather than *adaptive*.

As mentioned, until this day patriarchal sex norms are most fervently propagated by religious orthodoxies of all kinds and couched in autocratically inspired sanctity cults that aim at nothing else than keeping human individuality, agency and self-determination at bay. The link of patriarchal sex norms to authoritarian ambitions unmasks these norms' exploitative character in a too obvious manner to defend their presence as a functional adaptation to given circumstances. Patriarchal sex norms might be an adaptation to the coercieve orders that enculture them. But coervice orders are themselves maladaptive because they are evolutionary dead-ends when it comes to unlock entire populations' talent pool in developmental races against contractual orders. Indeed, organizing populations using coercion is a waste of developmental potential when the populations in question consist of a species composed of intelligent individuals. This means that patriarchal sex norms are an adaptation to an maladaptive system, which renders this adaptation itself maladaptive.

Moral Awakening and Mindset Expansion

In terms of value dynamics, submissive-vs-emancipative values are to a greater degree chronic than situational. Where a person's orientations settle on the continuum of submissive-vs-emancipative values reflects to what extent this person experienced life as a source of threat-vs-promise during her upbringing, rather than reflecting the extent to which threat-vs-promise experiences prevail at given moments in later life stages. To be sure, people certainly adopt a somewhat more submissive or more emancipative position in their values depending on their current threat-vs-promise perception, shifting a bit towards the submissive end under more threatening circumstances and a bit more towards the emancipative end under more promising circumstances. But these momentary shifts gravitate around stable anchor points that reflect people's *chronic* setpoint on submissive-vs-emancipative values.[196]

When vital resources are abundant and ubiquitously accessible, the elements of prospect and opportunity outweigh those of threat and insecurity in people's life perception. Under this empowering constellation, submissive values fade and emancipative values rise in their place. As this happens, social identities also change in profound ways. To understand this change in social identities, one needs to recognize that humans are an inherently cooperative species whose achievements always depend on teamwork, no matter how people's existential conditions and moral values look like. For this reason, people continue to form groups and to build alliances—under any circumstances. But when enabling conditions give rise to emancipative values, social alliances no longer form primarily on the basis of extended kinship or some other form of joint *ancestry*, over which people have no control. Instead, social alliances increasingly shift towards voluntary *agreement*. By infusing an element of choice into the social fabric, group boundaries become more permeable and fluid and loose their insurmountable divisiveness. Step by step, then, group boundaries

cease to disrupt inter-human solidarities. Thus, the radius of concern and the solidarity circle widen, eventually so far that they include all of humankind and even the planet, at which stage the most universal form of empathy is reached—what psychologists like Abraham Maslow, Robert Kegan and Shalom Schwartz call "transcendence": Our horizon of concern transcends beyond exclusively defined ingroups. In that sense, rising emancipative values mean an expansion of what psychologists call the "mental bandwidth."[197] Because this mindset expansion is the result of a mental maturation process that brings a gain in human empathic quality, emancipative values represent a psychological evolutionary progression over submissive values.

When we relate these considerations to Robert Kegan's stages of "self-development,"[198] it becomes clear that surrendering our submissive instincts to our emancipatory drives indeed means moral progress because this sacrifice capitalizes on the most noble ethical quality of our species: empathy and solidarity.[199] Empathy and solidarity involve higher-ordered mental capacities that reflect an evolved degree of moral development and intellectual maturation, signaling brighter mindsets that incorporate a more indiscriminately benevolent view of humans, life and the world.

Regime-Society Misfits

The element in the impairment-vs-empowerment model that is most susceptible to human engineering by elites is regime institutions. Indeed, regime institutions can be remodeled at will through the acts of elites at any time. It is eventually always an intentional act of elites to create, sustain or remodel regime institutions in their given shape. Even in the case of revolutions, coups d'états or conquests by foreign powers in which an incumbent domestic elite is ousted, it is a new elite that eventually reshapes the institutional order and enforces its rules as an act of volition. Hence, modeling and re-modeling political orders is where elite-level actors' intentions and interests kick in most directly. Even under impairing societal framework conditions (with struggling economies and submissive cultures) under which little pressure from the population exists to introduce a contractual order with its representative institutions, the elites might nevertheless establish such institutions for strategic reasons. One such reason could be the elites' belief that they can stay in power even in an electoral system because—behind the curtains—they control access to the electoral arena and media coverage and consequently win elections, while claiming democratic legitimacy for reasons of electoral success. This is likely a reason why various waves of regime change over recent decades have produced more electoral autocracies than liberal democracies.[200] Alternatively, democratizing pressures by major foreign powers (think of the US and the EU) and by international donor organizations (like the World Bank and the IMF) might convince the elites of depending countries to give in to these pressures and to establish an electoral parliamentary system, although most of the population might still adhere to submissive values and idolize "a strong ruler who does not have to bother about parliaments and elections."[201] Either way, it is certainly true that idiosyncratic elite decisions can model and re-model any kind of political order at any time.

The latter insight opens the possibility for *regime-society misfits*: a constellation in which an elite-sustained institutional order is out of line with a society's framework conditions in the sense that people's prevalent living circumstances feed value preferences that turn them against the given institutional order and make them aspire for an opposite power regime. For instance, miserable living conditions that make people suffer and struggle fuel submissive values that make people believe in strongmen rule under an autocratic order. Under whatever circumstances, strategic elites might nevertheless agree on establishing a democratic regime, in which case we would have a regime-society misfit in such fashion that an empowering regime exists within impairing societal framework conditions. In this scenario, democratic institutions are in place in a societal context in which disabling existential conditions feed submissive values that then lend legitimacy to autocratic rule.

Vice versa, regime-society misfits can also occur in the opposite fashion, such that greed for power prompts elites to establish autocratic institutions within a societal context in which enabling living conditions fuel emancipative values that in turn lend people's legitimacy beliefs to democratic rule. In this scenario, the regime-society misfit contrasts an impairing regime with empowering framework conditions. Either way, particular elite choices can create at any point in time such regime-society misfits, with institutional configurations too autocratic or too democratic relative to a society's broader framework conditions.

Our model does not foreclose the occurrence of such regime-society misfits because we recognize that the decisions of elite-level actors in given situations are contingent on idiosyncratic historic circumstances.

Yet, our model does imply that regime-society misfits generate rather vulnerable systemic constellations that are unlikely to persist for long. The reason is that regime-society misfits permanently feed motivation among regime-oppossing groups to join forces, to voice their dissent and to mobilize public support for a revolution that turns the regime into the opposite direction of its misfit to the societal framework conditions, that is, towards democracy when the regime institutions are too autocratic relative to the society's framework conditions, or towards autocracy when the regime institutions are too democratic relative to the society's framework conditions.[202]

In conclusion, both the creation and the resolution of regime-society misfits are actor-driven processes, but in the long run a society's gravitational force directs elite actions more powerfully towards the resolution of such misfits, rather than their sustenance. Unless propped up by foreign powers, domestic elites cannot resist for too long the pressures emanating from their society's framework conditions.[203]

According to the CW-Theory of human impairment-vs-empowerment, the institutional shape of regimes is the outcome of lingering societal framework conditions, which include prevalent subsistence modes in the material domain sphere and prevalent mentality patterns in the psychological domain. These societal framework conditions in turn originate in a society's natural environment, most notably the absence-vs-presence of the CW-Condition. The idea that the elites' political choices and the resulting institutions themselves are the source, rather than the product, of a society's framework conditions is most fundamentally at odds with our model, which assumes

the exact opposite causality—in line with Karl Marx's "societal basis/institutional superstructure" depiction of systemic constellations. In other words, institutions and their operation are symptomatic reflections of broader societal framework conditions and not their cause.

Emancipatory Progress

Emancipation is a mentally healthy process. In contrast to media reports about spreading depression, burnout syndromes and other pathologies, evidence from representative surveys shows a clear increase in average happiness where human emancipation advances.[204] This does not mean that every population is getting happier on average, yet in most places for which reliable data are available this is indeed the case—at least if we trust representative mass surveys from around the world. At the same time, people's willingness to sacrifice lives in war is in sharp decline throughout the overwhelming majority of populations.[205] This evidence might conflict with media reports about a growing appeal of "Djihadism" among young people and various other calamities of our time. Yet, in judging the state of the world writ large we just cannot rely on the media's portrayal of reality. In the meanwhile, it has become conventional wisdom that the media—including high-quality media and investigative journalism—cover societal reality in a highly selective manner, with a negativity bias so extreme that the overall portray of reality turns into a caricature of the state of the world as a whole, which is the reason why counter-initiatives like "Gapminder," "Our World in Data," "Factfulness" and the "constructive journalism" movement exist.

The media continuously focus on the most extreme manifestations of war, terror, violence, famine, pestilence, disaster, corruption, oppression, discrimination, misery, pollution and devastation and portray these calamities as typical exemplifications of our daily lives. By contrast, systematically collected data from across the world indicate that human existence is slowly but steadily improving in most places of our planet, including the Global South. Indeed, human lives confront fewer threats and face more promise because—on average—war, violence and crime are in decline, life expectancies rise, living standards improve, education expands and life planning opportunities widen. As part of this brightening outlook, we observe a decreasing willingness of people to sacrifice human lives in wars and other acts of violence, together with an overall increase in happiness. These tendencies merge into a broader human empowerment trend, which indicates an emancipatory progression of civilization. In a sense, human emancipation unlocks what Steven Pinker calls *The Better Angels of Our Nature*.[206]

But even though the desire for emancipation is part of our evolved mind programming, it is adaptive. When external constraints beyond our influence render the idea of individual life control unrealistic, the emancipatory drive goes into hibernation and our submissive instincts take control—which is why humans can live under oppression and survive in captivity.[207] Global evidence from the *World Values Surveys* (www.worldvaluessurveys.org) supports this proposition. Specifically, the feeling of having freedom of choice in shaping one's life exerts in all countries a positive influence on people's overall life satisfaction. But the strength of this influence is weaker where

living conditions are harsher.[208] In other words, where life is a daily struggle, people more easily accept restrictions on their freedoms as something inevitable, for which reason this deficiency is not felt as strongly. Consequently, deficient freedoms depress people less strongly than they do when life is generally easier and brighter and when only the guarantee of freedoms through effective rights remains missing. Under threatening living conditions, the innate human drive for emancipation lacks the virulence that it gains naturally under more enabling existential circumstances.

As mentioned several times, threats describe the default condition for most people over most of the history of agrarian civilization.[209] Throughout all the millennia of human civilization, at no place and at no time is there evidence that the average life expectancy of ordinary people exceeded forty-five years of age.[210] Usually, it was considerably less than that. Accordingly, the living standards of ordinary people in pre-industrial societies always hovered around the existential minimum. Any gains in productivity were channeled into the expansion of cultivated land and the growth of the population. Oded Galor characterizes the growth pattern during this long Malthusian era as "extensive" rather than "intensive" because the enlargement of the human population did not elevate individual living standards.[211] And even though human populations spread into new habitats and grew in numbers during the Malthusian era, the overall trend showed pronounced cyclical fluctuations, with recurring demographic disasters caused by floods, droughts, epidemics and other calamities. Without exception, Malthusian cycles were typical of all agrarian civilizations of pre-industrial times.[212]

Living conditions during the Long Malthusian Era were also similar in other aspects: Peasant populations lived in locally isolated communities. Only the small segment of tribute collectors and trade merchants traveled between different commercial and administrative sites. Education as well remained limited to these tiny population segments whose privilege was entirely hereditary. Prospects for upward social mobility from the peasant mass into the privileged classes were negligible, if not outright inexistent. In this world, the notion of human rights that would protect ordinary people from maltreatment, exploitation and expropriation by those in power was unknown.

Only since the rise of pre-industrial capitalism and the Industrial Revolution, are parts of humanity escaping from a situation in which most of the population is poor, illiterate and rightless. Since the era of decolonization, the end of the Cold War and the onset of an accelerating phase of globalization, these parts of humanity are expanding with increasing speed. Growing areas of the world and increasing shares of our species begin to benefit from human emancipation: Ordinary people experience better material conditions, receive more education, develop higher skills and ambitions and benefit from broader entitlements. This is evident from manifest upward trends in every kind of quality of life indicator.[213]

For instance, the three components of the well-known "human development index"—longevity, education and prosperity—show a clear and continuous fifty-year increase from 1970 to 2018 in *all* regions of the world, including since recently also sub-Saharan Africa.[214] The trends in longevity and education even show convergence, with living conditions in the "developing" world catching up with those in the "developed" world. Rising life expectancies mean that people live under better nutritional, hygienic, medical and material conditions. And when the lifetime horizon

widens, people's life orientation changes with it, making them pursue long-term goals that come with a delay of gratification, such as education.[215] What is more, risking one's own and other people's lives in dangerous adventures and violent acts might be acceptable to people when life is short anyways. But when the lifetime horizon is wide, people consider such sacrifices increasingly an unacceptable waste of human potential.[216] Education, for its part, has been expanding rapidly over recent decades almost everywhere in the world, especially for girls (Afghanistan's setback under the resurgence of the Taliban notwithstanding). The cognitive consequences of this process are profound. As long as it is not outright indoctrination, formal education trains people to think for themselves and make up their own minds. People who discover their "agency" this way, do not want to be told anymore what to believe and to do. This cognitive mobilization is a process of psychological empowerment that diminishes people's demand for doctrinal guidance by arrogated authorities. As people discover their agency, the emancipatory drive awakens and turns people's mindsets into an elite-challenging mode that questions all forms of unconsented authority.[217]

The overall trend in human security and freedoms shows a similarly progressive path for most of the world.[218] Despite media attention on war, terrorism, torture, trafficking, genocide, famine, disaster, and epidemics—all of which still exist—the *prevailing* tendency is improving living conditions in most of the world and a continuing rise in life quality to levels never witnessed before on a mass scale. As a consequence, the "number of happy life years" has been increasing across the world for all countries for which we have reliable longitudinal data.[219]

The sharpest breakup with the perennial pattern of human history is the *Rising Tide*[220] of gender equality worldwide, which emancipates half of our species from patriarchy—the most original and enduring form of group discrimination since the emergence of the ancient agrarian empires.[221] Patriarchy consists in male control over female sexuality in the family. Until today, women and girls continue to be disadvantaged even in the most emancipatory societies, like The Netherlands, Sweden or Denmark. Even there, women receive lower pay for the same work, face greater challenges to reconcile family and career and are under-represented in positions of power, most obviously in the corporate world.[222] In many developing countries, much more serious forms of gender discrimination persist, including such practices as genital mutilation, pre-arranged marriages, intra-marital rape, female infanticide and so-called "honor killings."[223] Nevertheless, the existential conditions and rights of women and girls are massively and rapidly improving in all but a handful of societies worldwide (the most obvious exception being Afghanistan's Taliban regime).[224] No domain other than gender relations and sexual norms shows a more profound and pervasive emancipatory trend.[225]

Improvements in objective conditions thoroughly transform the subjective values that people pursue. The evidence for value change documents that moral evolution is possible and happening. Based on time series data from the *World Values Surveys*, it is evident that the subjective goals, purposes and values that ordinary people pursue transform in response to changes in people's objective needs and opportunities.[226]

The connection between objective conditions and subjective aspirations reflects an intimate utility-value link: People value the most what has most utility for their well-being under given

circumstances. This utility-value link is vital for our species' livability because it keeps our aspirations in touch with reality. The respective adjustments in our value systems operate on what Christian Welzel calls the "value ladder of freedoms."[227] Under threatening existential conditions, people must see every day how to meet their most basic survival needs. Existential threats leave people little choice about the purposes to which they dedicate their time and energy. Rights to exercise freedoms have little value under threats because people lack the means and time they need to practice rights. Accordingly, people do not dearly value freedoms that have little utility to them because they lack the resources to take advantage of these freedoms. Rather, they turn to religion and other sources of authority that promise protection and provide comfort in a dangerously miserable world. But when existential improvements widen people's opportunities and turn the nature of life from a source of threats into a source of promise, people gain objective options about the purposes to which they can dedicate their time—which is a profoundly empowering process that enhances individual agency. As a brained species equipped with self-awareness, humans naturally wish to be autonomous in their subjective choices about how to utilize their objective options: hence, an increasing valuation of the rights that protect freedom of choice. This adjustment of subjective values to objective utilities is a fundamental and universally human psychological mechanism that operates as a force of nature, in full ignorance of cultural differences.

Individually empowering improvements in people's living conditions elevate societies on the value ladder of freedoms. As people acquire the time, skills, connections and means to practice rights, the value they see in rights begins to rise. Since recognizing what is valuable under given circumstances is vital to master life, evolution has shaped human perception towards this end. Hence, people tend indeed to value goods according to the utility that these goods have in coping with given living conditions.

Insight:

> *People value rights in proportion to their individual ability to practice them. This is the reason why improving living conditions awaken the human emancipatory drive wherever such improvements occur. Indeed, the evidence shows that emancipatory drives have risen in direct proportion to improvements in objective living conditions. The dynamic has been particularly pronounced in issues concerning gender equality, sexual liberty and democratic voice.[228] Like a force of nature or Adam Smith's infamous "invisible hand," this is a self-driven evolutionary dynamic that needs no master mind, coordinator or program to proceed. For it is a natural psychological mechanism that guides the functioning of the human mind in a universal, species-wide and culturally invariant manner (for proof, see Figure 3-6 again).*

Advancing human emancipation changes the moral fabric of societies pervasively and in ways that bring our better ethical qualities to dominance. The reason is that advancing human emancipation is a psychologically *transcending* process that expands our empathetic horizon and solidarity circle. Indeed, emancipative values embody adherence to universal justice principles that guide people to empathize with others across group boundaries, especially in instances of discrimination.

This moral tendency is part and parcel of a profound process of mental maturation and growth. It is a moral awakening that liberates humans from their submissive instincts and sets free their agentic aspiration for self-determination.

As this happens, people dissociate themselves from ancestral ingroup ties into which familisitic obligations otherwise force them. Remarkably, this process of individualization does not erode societies' collective functioning. Quite the contrary, people's growing individual agency transforms the nature of societies' collective functioning in that people coalesce with others, join forces and form associations as a voluntary act of mutual agreement for shared benefit. Contradicting widespread stereotypes, individualism and individualization do not erode collectivism but, instead, nurture a novel and actually more powerful form of it, which we call egalitarian collectivism. Under egalitarian collectivism, each individual's personal agreement to cooperate counts equally. By unchaining cooperation from ancestral group loyalties, societies' collective action capacity multiplies, which means an expansion of societies' civic agency, coordinating capacity and synergetic potential. Recognizing these transformative consequences of rising emancipative values is not to idolize Western culture but to appreciate individuals' growing civic qualities and societies' growing democratic potential.

The Three Pillars of Emancipation

Our CW-Theory presumes a three-domains construct of social reality. Accordingly, social reality shapes people's lives on three distinct, and yet closely interrelated, domains of existence, which comprise:

(1) *subsistence modes* in the *material* domain,
(2) *mentality patterns* in the *psychological* domain, and
(3) *formal rules* in the *institutional* domain).

Over time, societal constellations tend to be coherent over these three domains of collective human functioning. The reason for this congruence principle is the sequential causal connection of the three domains, with a dominant flow of impact from subsistence modes to entality patterns to formal rules. Thus, the sequence starts from subsistence modes, which constitutes the material basis of societies' very survival. Subsistence modes comprises the economic activities that people perform to make a living. In any society, people perform their economic activities in a coordinated fashion within regulated social spaces, from the family to the workplace. Hence, a society's typical subsistence activities not only describe what technologies and toolkits people need to master and which manual and cognitive skills they must apply; economic activities are also framed in role scripts that tell people how to perform their tasks in interaction with others. In order to fit people into their role scripts, corresponding moral norms must be habitualized so that people can learn what is expected from them in the course of their socialization. These moral norms are the essence of societies' predominant mentality patterns.

Table 4-1. The Emancipatory Trinity of Human Empowerment

	The Three Pillars of Social Reality		
Societal Domain:	Socio-*economic* (*material* subsistence)	Socio-*psychological* (*moral* norms)	Socio-*political* (*formal* rules)
Aggregate Progress:	Knowhow Accumulation	Aspirational Ascension	Rights Extensions
Human Impact:	*Cognitive Mobilization* (i.e., growing individual agency)	*Motivational Elevation* (i.e., rising life ambitions)	*Political Liberation* (i.e., expanding legal guarantees)
Measures:	**Life Resources**[1)] (*poor*-vs-*rich*)	**Emancipative Values**[2)] (*dormant*-vs-*viral*)	**Civic Entitlements**[3)] (*narrow*-vs-*wide*)
Empowerment Type:	INSTRUMENTAL (HARDWARE)	MOTIVATIONAL (SOFTWARE)	INSTITUTIONAL (LICENSE)
Synthesis:	H U M A N E M P O W E R M E N T		

[1)] Summary index of (*a*) life expectancies, (*b*) per capita incomes, (*c*) income equality (inverse GINI), (*d*) schooling years, (*e*) inverse child mortality and (*f*) inverse female fertility (from the World Bank's Social Development Indicators series).

[2)] Summary index of (*a*) emphasis on gender equality, (*b*) support for sexual self-determination, (*c*) appraisal of child autonomy and (*d*) and affirmation of people's voice (from the World Values Surveys).

[3)] Summary index of (*a*) civil liberties, (*b*) political rights, (*c*) rule of law and (*d*) power separation (from V-Dem).

Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

Consequently, the *first principle of correspondence* in societal evolution implies that modes and techniques of subsistence shape corresponding mentalities, thus programming people's psychology in such fashion that they perform their subsistence roles as expected. Next, as societies grow in size, increasing anonymity among interacting people makes it necessary to transplant the task of role socialization into centralized institutions that operate by formal rules. These formal rules are designed to reflect and reinfroce the mentalities needed to keep the given economy going. Hence, the *second principle of correspondence* in societal evolution implies that prevalent mentality patterns shape corresponding formal rules.

Due to these two correspondence principles, the dominant flow of impact in societal evolution runs, first, from the material to the psychological and, then, from the psychological to the institutional domain of social reality. Reinforcing feedback loops in the reverse direction of impact notwithstanding, the main flow of impact moves alongside a material-psychological-institutional sequence of progression.

Given the two correspondence principles, an emancipatory turn in the dynamics of civilization advances jointly across the three domains of social reality. Understood as a process of empowerment that liberates people from external domination over their lives, emancipation, hence, means a *three*fold liberation of people from (*1*) *material*, (*2*) *psychological* and (*3*) *institutional* limitations of their individuality. Emancipation in this sense is basically a wall-breaking process that

unlocks people's individual agency. Unlocking people's individuality—regardless of group divisions—infuses into societies a fundamental moment of egalitarianism. As this happens, merit increasingly replaces ancestry as the principle of status acquisition.[229]

Because every human possesses a mind that can learn to think independently and withstand doctrinal guidance in what to believe and to do, the potential for emancipation resides in all of us. It is a universal human potential that defines our species, which is why emphasizing this point cannot be disqualified as a specifically Western perspective. Therefore, the critical question is to what degree societal framework conditions are shaped in such fashion that individuals' potential for emancipation can freely unfold. Due to our three-domain conception of societal evolution, we identify three realms of empowerment that must come together to complete human emancipation. We label these three realms *instrumental*, *psychological* and *institutional* empowerment—meaning individuals' empowerment in terms of *tools*, *minds* and *rules*.

Instrumental empowerment focuses on the *resources* (i.e., *tools*) that *enable* people to practice freedoms. *Psychological* empowerment refers to the *values* (i.e., *minds*) that *motivate* people to practice freedoms. *Institutional* empowerment covers the *rights* (i.e., *rules*) that *entitle* people to practice freedoms.

Thus, we maintain that

> *human empowerment is a **trinity** of **enabling**, **motivating** and **entitling** framework conditions at the level of populations*.

Distinct, albeit intertwined, mass-level processes drive these three partial empowerments. First, *knowhow accumulation* in economic subsistence widens people's *life resources*, which is a process of agency growth that advances people's *instrumental* empowerment. Second, *rising life aspirations* on a mass scale lead to a moral norm shift visible in ascending *emancipative values*, which promote people's *psychological* empowerment. Third, *rights extensions* widen *civic entitlements*, thus advancing a process of political liberation that seals people's *institutional* empowerment. Table 4-1 schematizes this portrayal of the human empowerment trinity.

In *Freedom Rising*, Christian Welzel examines the interconnections of the three components of human empowerment. The purpose is to determine which component comes first and which thereafter in the evolutionary progression of human empowerment writ large.[230] The author finds that instrumental empowerment emerges before psychological empowerment and that the latter precedes institutional empowerment. The logic of this sequence operates as follows. When knowhow accumulation in economic subsistence improves living standards, people become richer in life resources, including income, education and connectivity. As a consequence of richer life resources, people's individual agency grows in unison—a process that transforms the nature of human existence by turning everyday life from a source of threats into a source of opportunities. This means an expansion of people's action repertoire: that is, the radius of activities that people have the capacity to pursue at will. As more goals for which it is worth striving intrude into people's reach, individuals invest more into their individual biographies and their life aspirations rise, visible in growing emancipative values. Since life resources enable people to struggle for rights,

while emancipative values make them eager to do so, mass pressures to grant, defend and extend civic entitlements emerge. Once these pressures grow strong enough, the established elites either give in or are replaced by dissenting counter-elites who then institutionalize civic entitlements at a level meeting public demands.

These propositions have initiated a debate about whether this is indeed the accurate causal sequence in the progression of human empowerment across its three ingredients: life resources, emancipative values and civic entitlements.[231] In this book, we leave this discussion aside because, in the context of our interest, the key point is that the three ingredients of human empowerment form a tightly knit triad: Societies exist and evolve alongside consistently low, mediocre or high levels of human empowerment throughout each of its three domains. From this point of view, it is irrelevant which component precedes which other one. In the end, they form a coherent entity of human empowerment anyways.

Trends and Differences of Emancipation

Based on contemporary countries as the units of observation, SOM-Tables 4-1 to 4-3 use measures of the social prevalence of the three components of human empowerment: life resources, emancipative values and civic entitlements. We measure life resources by a combination of life expectancies, per capita incomes, mean years of schooling, inverse female fertility and greater educational equality in societies, as outlined in SOM-Section S4.

To measure emancipative values, we use the index invented by Christian Welzel.[232] The index summarizes twelve items from the *World Values Surveys* that indicate an emphasis on freedom of choice and equality of opportunities in four thematic domains: (*a*) reproductive freedom, (*b*) gender equality, (*c*) public voice and (*d*) child autonomy. Individuals might not always be consistent in how strongly they support emancipation simultaneously across these four domains. Prevalence patterns among populations, however, are very consistent in this respect: To the extent to which support for emancipation is prevalent in one domain, it tends to be prevalent in the other domains as well.[233] SOM-Sections S2 and S11 document the measurement of emancipative values in detail.

To measure civic entitlements, we use the "liberal democracy index" developed by the Varieties of Democracy Institute at Gothenburg University in Sweden.[234] The index combines measures of suffrage, the quality of elections, the legislative power of elected assemblies, civil liberties, minority rights, rule of law and the separation of powers in a combined index.

Measured across 178 countries from all over the world, people's instrumental, psychological and institutional empowerments associate closely. As SOM-Table 4-1 illustrates, correlations range from $r = .70$ to $r = .80$. Actually, these three partial empowerments correlate so tightly that—statistically speaking—they represent a single dimension. This is evident from the factor analysis in SOM-Table 4-2.[235] Substantively speaking, this dimension constitutes human empowerment—the trinity that unifies the three elements. Thus, it is adequate to summarize the three partial empowerments in an overall index of human empowerment, as detailed in SOM-Section S2.[236] The

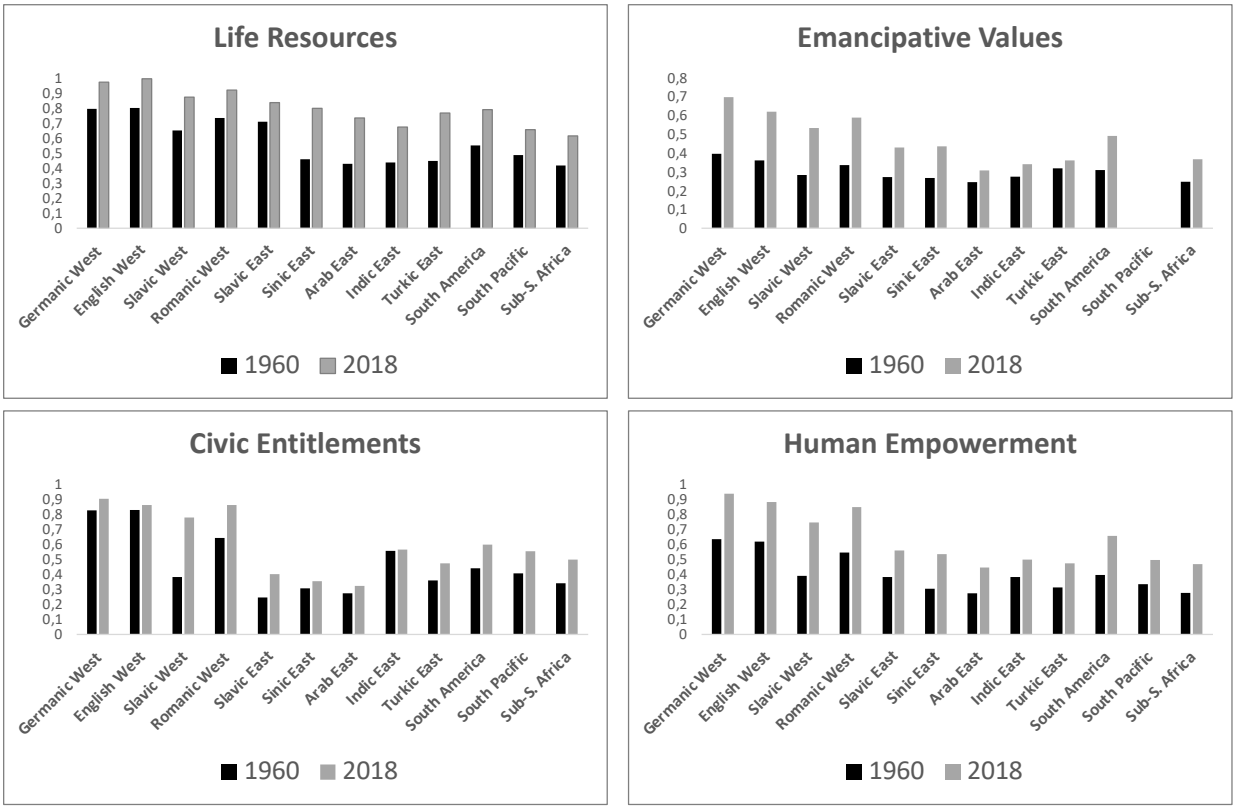
human empowerment index measures people's empowerment across all three domains, such that unusual peaks and dips in just one domain are averaged out when they are out of line with the others. This produces not only a more encompassing measure of human empowerment in a substantive sense but also a more reliable measure in a technical sense.[237] The world map in Figure 4-3 shows the geographic distribution of human empowerment in this understanding, with darker countries representing higher levels of human empowerment.

The geographic pattern apparent from Figure 4-3 is well known from global maps of almost any other living condition of which we have data, including life expectancies, fertility rates, literacy and schooling rates, per capita incomes, life satisfaction and happiness, social movement activism and the strength of civil society, outgroup trust, impartial and transparent governance, peace and stability, freedom and democracy, environmental quality—and anything else that could come to mind as an indicator of life quality, societal flourishing or human progress. Accordingly, SOM-Table 4-4 demonstrates very close country-level correlations between the human empowerment index, on the one hand, and three dozen historic as well as contemporary indicators of a wide variety of life quality aspects, on the other.

In light of the evidence in SOM-Table 4-4, human empowerment is obviously an encompassing indicator of *all* favorable living conditions from which the bulk of entire populations benefit. Differences in the populations' human empowerment are a worthwhile object of study for this very reason. These differences represent a catch-all indicator of societies' human condition writ large. Where human empowerment is advanced, people flourish, life in general has shifted its character from the threat- to the promise-side and civilization as such shows a more humane face.

Figure 4-4 groups the world's countries into twelve ancestal population families, following the scheme outlined in Chpater 7 (especially Table 7-1). Evidently, the branches of Western civilization lead the world in all three components of human empowerment and, hence, in human empowerment overall. This was so at the beginning of the observation period in 1960 (and further back in time till the Industrial Revolution, as we will see) and continues to be the case at the endpoint of measurement in 2018. Pointing this out is not to measure non-Western cultures against Western standards. Arguing this way would be a case of the "genetic fallacy," that is, confusing the identification of a process's locus of origin with invalidating its applicability to other locations. Consequently, the fact that the West pioneered and still leads the human empowerment trend does not make this trend an exclusive property of the West, even less so as the trend has in the meanwhile become truly global in scope. And the normative standard informing the human empowerment index addresses a quality—namely, individual agency—that is by no means unique to Western people but universally human: hence, no specifically Western but a generally humane standard. Besides, the fact that the West kicked off the human empowerment trend does by no means reflect any inherent superiority of Western people but merely the West's luck to evolve under the geoclimatic configuration most conducive to the germination of the emancipatory human potential: the CW-Condition.

Figure 4-4. Culture-Zones and the Dynamic in Human Empowerment and Its Three Components



Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

At any rate, the overwhelming trend over time is an increase in human empowerment writ large and in each of its three components throughout all population families of the globe, albeit at varying intercepts and slopes. In light of this process's intimate connection to all kinds of indications of societal florescence, this is an encouraging insight.

Summary

If we define societal development more specifically as "human" development, one cannot avoid recognizing that the most distinct characteristic of human nature is our potential for agency, that is, the faculty of humans to act with purpose and to dedicate their time, energy and lives to purposes of their own choice. Human development, thus, comprises all societal achievements that unlock and cultivate ordinary people's agentic potential. In this sense, human development becomes synonymous with human empowerment and obtains an altogether emancipatory meaning, focusing on developmental outcomes that liberate ordinary people from material, mental and legal constraints on their individuality. This emancipatory definition of development stresses life resources in the material domain, emancipative values in the psychological domain and civic entitlements in the institutional domain of social reality, which we summarize into a single human empowerment index.

The cross-cutting link between life resources, emancipative values and civic entitlements keeps societies in a consistent overarching mode of operation. When life resources, emancipative values and civic entitlements remain underdeveloped, societies function in the human impairment mode of operation. When these three elements are pronounced and growing, societies function in the human empowerment mode of operation.

To what extent societies function in the human impairment-vs-empowerment mode depends on the CW-Condition because the absence-vs-presence of this condition decides whether vital resources are concentrated or decentral and whether an emerging social order is structured by hierarchies, indoctrinated by intimidation cults and ruled by coercive institutions, or whether the evolving social order is infused with autonomies, inspired by encouragement and governed by contractual institutions. At the grassroots of society, the human impairment mode of societal functioning involves tight patriarchal controls over female sexuality, while the human empowerment mode involves light such controls. The tightness-vs-lightness of patriarchal control over female sexuality, in turn, associates strongly with fertility-vs-schooling oriented reproductive investments, shifting these investments from fertility ("births") to schooling ("brains") in unison with an impairment-to-empowerment shift of the human condition writ large.

The human empowerment index is a first-rate indicator of exactly where on the human impairment-vs-empowerment continuum a population is located. Therefore, the human empowerment index correlates positively, and very strongly so, with every indicator of human wellbeing, life quality and societal florescence. By the same token, the human empowerment index correlates in strongly negative fashion with all indicators of societal misery, including mortality, fertility, poverty, crime, discrimination, corruption and oppression. The human empowerment index, thus, provides an encompassing catch-all measure of societal misery-vs-flourishing.

Measuring societal progress in human empowerment terms does not mean to hold culturally diverse societies against a one-sided Western standard. Instead, empowering ordinary people is a particularly "humane" standard inspired by our species distinct potential for emancipation, which is *universally human* and not *particularly Western*. Although it is true that Western societies have been and continue to lead the world in human empowerment terms, this lead is continuously ceasing to be a Western singularity because human empowerment is on the rise in all of the world's population families and in each of its three elements: life resources, emancipative values and civic entitlements.

A key driver of humanity's emancipatory ascension is the ubiquitous quantity-to-quality shift in women's reproductive investment from fertility towards schooling, visible in the sharp drop in female fertilities and the parallel steep rise in female school attendance, which is indicative of the erosion of perennial patriarchal sex norms and the progression of female emancipation. We explore the latter trend in more detail in the next chapter as well as Chapter 12.

5 The CW-Condition's Gestation

For the populations of entire countries, basic living conditions improve at a glacial pace at best. Even in phases of rapid economic growth, it usually takes a generation before significant improvements in living conditions become truly felt by large segments of a population. One of the most rapid catch-ups in world history, South Korea's steep rise from a low-income society in the 1950s to a high-income society in the 1980s, took some thirty years—the length of an entire generation.[238] The fact that even the fastest improvements show such inertia testifies to the glacial pace of developmental processes in general. One can see this by looking again at the population ancestry classification of countries shown in Figure 4-4 to trace the three components of our human empowerment index—life resources, emancipative values and civic entitlements—over the last sixty years, from 1960 to 2020: Despite an upward glacial trend everywhere, the ancestral population families that were in lead in 1960 are still in lead today.[239] This pattern underlines the strong persistence of cross-national differences in basic living conditions, especially those with an emancipatory signature.

Persisting differences in intercept lie in the nature of glacially progressive trajectories: Since ascending slopes differ only slightly in angle, intercept differences reproduce themselves in each temporal cross-section over long stretches of time. For this reason, catch-up processes by societies that were once behind others in their emancipatory achievements take a long time, even if the pace is comparatively fast.

The Long Misery and the Emancipatory Turn

Cross-national differences in human empowerment, as we know them today, are recent on the time scale of history. In fact, the emergence of these differences signals what we see as the Great Emancipatory Turn in the lead theme of the entire civilization process: The trend is shifting, and ever more forcefully so, from the perpetuation of human exploitation to the advancement of human empowerment. The Great Turn coincides with what Oded Galor calls the late sudden shift from "extensive" to "intensive" economic growth. Extensive growth prevailed over the Long Malthusian Era of civilization since the invention of agriculture some 10,000 years ago. Intensive economic growth kicked in only recently but then sweepingly, beginning in Northwestern Europe's CW-areas with the Industrial Revolution just 250 years ago.[240] This recency and explosiveness—the Great Turn, indeed—is what defines the West.

In somewhat related terms, Depak Lal describes the Great Turn as the transition from "Smithean" economic growth to "Promethean" growth. Smithean growth in Lal's understanding advances through an increasingly intricate division of labor in manual activities. Promothean growth, by contrast, progresses through replacing manual work by labor-saving technologies that automate commodity production. As Lal, Joseph Needham, Joel Mokyr, David Landes and Eric Jones argue, a manufacturing economy that needs to satisfy growing commodity demands but faces chronic (and peridocially peaking) shortages in the supply of cheap mass labor operates under the pressure of technological innovation—in order to replace manual with automated commodity production. And since perpetuated innovation requires the interplay of individual ingenuity, creativity and knowledge on a mass-scale, the incentives to invest into populations' human capital increase, thus favoring the quantity-to-quality shift in people's reproductive investment from fertility to education (reinforcing shortages in cheap mass labor). Once the transition from Smithean to Promothean growth starts, the process is self-acceleating: As automated commodity production and service delivery set manual labor free, more people invest their time into marketable cognitive abilities, which further elevates a workforce's skill level and the economy's knowledge intensity.[241]

Before the Great Turn, gains in food surplus led to higher fertility, an increase of the labor force, a spatial expansion of the cultivated habitats and population growth. But these gains in "extension" did little to improve the material wellbeing, skill level and economic value of the median individual. Quite the contrary, when high fertilities proliferate an abundant supply of cheap mass labor, individual human lives are of little perceived value, both economically and ethically. Under these circumstances, familism becomes the prevalent mentality and forces people into rigid ingroup discipline. Vice versa, rising individualism, which cherishes people's personal autonomy, is always a sign of increasingly secure and permissive existential conditions—conditions under which, first, the economic and, then, the ethical value of human lives elevate.[242] Mentality shifts from familism to individualism prompt equally important shifts in people's lifetime investments. Indeed, the Great Turn shifted people's lifetime investments from maximizing the number of children towards acquiring valuable skills, which further diminished an already limited supply of cheap mass labor.[243] Accordingly, the economic value of the human individual began to rise, which provided the material basis for cultural individualism and its orientation towards human rights.[244] Furthermore, when cheap labor is in short supply, producers have the incentive to reduce production costs by employing technologies that replace manual labor and yield multiple outputs of what a single human worker would produce. The incentive for technological innovation enhances an economy's demand for experimentation, research and education. And this demand grows bottom-up from the grassroots of society because it is driven by changing features of the workforce. When the economic context becomes more demanding of knowledge inputs, the seed of human empowerment begins to germinate.

Nevertheless, over several thousand years of pre-colonial history, human empowerment on a mass scale was an unknown phenomenon. Common people throughout all agrarian civilizations in history were disempowered in each of social reality's three domains of existence: people were

poor in the material domain, submissive in the psychological domain and rightless in the institutional domain. Mass-level differences in human empowerment only began to emerge with the rise of Western civilization to global dominance in the era of colonialism.[245] During that era, Western populations quickly advanced in human empowerment by making their own people more prosperous materially, more emancipatory psychologically and more entitled institutionally. At the same time, Western countries monopolized the benefits of these advancements for their own people, while they decimated, marginalized and exploited non-Western people in their colonies and at home. Moreover, even in the most advanced Western societies, women and people of color continued to live under discrimination, and our natural habitats became recklessly polluted and exploited. Despite its initiation in the West, the progression of human emancipation remained partial, incomplete and overshadowed by the endurance of sexism, racism and predation, as the vigor of the *Me Too*, *Black Lives Matter* and *Fridays for Future* movements illustrate in lucid clarity till today.[246] The progression of human emancipation remains a continuous struggle and an unfinished journey.

Since the era of decolonization, Western dominance is fading slowly. But the most important evidence for the West's recession is neither Russia's military aggression nor China's imperial outreach. Instead, it is the ubiquitous advancement of human empowerment almost everywhere around the world, especially among women and people of color.[247] Still, because human empowerment diffuses slowly, the global picture of advancements in this process continues to show a concentration on countries with a Western heritage. The shadow of colonialism is fading, but it is not about to loose visibility entirely, at least not soon.

The civilization process began to turn towards human empowerment in Western societies. These societies are shaped by their imprint from emancipatory movements in history, which is a singularity of the West. These movements include Renaissance Humanism, the Reformation and eventually the Enlightenment. Geographically, Western societies in our definition of the term originate in *North*western Europe[248]: a location described by Werner Plumpe as the "Blue Banana."[249] Because of this commonality, the locations in Northwestern Europe share certain geo-climatic features, albeit to different degrees. We coin these features the CW-Condition: the persistence of relatively cool temperatures throughout the seasons, combined with continuous rain in relative coastal proximity. Significantly, the New World colonies that once attracted most of the settlers from Northwestern Europe are also characterized by the CW-Condition. Thus, Western societies in both the Old and the New World are strikingly distinct from most other parts of the globe when it comes to the CW-Condition. This condition is without question exceptionally pronounced in the West. Figures 3-1 and 3-2 in Chapter 3 document the evidence for this claim.

The CW-Areas' Agrarian Delay

The inherent advantages of the CW-Condition could only begin to become visible after a high level of pre-industrial agrarian productivity had been reached. Once they made the transition from

foraging to agriculture, areas with the CW-Condition did not take a particularly long time to achieve advanced agrarian productivity. But, as we will see, the CW-areas in the Old World, namely Northwestern Europe and Japan, were suspiciously late adopters of agriculture, following long after the pristine civilizations alongside Eurasia's East-West Silk Road belt. In the New World, the CW-areas of North America, Australia and New Zealand only adopted intensive forms of agriculture when settlers from Northwestern Europe imported them. In other words, the civilization process took a very long time to witness the first CW-area reaching advanced agrarian productivity—which happened several millennia later than in the non-CW areas of the much older civilizations in the Middle East, the Mediterranean, India and China. In fact, only in about 1500 CE, Northwestern Europe emerged as the first CW-area in the world, followed by Japan in about 1600 CE, to reach a level of agrarian productivity advanced enough to nurture accelerated urban growth and a proto-industrial capitalist economy with growing commercialization and market penetration.

A reason why the CW-areas shifted suspiciously late from foraging to agriculture might lie in the fact that foraging means a more individualistic, egalitarian and freer way of life than farming.[250] Anthropologists indeed agree that the hunter-gatherer way of subsistence matches humans' natural lifestyle preference more than intense farming.[251] Consequently, humans would transition from foraging to intensive farming only when ecological or demographic pressures force them to do so.[252] Given that the environmental features of the CW-Condition are especially suited to a foraging subsistene, populations evolving under this condition would do little to explore and exploit their agrarian potential, until the spread of agriculture to neighboring populations emits respective pressures.

In their pristine condition, most CW-areas are covered with moist woodlands. With plenty freshwater sources, these woodlands provide formidable hunting and fishing grounds. They also offer a rich source of seasonal vegetal foods, including berries, nuts, mushrooms, tubers, roots, herbs and the like. And the ubiquity of freshwater is a rich source of mussels, fish and shellfish. Forests also place limits on group size, making overexploitation of resources unlikely and their concentration in a few hands impossible, also because of the lack of oversight that forested areas offer. All in all, these conditions allow people to pursue a foraging lifestyle in a rather autonomous manner within relatively small groups outside the control of a central ruler and his surveillance.[253] These features strengthen the egalitarian-individualistic features that generally characterize hunter-gatherer tribes.

Where natural conditions provide good hunting and fishing grounds, foraging is a freer lifestyle than intensive agriculture.[254] At least, it is a freer lifestyle than the type of hierarchically regulated agriculture that gave rise to irrigation-managed despotic empires in Eurasia's axial civilization belt, spanning from the Eastern Mediterranean to the Middle East, India, and China.[255] Compared to the life of a typical peasant in any of the major agrarian empires of pre-industrial history, foragers in areas with decent hunting and fishing grounds spend less time with work, enjoy a more varied diet and more autonomy in deciding with whom to mate and which group to join. Compared to agrarian societies of the hierarchically regulated type, the foraging lifestyle is both

more individualistic and egalitarian. Hierarchies are flat and fluid, and status depends on individual merit, that is, demonstrating skill in the typical activities of foragers, including hunting and fighting. Women are also freer because partnership is consensual. Furthermore, the foraging lifestyle poses a natural limit on female fertility, which exempts women from the pressure to spend as many of their fertile years as possible in pregnancy.[256]

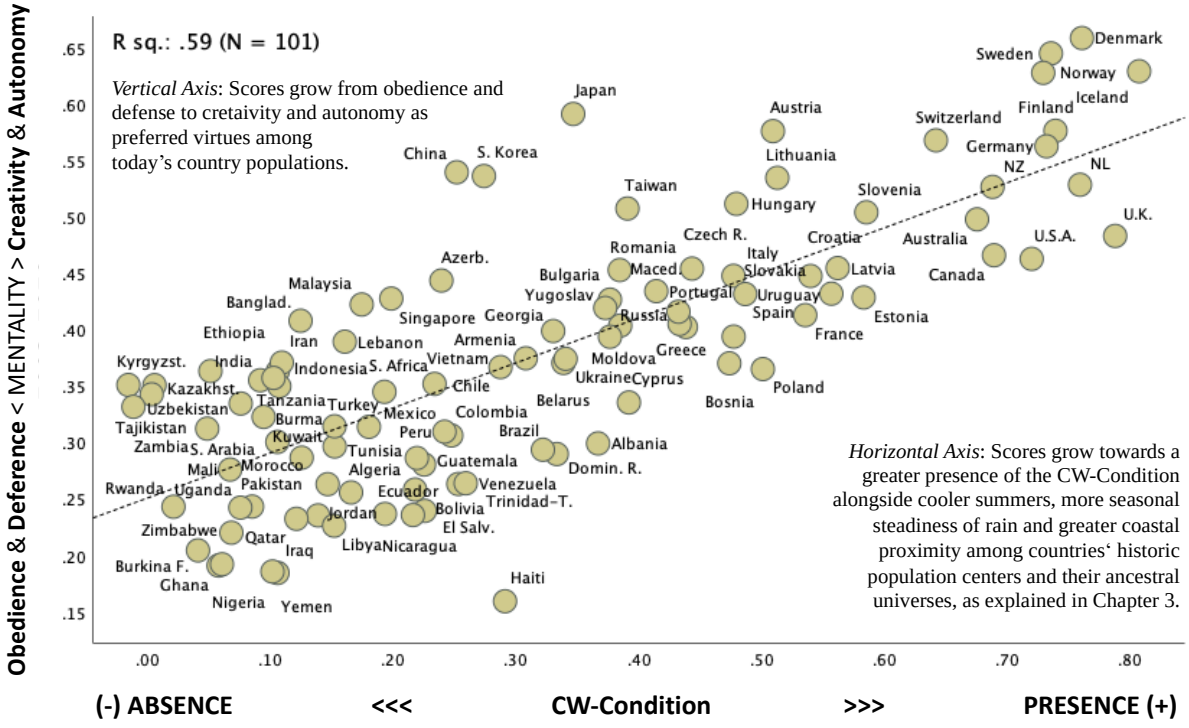
The meritocratic character of foraging societies makes them more individualistic in the sense that a person's status in the group depends on her individual abilities, not on inherited privilege—something largely unknown in foraging societies. These societies are also egalitarian because all group members grow up with equal opportunities to prove their talents. For the survival of the group, it is crucial to divide tasks in such a manner that those who have shown the greatest talent in performing a skill are in charge of it. Thus, anthropological data from the Standard Cross-Cultural Sample also show that these individualistic-egalitarian features of meritocracy were more pronounced in tribal societies living under the CW-Condition.[257]

The earliest transitions to agriculture date back to about 10,000 years ago,[258] while our species has been around for about 150,000 years.[259] This means that humans have spent more than ninety-nine percent of their entire history in the foraging stage. The features of this stage must accordingly have left a deep imprint on humans' social preferences. In other words, an appreciation of original autonomies should be evolutionary hard-wired into our species' implicit preference structure.[260] Humans' natural appraisal of autonomy defies a "blank slate" condition that would otherwise allow to utilize religious doctrine and other brainwashing tools of socialization to eliminate our individuality altogether. Hence, no dictatorial system—however perfect—can socialize away humans' individualistic nature to an extent that turns us into mindless insects or robots. Still, where the environmental features embodied in the CW-Condition suit humans' natural autonomy preference, resistance against efforts to curtail people's original freedoms should be stronger.

If this is an accurate assumption, then the transition from foraging to agriculture must have been something that people would have preferred to avoid or revert as soon as it became obvious that this transition meant the abandonment of original autonomies. Anthropologists, therefore, assume that populations were either unintentionally sliding into agriculture, not foreseeing its social consequences, or they were forced into this transition by demographic pressures from neighboring agriculturalists.

Usually, people adapt their value orientations to what is most helpful to master given circumstances. This adaptability sustains the utility-value link that keeps human life strategies sufficiently in touch with reality to preserve our livability. It follows from this utility-value link that, if the transition from foraging to agriculture means the abandonment of hunter-gatherers' original freedoms, people should have lost their original appreciation of individual autonomies and instead adopted an submissive orientation with the transition to agriculture—and all of this the more completely so, the longer the transition reaches back in time. This seems plausible, given that cultivation methods tend to mature over time, implying increasing labor intensity and scarcity of valuable land. The latter two factors, in turn, provide a source of mounting pressures for authoritative management of water, land and people as cultivation methods mature—hence, the progressing loss of

Figure 5-1. The CW-Condition and Orientations toward Obedience & Deference-vs.-Creativity & Autonomy



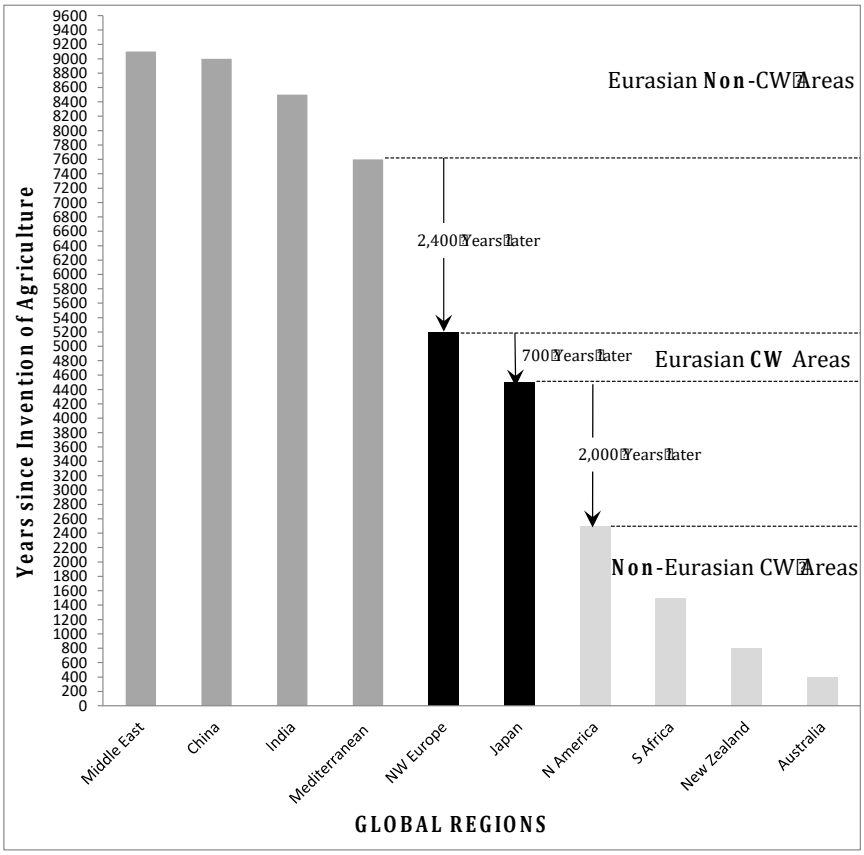
Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

original autonomies alongside the endurance of agriculture. If so, and assuming the utility-value link actually works, people's emphasis on individual autonomy should become weaker and their communal obedience stronger, the longer a population's transition to intensive forms of agriculture reaches back in time. Indeed, this is what Ola Olsson and John Paik find.[261]

However, Figure 5-1 demonstrates that people's obedience-vs-autonomy emphasis varies systematically with the respective country's CW-Condition—to the effect that a stronger CW-Condition means less emphasis on obedience and more on autonomy. And this link does not fall apart when we control for how early the respective population transitioned to intensive agriculture.[262] This striking finding only makes sense if either the CW-Condition indicates how late countries went through the Neolithic Revolution or if the CW-Condition allowed people to preserve their original autonomies in modified fashion throughout the Neolithic transition. As we will see, there is evidence for both possibilities.

In areas suitable for agriculture, pressures to actually adopt agriculture emanate from the fact that agrarian societies achieve higher population densities than foraging tribes. For this reason, agrarian populations quickly outnumber foragers and are ready to take over their land, unless the foragers themselves adopt agriculture. Once invented, agriculture spread out continuously from its original locations in the Middle East, India and China into all areas of the Eurasian-African landmass where farming is possible.[263]

Figure 5-2. The CW-Areas as Laggards of the Neolithic Revolution



Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

Jared Diamond's epic *Guns, Germs and Steel*[264] highlights the influence of environmental conditions on an area's suitability for agriculture: The quality of domesticable animals and cultivable crops depend on temperature and precipitation patterns, among other things. Based on these insights, Ola Olsson and John Paik[265] collected data for more than a hundred countries around the world, measuring the respective territories' natural suitability for agriculture. In addition, their measurement recognizes how likely it is that a territory's natural agrarian suitability germinates early, favoring an early transition to agriculture. As Jared Diamond argues, this "agrarian pioneer potential" depends not only on an area's own agrarian suitability, but also on its larger geographical embedding. For instance, when a territory extends over an East-West axis, rather than a North-South axis, agrarian innovations spread out quicker and easier because East-West distances tend to stretch over climatically more similar regions than the same distances on a North-South gradient. In the same vein, areas embedded in, or adjacent to, large landmasses have potentially more neighbor exposure, which means a greater influx of stimulus from outside. For this reason, Diamond argues that territories at the same level of agrarian suitability had a greater agrarian pioneer potential when they were located in Eurasia—by far the largest landmass of our planet with the most gigantic East-West extension. Indeed, even though areas well suited to agriculture do exist at various places outside Eurasia, they are nowhere part of an East-West oriented landmass remotely as

large as the Eurasian belt of civilizations reaching uninterruptedly from the Western Mediterranean to East Asia—which is more or less the course of the Silk Road.

In recognition of this point, Ola Olsson and John Paik adjust their original agrarian suitability measure, which counts the number of initially available, cultivable crops and domesticable animals in a territory. They do so by factoring in additional information on the East-West relative to the North-South territorial extension as well as territorial size itself. So, the resulting index not only measures a territory's agricultural suitability but indeed the "agrarian pioneer potential."

Using these data, SOM-Figure 5-1 illustrates in striking clarity the sharpness of the Eurasian/non-Eurasian divide over the agrarian pioneer potential.[266] Measured on a scale from 0 for the lowest to 1 for the highest agrarian pioneer potential, not a single country-territory outside Eurasia reaches a score of 0.4, whereas seventy-five percent of Eurasia's country-territories score above 0.5. The average pioneering potential in Eurasia is 0.85, which compares to an average of 0.15 outside Eurasia—fully seventy percent of the scale range apart. In fact, fifty-four percent of the entire world's variation in the agrarian pioneer potential is just a matter of this simple division, separating Eurasia from all else. In light of this simple fact, the first steps towards agriculture and, hence, into civilization were way more likely to be taken somewhere in Eurasia than elsewhere.

Figure 5-2 shows that the CW-Condition[267] is significantly associated with a country-territory's agrarian pioneer potential. There are just two groups of outliers from this otherwise positive relationship:

(*1*) Country-territories in the Middle East have a weak CW-Condition but nevertheless a very high agrarian pioneer potential because of their location at the crossroads of the Eurasian East-West civilization belt reaching from the Western Mediterranean to Japan.

(*2*) New World country-territories attracting overseas European settlement (i.e., North America, Australia and New Zealand) have a strong CW-Condition but nevertheless a low agrarian pioneer potential because of their isolated location far away from the original Eurasian civilization belt.

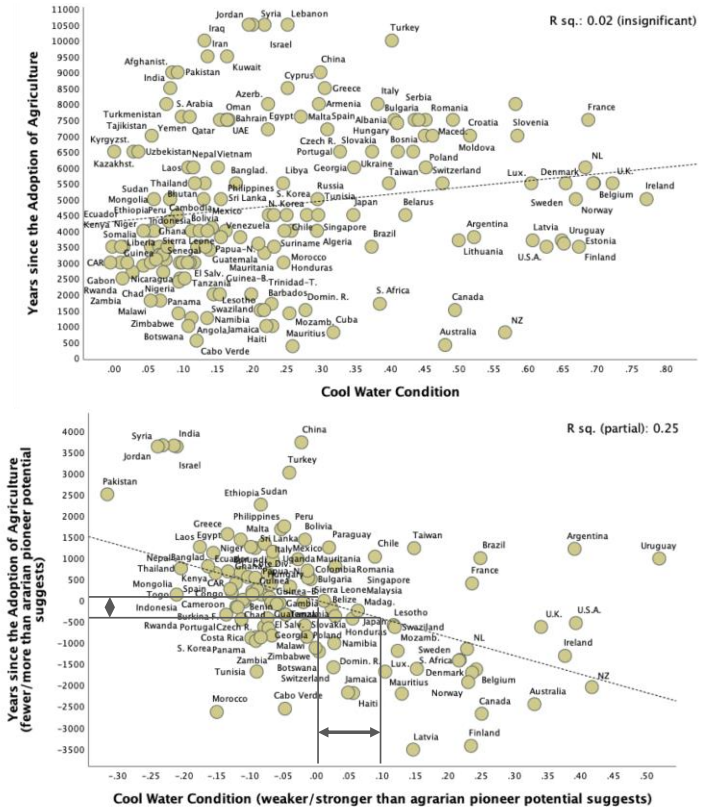
Despite these two groups of outliers, the relationship between the CW-Condition and the agrarian pioneer potential is moderately strong and overall positive, which suggests that—on average—CW-areas should have adopted agriculture earlier than non-CW areas. In fact, however, the exact opposite is the case. To demonstrate this point, SOM-Figure 5-2 uses the data that Louis Putterman and his colleagues[268] collected for about 160 countries around the world, measuring how many centuries back in time intensive forms of agriculture has been adopted by the historic centers of a given country-territory.

Indeed, the CW-area of Northwestern Europe adopted agriculture 2,500 years after the Eastern Mediterranean, 3,500 years after India and 4,000 years after China and the Middle East. Japan followed Northwestern Europe after another 700 years. The CW-areas in the New World—including those in North America, Australia and New Zealand—followed even much later: when European settlers imported intensive agriculture.[269] As a qualifying remark, we recognize that, for

Figure 5-3. The CW-Condition and the Earliness of Adopting Agriculture

Diagram *a*: Before Controlling Agrarian Pioneer Potential

Diagram *b*: After Controlling Agrarian Pioneer Potential



Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

instance, the Iroquois in the CW-area around upstate New York and the Great Lakes lived from a mixture of foraging and horticulture. Yet horticulture is not the same as agriculture, of which the latter involves technologically more intense cultivation methods, such as irrigation and plowing.[270]

The upper diagram in Figure 5-3 plots the earliness of a country-territory's adoption of agriculture against the respective territory's CW-Condition. We see a slightly positive relationship—which is, however, so weak that it is statistically speaking insignificant and accounts for a negligible two percent of the variation in how early the historic center of given country-territories adopted agriculture. The weakness of this tendency is due to the same two groups of outliers already shown in SOM-Figure 5-2. For one, located in the upper-left corner of Figure 5-3*a*, we see countries of the Middle East in which the CW-Condition is literally absent but where agriculture has been adopted earliest. Next, at the lower-right corner, one sees again the CW-areas of the New World—namely North America, Australia and New Zealand—where settlers from Northwestern Europe imported agriculture late compared to Eurasia's pristine civilizations.

The key insight surfaces by contrasting the upper with the lower diagram in Figure 5-3. The latter exhibits the effect of the CW-Condition taking into account a country-territory's agrarian pioneer potential. Now, the previously slightly positive relationship reverses its direction and turns pronouncedly *negative*. The relationship only seems to be positive in Figure 5-3*a* (upper diagram) because the vast majority of the globe's CW-areas is located in Eurasia and that alone gives them

a high score in our measure of the agrarian pioneer potential borrowed from Ola Olsson and John Paik. Now, taking this aspect of the evidence into consideration, Figure 5-3*b* (lower diagram) clarifies something truly important: Among country-territories endowed with the *same* agrarian pioneer potential, those with the stronger CW-Condition adopted agriculture considerably *later* than those with the weaker CW-Condition. In other words, the CW-Condition delays the adoption of agriculture among country-territories with the same agrarian pioneer potential. In numbers, a 0.10 scale points stronger CW-Condition (i.e., a tenth of the scale range) implies on average a 500 years later adoption of agriculture among territories with the same agrarian suitability.

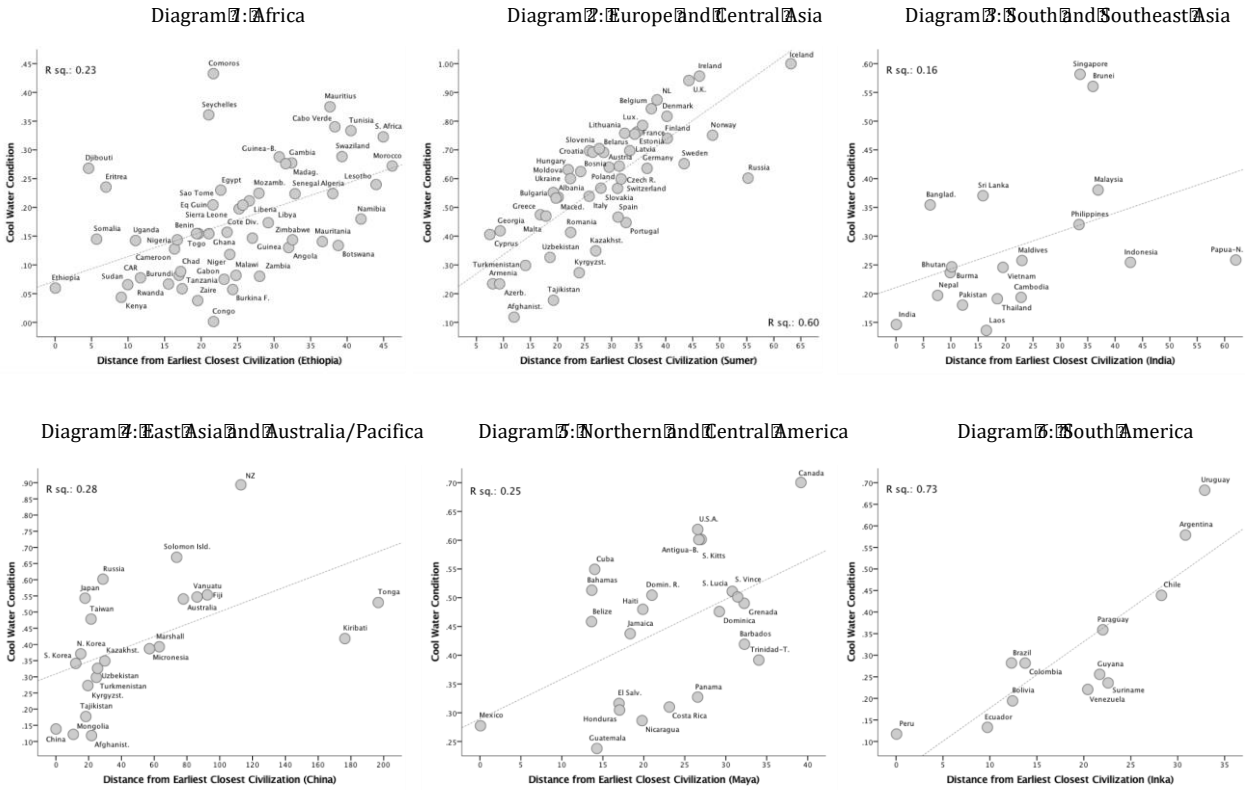
The difference in agrarian pioneer potential explains entirely why the CW-areas *inside* Eurasia—namely Northwestern Europe and Japan—adopted agriculture much earlier than the CW-areas *outside* Eurasia, that is, the CW-parts of North America, Australia and New Zealand. Indeed, as already mentioned, the CW-areas of the New World only adopted intensive forms of agriculture once European settlers introduced it.[271] But differences in agrarian pioneer potential cannot explain why—*within* Eurasia—the CW-areas were by far slower in adopting agriculture than the non-CW areas, despite a similar pioneering potential. Once more, this observation suggests that there is something about the CW-Condition itself that delays the adoption of agriculture and, hence, the step into civilization and toward early developmental achievements, most notably the emergence of cities and states.

The CW-Areas' Migratory Distance

Yet, there is an alternative explanation. It relates to the fact that the CW-Condition is confounded with another significant feature: the country-territories' migratory distance from the supposed human origin in East Africa. In recognition of this confoundation, it seems plausible that the delayed adoption of agriculture in CW-areas has little to do with the CW-Condition itself but only reflects the fact that the CW-areas were populated by humans much later than other areas of the globe. A later arrival of humans in CW-areas is indeed a basic matter of fact because these areas are far more remotely located from the origin of our species in Africa than is true for the early sites of human settlement in the non-CW areas of the pristine Eurasian civilization belt.[272] It is actually surprising how little attention has been paid to the huge geo-temporal differences in human settlement—which is essential for the time at which the clock of marching towards civilization started in an area.[273]

Late arrival is a key issue if we consider that agriculture was invented independently in various places.[274] To understand this point, it is important to remember that the first humans arrived in *all* populated areas of the world originally as hunter-gatherers, not as farmers. Consequently, for an independent invention of agriculture, hunter-gatherers needed to accumulate knowledge about the respective environment's agrarian potential. However, accumulating knowledge takes many generations, so the clock that started the process simply began to tick later where hunter-gatherers arrived later. And these differences in starting time points are large: The peopling of the world

Figure 5-4. Distances from Earliest Closest Civilizations and the CW-Condition



Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

lasted from some 80,000 years ago, when the first successful exodus from Africa began, until the settlement of New Zealand by the Maoris some 1,500 years ago.[275] Thus, the range of variation in when the clock of development started ticking in an area spans tens of thousands of years. Inevitably, the much newer human populations in CW-areas were much less likely to invent agriculture early than those in earlier populated non-CW areas with similar agrarian suitability.

Alternatively, we may consider the adoption of agriculture not as a matter of independent local invention but as a matter of spatial diffusion from the centers of original invention.[276] But even then, we come to a similar conclusion: The CW-areas were likely to turn out as late adopters of agriculture. The reason is straightforward: Migratory distance from the origin of humanity in East Africa is a reliable proxy for diffusion distance from the origin of agriculture in the Middle East and other original centers of agriculture on the pathway of humanity's way out of Africa, known as the "beachcomber route."[277] It is indeed a matter of fact that the CW-areas are remote from the earliest centers of agriculture.

Interestingly, this is equally true for both the Old and the New World. In the Old World, the earliest centers of agriculture are the Middle East, Northern India and Southern China. The CW-areas in Northwestern Europe, Japan and the very South of Africa are geographically remote from these centers. Hence, the concentric outward diffusion of agriculture from its initial centers towards the CW-areas in the periphery hit these regions late. In the Americas, the earliest centers of

agriculture are located in Mexico and Peru. So again, the CW-areas in the very South and North of the Americas are remote from the earliest centers of agriculture. As concerns the CW-areas of Southeast Australia and New Zealand, no early centers of agriculture were in the vicinity. The regional diagrams in Figure 5-4 document these observations.[278]

The lower diagram in Figure 5-3 shows how much later the CW-areas inside and outside Eurasia adopted agriculture compared to the non-CW areas that were equally suited for agriculture. The diagram also documents how much faster the CW-areas within Eurasia adopted agriculture than those outside Eurasia, reflecting that the CW-areas within Eurasia were territorially connected to the earliest centers of agriculture, albeit at a considerable distance. This evidence also documents that the CW-areas entered civilization later, which implies a correspondingly later emergence of urban settlements and organized statehood.

To further illuminate these issues, SOM-Figure 5-3 shows how closely the country-territories' CW-Condition associates with their migratory distance from the human origin in East Africa. Within Eurasia, smaller-vs-larger migratory distance accounts for sixty-nine percent of the gradual absence-vs-presence in the CW-Condition, with locations in larger distance from East Africa tending to harbor a stronger CW-Condition.

Beyond Eurasia, the relationship is slightly negative, but not significant. The latter reflects the North-South path of human migration into the Americas. Since the first humans entered the Americas across the Bering Strait in the North and moved south toward the equator, the CW-Condition initially became weaker with increasing migratory distance in the Americas. But then, further southward from the equator (i.e., further south of Ecuador's latitudinal range), the CW-Condition becomes stronger again as the migration distance increases. In the end, the two adversary effects—i.e., a weakening CW-Condition on the American North-South migratory path down to Ecuador versus a strengthening CW-Condition further south from Ecuador onward—cancel each other out. Overall, though, it is clear that the CW-areas of the globe are generally located in larger migratory distance from the human origin than the non-CW areas, which also implies a large diffusion distance from the earliest centers of agriculture on a given continent.

If the CW-area's later adoption of agriculture is *only* due to their later conquest by human hunter-gatherers, the already mentioned anomaly of the Americas is a counterfactual. In apparent contrast to Eurasia, the CW-areas in America's North were settled *before* the non-CW areas further South. Consequently, in the Americas the starting shot for the race towards agrarian civilization was fired first in the Northern CW-areas. Hence, if the CW-areas' consistently late adoption of agriculture was *merely* due to their later human conquest, then in the Americas agriculture should have been first invented somewhere around British Colombia, Washington State and Oregon on the North Pacific West coast. Instead, the earliest centers of intensive agriculture in the Americas turned out to be Mexico and Peru. This is a striking counterfactual to the idea that the timing of human arrival *alone* accounts for the timing of the Neolithic Revolution in agriculturally suited territories. The strikingness of this counterfactual nourishes our suspicion that there is something about the CW-areas in and by themselves that hampers an independent invention of agriculture—despite these areas' suitability for agriculture.

We can subject this suspicion to a more systematic test than just cherry-picking counterfactuals. Specifically, if the delaying effect of the CW-Condition on the adoption of agriculture is merely due to the CW-areas' late human conquest, this delay effect should be *in*visible among agriculturally suited country-territories with the same arrival time of hunter-gatherers. Because the country-territories' migratory distance from East Africa is a reasonable proxy for differences in modern humans' arrival time in the various areas of the world, the CW-Condition should show no more delay effect on the adoption of agriculture among country-territories with a *similar* migratory distance from East Africa—if the delay effect is indeed only due to the later conquest of the CW-areas, and not due to something inherent in the CW-Condition in and by itself.

To see if this is the case, we use regression analyses to explain the earliness of the adoption of agriculture in a country-territory, testing as simultaneous explanations (*a*) the country-territories' CW-Condition, (*b*) their time of settlement (proxied by migratory distance from the human origin), (*c*) their agrarian pioneer potential, and (*d*) whether or not the country-territory belongs to Eurasia, to account for this location's obvious advantage (as evidenced in SOM-Figure 5-1).[279] If the delay effect of the CW-Condition is *merely* due to the CW-areas' late conquest, the CW-Condition itself must turn out to be an insignificant explanation in this regression test.

However, the regression test disconfirms this possibility: Even among countries with the same agrarian pioneer potential and the same migratory distance from the human origin, the CW-Condition still exerts a highly significant delay effect on the adoption of agriculture. In fact, the partial regression plot depicting the CW-Condition's effect on the agrarian transition under these controls is an almost perfect replica of the lower diagram in Figure 5-3, so we do not need to visualize this result here another time. This finding supports a straightforward conclusion: Beyond the CW-areas' generally late conquest, there is something about these areas themselves that hampered an early adoption of agriculture.

In our view, there is only one plausible explanation of this delay effect: Despite its suitability to agriculture, the CW-Condition embodies features that make an independent invention of intensive agriculture unlikely, so that the transition only happens when a wave of agrarian diffusion reaches a CW-area, thus exerting outside pressures for transition that are irresistible.

Exactly what conditions make an independent adoption of agriculture in CW-areas less likely is difficult to demonstrate. The answer to this question is a matter of informed speculation. It could be, for instance, that the CW-Condition is so well suited for sustaining a free foraging lifestyle that there was neither the incentive nor the need to search for a different mode of subsistence. It may also be, as David Landes[280] points out, that the landscaping efforts required to make CW-soils cultivable were so demanding that it simply took more time to get to this point than, for example, in subtropical flood plains.

Indeed, CW-areas are originally densely forested and cover extended swampy regions. It needs large-scale landscaping projects to clear woodlands and drain swamps before one can grow crops and herd animals. This in turn requires technological advancement in iron production to produce axes and other metal tools. Likewise, the moist, heavy and dense soils typical of CW-areas can only be worked with a massive iron plow pulled by draft animals, like horses or oxen—all of which

requires a variety of inventions from the moldboard to the horseshoe to adequately shaped iron blades, apart from domesticating horses and cows.[281] In summary, a combination of (*a*) suitability for free foraging, (*b*) diffusion center distance and (*c*) high technological entry barriers into intensive cultivation methods provides the most plausible explanation of the CW-areas' delayed transition to agriculture and, hence, their late step into civilization and its signature features, in particular urban settlement, proto-industrial capitalism and effective state organization.

The CW-Areas' Challenge-Opportunity Mix

All natural habitats embody a mixture of challenges and opportunities with which human populations must cope to survive and thrive. The CW-Condition embodies a very special challenge-opportunity mixture. The challenge-component lies in the presence of temporarily frosty winters. Winter cold is a mobilizing thermal challenge because it forces people to engage in productive activities to provide food storage, clothing, shelter, housing and heating—in preparation for winter. Accordingly, seasonality with frosty winters requires planning, which not only involves hard work but also incentivizes a long-term orientation towards future investments, making people receptive to ideas such as construction, maintenance, savings, skill building and other assets with delayed gratifications. Accordingly, a study by Hernando Zuleta[282] shows that people in areas with greater seasonality acquire more savings, which echoes evidence demonstrating that populations with more long-term time orientations generate greater prosperity.[283] Also, studies find that temporary winter frost of modest extremity increases soil productivity[284] and work motivation.[285]

Unlike winter cold, summer heat is a thermal challenge of the counterproductive kind, because one cannot escape the heat by working hard. On the contrary, summer heat is a debilitating challenge that significantly discourages any form of strenuous activity.[286] Already in *De L'Esprit des Lois*, the French Enlightenment philosopher Charles de Montesquieu pointed out these obvious productivity effects of temperature.[287] For a long time, historians ridiculed his argument for its apparent simplicity in explaining the "lucky latitude effect"[288]: the well-documented fact that the Industrial-Democratic Double Revolution started only in inhabited areas of large equatorial distance (whether North or South) and that—ever since—prosperity, democracy and other emancipatory outcomes correlate closely with high latitudes.[289] But simplicity does not render an argument untrue. Today, sufficient data substantiates the notion that heat challenge depresses economic productivity and civic activism, while cold challenge motivates it. Massive evidence confirms that heat stress corresponds with lowered worker productivity, safety and health.[290] Likewise, hot temperatures reduce people's helping behavior[291], while increasing human aggression and the readiness to take serious risks for momentary benefit.[292]

The world's climate zones harbor different combinations of thermal productivity incentives and disincentives. Summer heat is most pronounced in desert, savannah, tropical and subtropical climates—all of which prevail in low latitudes, that is, in proximity to the equator. For this reason, these climates lack frosty winters, which means that they are only exposed to the counterproductive

thermal challenge of summer heat, while missing the productive challenge of winter cold altogether.

Apart from low latitudes, summer heat is also pronounced in continental climates, as they prevail in large parts of Russia and Central Asia, especially Kazakhstan and Mongolia. Because continental climates are characterized by an extreme seasonality that combines crushingly cold winters with debilitating summer heat peaks, productive and counterproductive thermal challenges cancel each other out. Interestingly, in terms of the counterproductive-vs-productive incentive balance, the situation in continental climates is similar to temperate Mediterranean climates, where mild winters and mild summers reduce any thermal challenges, both productive and counterproductive. So like in continental climates, in Mediterranean climates too, the thermal incentive balance is neither tilted consistently towards the counterproductive nor to the productive side.

These considerations now highlight in all clarity the uniqueness of the CW-Condition, which represents the only climatic configuration combining temporarily frosty winters with mostly cool summers, thus avoiding the counterproductive challenge of excessive summer heat, while being exposed to the productive challenge of winter cold, albeit at a level of moderation beyond the hindrances of coldness so extreme that it would seasonally interrupt plant growth or freeze waterways to make them unnavigable throughout entire winter periods. Overall, the CW-Condition's temperature pattern is unique in shifting the thermal balance from the counterproductive to the productive side of challenges.

The CW-Effect Respelled

There are good reasons to believe that the connection of the West's emancipatory heritage with the CW-Condition is not coincidental. Indeed, our evidence suggests that there is something about the CW-Condition itself that is conducive to emancipatory civilizational dynamics.

Essence:

> *In a nutshell, the CW-Condition's emancipatory significance lies in the fact that this condition favors decentral forms of water, land and labor management, which infuses multiple autonomies into the social fabric and shapes marriage, fertility, inheritance, household and family patterns and other aspects of organization at the grassroots of society in a more pluralistic, egalitarian and individualistic fashion. A social order evolving from this condition gives rise to all kinds of voluntary associations—including local assemblies, business corporations, artisan crafts, merchant guilds, trade leagues, religious movements*[293]*, monastic orders and many more—all of which are experienced in self-governance and coalition building. Under this decentral-pluralistic order, state formation is a negotiated process leading to a contractual type of state in which elected assemblies check the monarch's executive power in ways that enshrine autonomies, freedoms and rights in constitutional charters. As struggles for the extension of suffrage continue, state activity is directed towards an increasingly indiscriminate pursuit of the common good, aimed at*

> *mass prosperity and universal entitlements. Through this process, ordinary people are more and more liberated from existential constraints on how to shape their lives—which is the definition of human emancipation. Driven by this emancipatory logic, liberating struggles against sexism, racism and ecocide continue to define the civilizational dynamic's pulse, as is evident in the "Me Too," "Black Lives Matter" and "Fridays for Future" movements*.

Our key proposition maintains that local autonomies, which the CW-Condition naturally bestows on people, turn into an accelerator of social progress in the moment societies reach the urban stage of pre-industrial development. This urban stage involves an advanced level of intensive agriculture that produces a food surplus large enough to sustain an increasingly specialized urban workforce, a monetized economy and an organized state harnessing bureaucracies and armies. Launching an industrial revolution is principally possible once this urban stage of pre-industrial development is reached. Strikingly, societies with a pronounced CW-Condition were suspiciously late in reaching the urban stage of pre-industrial development. Northwestern Europe got there in the early 15th century, followed by Japan in the 16th century[294], which is literally millennia after Mesopotamia and Egypt and many centuries after India, China, ancient Greece and the Roman Republic developed urban civilization with well-organized forms of statehood. The CW-areas in the *New* World—including coastal North America, Southeast Australia, Tasmania and New Zealand—only arrived at the pre-industrial stage after settlers from Northwestern Europe populated these regions. Yet, as soon as the CW-areas reached the urban stage of pre-industrial development, they were astoundingly quick in launching the Double Emancipatory Revolution of industrialization and democratization, namely within a 300-years timeframe from roughly 1500 till 1800 CE, which is short on the scale of history. And again, pre-industrial civilizations in the non-CW regions of the Middle East, India, China and Mesoamerica, which came into being millennia and centuries before pre-industrial civilization took hold in the world's CW-areas, proved unable to use their long temporal head start to initiate the double industrial-democratic take-off.[295]

We conclude from this obvious contrast that the presence of personal, local, corporate and sectoral autonomies under the CW-Condition is quintessential for the pioneering role of the CW-areas in the double industrial-democratic take-off. By the same token, the lack of these autonomies among all agrarian empires without the CW-Condition explains the early civilizations' perennial entrapment in the pre-industrial/pre-democratic stage. Hence, the CW-Condition provides an explanation of the famous "Needham Puzzle": China and the other early civilizations' enduring incapacity to escape the Malthusian trap of generating population growth without income growth and rights extensions.[296]

China, India and other nations in non-CW areas are leaving behind this perennial entrapment only since scientific breakthroughs in modern cultivation methods enabled a green revolution in these and other parts of the Global South. The green revolution allows the benefitting countries to yield agrarian surpluses large enough to feed urban workforces available as cheap laborers for the outsourced production facilities ("sweatshops") of more advanced economies. Able to charge modest income and consumer taxes on their emerging salaried workforces, postcolonial states now

can accumulate government budgets that—if under the control of committed elites instead of corrupt cronies—are invested into newly built educational systems and a fertility-to-schooling shift in women's reproductive investment. The resulting upgrading of the workforce's skill level today enables China, India and other areas of the Global South to climb the knowledge ladder in their economy's production profile and to develop high-end products by themselves, while handing down the workbench of low-end production to still poorer countries. None of this would have happened, however, if the CW-areas had not made the initial breakthrough into the industrial-democratic era.

Existential Autonomies

At the mature stage of pre-industrial development, societies perform agriculture at a level of intensity that yields enough surplus to feed cities with a progressively specialized workforce, urban markets, cash flows and state-managed public infrastructure, like roads, railroads, sewage systems, water pipes, electricity grids and more. From this stage onward, an industrial revolution can start but only if a society's fabric incorporates multiple pockets of autonomy, including personal, local, corporate and sectoral autonomies. Such autonomies are essential to release on a mass scale the human creativity, economic initiative and intellectual energy that feeds the experimentation, exploration, discoveries, inventions and innovations needed to launch an industrial take-off. All of the ancient civilizations reached the mature stage of pre-industrial development early, yet they also all lacked the CW-Condition and the multiple autonomies rooted in it. The lack of naturally rooted autonomies turned ancient civilizations time and again into innovation traps. Their very despotic nature disabled them from launching an industrial revolution and proved to be a dead end in social evolution. This became obvious upon the ancient civilization's first confrontation with the rising West in about 1500 CE: After millennia of recurring resurgence, the ancient empires have gone extinct at breathtaking speed upon confrontation with the West's rising colonial dominance over the entire globe.[297]

The fate of the agrarian empires as well as that of all other oppressive systems in history reveals that coercive labor regimes, and coercion more generally speaking, are in a profound sense maladaptive among a species consisting of intelligent individuals of whom each is equipped with agency. Coercive systems suffocate grassroots economic initiative and bottom-up civic activism, thus locking in and blocking the talent pool of the bulk of the population. Unable to capitalize on the population's talent pool, coercive systems waste developmental potential and eliminate self-transformative systemic learning capacity. And because coercive systems invest all their energy into securing the social hierarchy against mass rebellion, they lack any mechanism of preference aggregation that would allow them to tailor public policies to people's wellbeing and an indiscriminate provision of the common good. No question, coercive orders recur and can persist for some time, but their maladaptiveness dooms them to fail whenever they compete with contractual orders that protect autonomies and, thus, allow mass-level human intelligence to unfold freely.

This discussion aside, we note the following: As much as the CW-Condition's embedded autonomies are favorable to catapult a society quickly from the pre-industrial to the industrial stage, these same autonomies disfavor an early arrival at the mature pre-industrial stage. The reason for this irony in history is that the CW-induced autonomies provide a source of resistance, visible in the liberal revolutions of the 16th till 19th centuries, which effectively blocked the fast track to erecting coercive states. This fast track of coercive state building—tried and tested repeatedly in the pristine civilizations of the Middle East, India and China—originated in an agriculture based on centralized and strictly hierarchical management of water, land and labor. The CW-areas' decentral management of water, land and labor saved the populations evolving under this condition from coercive agrarian empires and their captivity in petrified social structures.

As Karl Wittfogel noted long ago, an agrarian society whose cultivation system is based on centralized irrigation conscribes masses of laborers to construction and maintenance work.[298] The conscription requires the concentration of authority, which means (*a*) a fast track towards establishing a state and (*b*) the centering of this state on coercive armies and cleptocratic bureaucracies whose main purpose is tribute collection and labor enforcement.[299] For some time, Wittfogel's irrigation thesis has fallen into disfavor, but recent evidence presented by Jeanette Bentzen and her co-authors, as well as findings by Johannes C. Buggle demonstrate that the connection between irrigation and despotism is real throughout history and to the present day.[300]

On the opposite end, CW-climates embody a most vitally important opportunity endowment: easy, equal and permanent access to freshwater sources for every individual. Indeed, continuous precipitation over the seasons in CW-climates guarantees the ubiquity and permance in access to freshwater sources, be it in the form of springs, brooks, rivers, ponds, lakes, and rainwater itself. The availability of freshwater is further enhanced by the fact that less water is lost to evaporation because CW-climates are, by definition, cold. Moreover, cool freshwater contains fewer microbes and is less infectious than freshwater in hot climates. Such ubiquitous and safe water access means a most vital form of existential autonomy for individuals that we pne may call "hydration autonomy." A key consequence of hydration autonomy is that it effectively eliminates an otherwise essential source of elite power over land and people: centralized control over water supplies.[301] Such centralization of water supplies, and its derivative centralization of land and labor management, is simply impossible in CW-climates.

This has further consequences. When freshwater is everywhere all the time, the value of land—whether as a hunting or farming ground—is not locally fixed but diffuse. In other words, land is valuable almost everywhere in CW-climates. Land's diffuse value diminishes another easy means of exercising power over common people: centralized control over locally circumscribed land of value. CW-areas, therefore, represent open-access environments where people can roam and settle at almost any place and still pursue the same type of subsistence activities, be it hunting, fishing or farming. Next to hydration autonomy, the CW-climate endows people with roaming and settlement autonomy. The resulting mobility is an empowering element that gives people exit options in case they wish to escape a local calamity, like a landlord trying to overtax his farmers. As Albert O. Hirschman explains, when people have the option to react to a grievance with "exit" or "voice,"

they do not have to bow down and to resort to "loyalty"—which is a crucial element in diminishing elite-mass power distances.

Besides hydration and settlement autonomy, the CW-Condition bestows on individuals' reproductive autonomy. This proposition requires a bit of explanation. The key point of departure here is that the combination of temporarily frosty winters with cool summers reduces the prevalence of infectious diseases whose pathogens do not need an animal host.[302] Using data collected by Damian Murray and Marc Schaller, SOM-Figure 5-4 shows the effect of the CW-Condition on the historic prevalence of diseases. Before controlling per capita income, countries' CW-Condition explains sixty-two percent of their disease load, to the effect that a more pronounced CW-Condition means a lower pathogen burden.[303] After controlling per capita income, the explained variance amounts to a still significant forty-seven percent.[304] It is important to note that these data are from times before the Industrial Revolution. Hence, the disease-diminishing CW-effect does not reflect the fact that the CW-areas industrialized early and had fewer diseases because of the invention of modern medicine and better hygiene that came with industrialization. Instead, the disease-diminishing CW-effect is *naturally* anchored in the CW-Condition's geo-climatic features.

Compared to foraging, agriculture is more labor-intense and as cultivation methods mature, labor intensity usually increases further. Still, the labor demands of cultivation systems differ by climate, which is important with respect to fertility pressures: When the labor demands of a given cultivation method are high, fertility pressures on women are heavier; if the labor demands are low, fertility pressures on women are lighter.[305] The key point in this context is that the cultivation methods favored by the CW-Condition imply lower labor demands. This is most obvious in comparison to irrigation-managed rice cultivation and (sub-)tropical monocultures, such as sugar cane, tobacco, cotton and the like. CW-areas, by contrast, are suitable to growing grains, especially wheat, rye and barley. Growing cereals, such as these, is less labor-intense than hierarchically coordinated cultivation methods. Indeed, a nuclear farming household on CW-land consisting of a married couple, their offspring and a maiden or servant in the possession of an iron plow and a horse or ox can work on its own a rather large area to grow rye, wheat or barley—free from the need of extended kinship support, child labor, far-ranging collective assistance and hierarchical labor coordination.

Another source of lower labor demands under the CW-Condition lies in the CW-areas' lush pastures, which offer excellent conditions for livestock farming. And livestock farming is even less labor-demanding than cereal cultivation. Thus, CW-areas are suitable to a combined crop-cattle agriculture. This has manifold advantages. For one, livestock provides the draft animals needed to pull the heavy iron plow—a tool required for growing cereals on the CW-areas' dense, thick and moist soils. For these reasons, the raising of cattle enhances the labor autonomy of family farms. It also varies the diet, adding more meat and dairy products to ordinary people's menu, which means a gain in calories, protein and calcium. These wider nutritional options explain the high lactose tolerance[306] among populations in CW-areas and might have contributed to better health conditions to which the evidence from medieval skeleton remains hints.[307]

Again, the point we wish to emphasize is that agrarian societies emerged later under the CW-Condition but harbored more autonomies than under the absence of this condition. Michael Mitterauer portrays Northwestern Europe's medieval "hide system" as the case in point.[308] In this system, the family farm operated as an autonomous production unit in cultivating its own slot of land, the "hide." Farmers voluntarily joined village associations that served to self-administer their common affairs and to represent their interests vis-à-vis the local landlord.

John P. Powelson describes this particular form of social organization as "contractual feudalism."[309] According to Powelson, contractual feudalism contrasts starkly with "coercive feudalism," which prevailed in all agrarian civilizations that lack the CW-Condition. The main point about contractual feudalism is that it establishes a more reciprocal lord-peasant relationship. Reciprocity involves mutual obligations that also commit the lord, as well as mutual entitlements that also benefit the farmers. Beyond their duty to provide a certain amount of tribute and service, peasants had rights to their landholdings and on what they produced. It was generally acknowledged that farm communities manage their own affairs and that their village associations represent and speak for their interests. It was understood that farmers had the right to resist lords who did not provide protection and justice and who tried to take more tribute than they were entitled to. To a certain extent, farmers had exit options and could pledge their loyalty to a different local lord. After reclaiming new land through forest clearing and swamp draining projects, landlords actually recruited farmers by offering them written privileges and rights.[310]

At times, lords competed for farmers and tried to attract them by offering exceptional entitlements. These tendencies were reinforced in times of sudden workforce drops that made land abundant relative to labor. The land-to-labor ratio was frequently tilted towards labor becoming scarce relative to land by major forest clearing, swamp drainage and other land reclamation projects. More dramatically, labor dropped suddenly scarce relative to land because of sharp decimations of the population in the wake of wars and epidemics, of which the Black Death in 1348 CE was the most dramatic, eliminating up to half of the population in some regions.[311]

Admittedly, lords continuously contested the rights of Northwestern Europe's farmers, so the farmers had to struggle to defend their autonomies. Even though these struggles were by no means always successful, the point is that the farmers never gave up struggling. We believe that the original autonomies embodied in the CW-Condition predisposed farmers to continuously claim rights in defense of their autonomies.[312] In support of this thesis, SOM-Figure 5-5[313] shows that farmers abolished serfdom and thus successfully protected their autonomies where the CW-Condition was more pronounced. Across Europe, the timing of the official abolition of serfdom by "decrees of emancipation" follows a clear CW-gradient, with earlier abolitions occurring where the CW-Condition is more pronounced (i.e., earlier emancipation in the North and West than in the South and East).

In this context, it is interesting to note that Marc Bloch, William McNeill, Fernand Braudel, Eric Jones and John Powelson attribute some of the contractual features of Northwestern Europe's feudal organization also to Japan.[314] In the words of Samuel Finer:

> "From the standpoint of this *History* the Tokugawa regime is is significant in four ways. First, its feudalism, similar though not identical to Europe's, is true feudalism in a sense that the Muslim *iqua*, for instance, is not; and this in complete isolation from any European contact […]. Finally […] the way the social structure and the economy developed inside the shell of the shogunal political institutions […] prepared the way […] for Japan's embracing the model of the modern European nation-state in the Meiji Restauration of 1868."[315]

David Landes, too, sees parallels between Northwestern Europe and Japan, pointing out a multipolar instead of monocentric power system, the existence of local, sectoral and corporate autonomies, such as independent artisan crafts and merchant guilds.[316] These resemblances prompt Landes to speculate that, if the Industrial Revolution had not happened in Northwestern Europe, Japan was the next likely pioneer—much more so than China, India and the Middle East's agrarian empires, despite Japan's much later arrival at the mature pre-industrial stage of civilization.

To understand these limited, yet significant, similarities between Northwestern Europe and Japan's feudal histories, it is crucial to recognize that Japan was the only mature agrarian civilization of non-Western origin whose CW-Condition comes close to that of Northwestern Europe.

Reduced Fertility Pressures

Partly as a consequence of fewer diseases, child mortalities are naturally lower in CW-areas. Again, this seems to have been the case already before the Industrial Revolution brought modern hygiene, medicine and health services.[317] Indeed, estimates suggest that pre-industrial child mortality rates in Canada, Norway, Germany and Japan were roughly 340 infants per 1,000 born, not reaching the age of five. In sub-Saharan Africa, South Asia and Central America, by contrast, the respective number is 520 children per 1,000 births not reaching the age of five. Using estimates by the non-profit organization "Gapminder"[318], SOM-Figure 5-6 simulates the likely relationship between the CW-Condition and child mortalities in 1800 CE. Once more, the mortality-reducing CW-effect is not rendered insignificant by per capita incomes.

Interestingly, the mortality-reducing CW-effect is partly but not fully mediated by the CW-Condition's disease-diminishing effect. Of course, natural disease rarity has, in and by itself, a mortality-reducing effect. But even under control of this fact, the CW-Condition still retains a mortality-reducing effect.[319]

One reason why this could be the case becomes apparent when we consider that—like mortality—fertility might also be *naturally* lower under the CW-Condition. Indeed, as SOM-Figure 5-7 demonstrates, estimates from "Gapminder" suggest that family households generally produced fewer children under the CW-Condition, with birth rates at roughly four children per woman in Japan, Switzerland, Iceland and Scandinavia, in contrast to seven to eight births per woman in most of sub-Saharan Africa, the Middle East and South Asia. If so, the CW-Condition incentivizes a so called "*K*"- instead of "*r*"-bias in parental investment.

According to the sociobiologist J. P. Rushton[320], "*r*"-strategies denote the maximization of the number of offspring and involve less parental care about individual offspring ("*r*" for growth ***r***ate). "*K*"-strategies mean the exact opposite: fewer offspring and more parental care about each individual ("*K*" for carrying capacity – "***K***apazitätsgrenze" in German). Significantly, sociobiologists believe that insecure environments (characterized by recurrent droughts, deadening heat peaks, monsoon-like floods, tropical storms and other calamities) incentivize "*r*"-strategies, whereas enduringly safe environments with predictably sufficient water and food supplies incentivize "*K*"-strategies. Evidence from primates, like the chimpanzee-bonobo comparison, supports this argument: Bonobos are more caring than chimpanzees and live in a special ecological niche where water and food shortages rarely occur.[321] This pattern sheds light on CW-climates because their lower disease prevalence and more reliable supplies of freshwater make them more secure in two critical aspects of human livability: health and hydration.

Another guiding principle behind "*r*"- and "*K*"-strategies is a species' brain power. Animal species whose nervous systems possess less information processing capacity than the brains of mammals and primates produce many offspring but provide no parental care. Think of insects, fish and reptiles—the stereotypical examples of the "*r*"-strategy. Brained mammals and primates, by contrast, do the opposite in producing fewer offspring that receive parental care to varying degrees (i.e., the "*K*"-strategy). Among mammals themselves, the various species pursue the "*K*"-strategy even more clearly, the more developed their brain power is. The reason why the average intelligence of the individual members of a species shifts the reproduction strategy towards more parental care for fewer offspring is quite obvious: A species' possibility to make evolutionary progress through learning depends directly on its individual members' average brain power. Evolutionary selection has operated towards species with greater and continuously growing brain power because intelligence shifts the field on which natural selection is working, from genetics to culture, thus accelerating the pace of evolutionary progress. As the species with the highest intelligence on our planet, humans invest the longest time into educating, socializing and acculturing their offspring, which consequently grow up with the longest lifespan of parental dependence among all known species. The reproductive strategy of humans is, hence, tilted the most towards the "*K*"-side on the "*r*"-vs-"*K*" polarity.

Nevertheless, the "*r*"-vs-"*K*" tradeoff is also visible among human populations, albeit within a narrow margin. The clearest indication of this trade-off is the strong inverse correlation between the female fertility rate of populations and their children's schooling years. Since statistical censuses exist, populations with high birth rates exhibit short education periods, whereas populations with low birth rates show have long education periods. The "many births/short education" constellation indicates a reproductive strategy closer to the "*r*"-side, while the opposite constellation of "few births/long education" reflects a reproductive strategy closer to the "*K*"-side.

The dominance of either strategy is a functional response to selection biases inherent in the "threat-vs-promise" mixture in a population's existential environment. Threatening environments in which existence is a struggle to survive bias reproductive behavior to the "*r*"-side, whereas permissive environments in which life is an opportunity to thrive shift reproductive behavior to

the "*K*"-side. But even though "*r*"-biased and "*K*"-biased strategies are equally adaptive to their respective environments, "*K*"-biased strategies are superior in bringing an intelligent species' evolutionary potential more fully to fruition. The reason is threefold:

Insight:

> *Producing fewer children who receive more skill training (1) mobilizes individuals' intellectual potential more fully and broadly, (**2**) utilizes a population's talent pool in a more encompassing manner and (**3**) invests more human capital of better quality into societies' overall functioning and progression. Hence, the mass-scale mobilization of human cognition involved in "K"-biased reproduction elevates populations' cultural learning capacity: that is, the ability to expand and improve the culturally transmitted stock of shared knowledge. Because of this evolutionary advantage of "K"- over "r"-biased strategies among brained species, selective pressures among human populations generally operate in favor of further "r"-to-"K" ("births"-to-"brains") shifts. These "r"-to-"K" shifts enhance the value of human individuals, which is a crucial reason why familistic orientations recede on behalf of more individualistic orientations in most of the world, especially where the demographic trend towards lower fertility and more education is most advanced (Chapter 12 evidences these points in greater detail).*[322]

Let us get back to pre-industrial fertility rates and the supposed influence of the CW-Condition. The question of whether every second or every third child dies before reaching adulthood creates different fertility pressures. When infant mortality is reduced from more than half of the born children to about a third (as it seemed to be the case in CW-areas), pressures to marry early and to produce a maximum number of children are lighter. This left young adults with more choices in family and life planning, as they could choose to marry later than usual under lower fertility pressure. In societies, especially those with high fertility rates, early marriage has been common. Early marriage can increase the length of the reproductive period, resulting in more children being born. Factors such as high child mortality also contributed to early marriage historically. Postponed biological reproduction saves time for profitable economic investments, including investments with delayed gratification, most notably acquiring savings and skills. It is well documented that, already at Medieval times, women in Northwestern Europe had fewer children and played a more important economic role in their households and communities. SOM-Figure 5-7 simulates the probable impact of the CW-Condition on the number of children born per woman in 1800 CE.[323] And once more, for all countries—except England and Belgium—this is before the Industrial Revolution. Hence, the CW-effect is likely *natural* and not attributable to the Industrial Revolution.

To believe that the CW-Condition embodies incentives for more long-term life planning is plausible from a related angle. If child mortality is naturally lower in an area, maternal mortality is most likely lower for the same reason. In case this is a correct assumption, reduced child mortality within CW-climates can be taken as an indication of a higher life expectancy in general. As already documented, Northwestern Europe supposedly had a moderately lower infant mortality rate than other regions of the world already before the industrial era. Skeletal evidence also

suggests that, already at Medieval times, Northwestern Europeans were taller and had healthier bones than people in other agrarian areas of Eurasia. This finding supports the assumption that the CW-Condition was conducive to higher life expectancies. Quite clearly, people who face a longer lifetime horizon are more open to long-term planning. They are likelier to invest effort in delayed gratification goals, such as savings and skills.[324] SOM-Figure 5-8 provides supportive evidence for this claim, illustrating that the CW-Condition is conducive to future orientations.

An additional reason for better health under the CW-Condition is be lactose tolerance. Using historic data from Justin Cook[325], we see that the CW-Condition is associated with higher lactose tolerance in the population.[326] Presumably, this link exists because the CW-harboring spaces exist in higher latitudes with lower sunlight exposure, thus causing vitamin D_3 deficiencies. Milk consumption compensates for these deficiencies because of milk's high calcium content. Milk is also healthy because of its protein share. However, in order to digest milk, one needs to be lactose-tolerant. Thus, the CW-Condition embodies selective pressures to make lactose tolerance prevalent in a population's gene pool. By adding a diverse set of dairy products to the diet—like milk, cheese, curd, yogurt and butter—lactose tolerance widens people's nutritional options. Further strengthening this tendency, lactose tolerance coincides with animal husbandry, which in turn allows for higher meat consumption. This meant another addition of high-protein and calorie-rich food to the diet, which made people healthier—at least at the generally low levels of meat consumption typical of pre-industrial agrarian societies.[327]

Another source of reduced fertility pressures under the CW-Condition is a lower labor intensity per unit of land. The cereals typically grown in the rainfed CW-areas—like wheat, rye and barley—require fewer laborers per land plot than tropical crops, such as rice, sugar cane or cotton. Moreover, CW-based agriculture usually mixes cereal cultivation with animal husbandry, for the above reasons. Animal husbandry is even less labor-intense per unit of land in use than is wheat, rye or barley cultivation. With less demand for labor, people can afford lower fertility to sustain the workforce.[328]

Reduced fertility in turn keeps the supply of cheap mass labor short—an effect that has been enhanced through the population losses during the Black Death in 1348 CE. If, under such circumstances, urban producers need more labor input to increase commodity output, they must satisfy their demands through labor-saving production technologies, which incentivizes technological innovation—a major trigger of the Industrial Revolution.[329] As Douglas North points out, the ancient empires solved labor shortages through high fertility rates and extensive slavery, which reduced the need for technological innovations that spare labor. An industrial take-off, thus, became more likely when CW-areas reached the pre-industrial stage of development than when non-CW areas reached that stage, which they did a long time ahead of the globe's CW-areas—but without ever launching the Industrial Revolution.[330]

Looking again at SOM-Figure 5-7, we see that the average number of children born per woman in 1800 CE varies from a high of eight children in places like Azerbaijan, Afghanistan, India and Somalia to a low of four children in Denmark, Sweden and Japan.[331] The CW-Condition explains a significant twenty-six percent share of this variation across 170 countries. And again, the

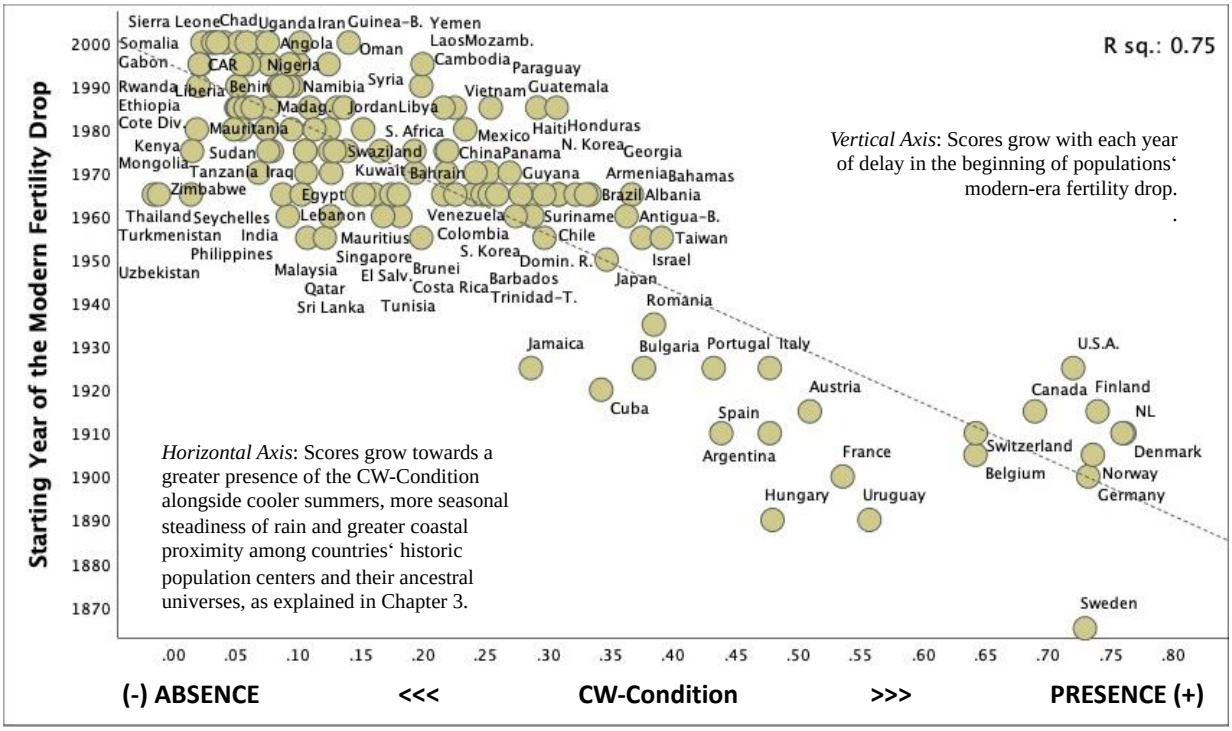
fertility-limiting effect of the CW-Condition is not fully captured by either its lower disease prevalence or lower child mortality.[332] Accordingly, the CW-Condition emits both direct and indirect incentives in favor of lower fertility.

Short-vs-Long Life Histories

The difference between "*r*"- and "*K*"-strategies maps in perfect fashion on another difference, which is known in evolutionary psychology as the distinction between "short-vs-long" life histories. Michael Woodley[333] describes "short" life histories as the combination of higher mortalities and fertilities and "long" life histories as the opposite, namely lower mortalities and fertilities. Like "*r*"- and "*K*"-strategies, short and long life histories are related to the environment, and apparently in the same way: Short life histories dominate in *threatening* environments where life is mostly a game about avoiding the *danger* of sudden lethal *losses*. By contrast, long life histories prevail in *permissive* environments in which life is rather a game about capitalizing on an *opportunity* to make lasting *gains*. Here we find a clear connection to the threat-vs-promise continuum depicted in the human impairment-vs-empowerment model of Figures 4-1a and 4-1b. In line with our reasoning, SOM-Figure 5-9 documents that, already at the eve of the industrial age in 1800 CE, the gradual absence-vs-presence of the CW-Condition largely explains the prevalence of short-vs-long life histories, with a stronger presence of the CW-Condition coinciding with longer rather than shorter life histories. Since this is for all countries, except England and Belgium, a time before the Industrial Revolution when societies were still predominantly agrarian, it is reasonable to assume that this relationship reaches much farther back, all the way to the dawn of the agrarian era.

According to Michael Minkov and Michael H. Bond[334], short and long life histories shape human psychology by implanting into people's mindsets different time orientations. With short life histories, people are driven by a "here and now" orientation that looks for immediate benefit and does not shy away from serious risk, if there is a chance to grab an advantage for the moment. With long life histories, people avoid such short-term oriented risk and instead invest effort into long-term purposes with delayed gratification, of which learning and education are once more the most notable examples.[335] Long-term life orientations widen people's "mental bandwidth," equipping their minds with a *transcendent view* that abstracts from the "here and now" and expands the mindset's horizon to include spatially more remote places and temporally more distant times. This mental expansion works against hostile and in favor of benevolent behavior, including business and government practices. For instance, instead of trying to grab every short-term benefit at the expense of their customers, companies act customer-friendly and resist the temptation to exploit a momentary advantage on behalf of building a lasting reputation in their business. Governments, for their part, are less corrupt and act under a broader common good orientation.

Figure 5-5. The CW-Condition and the Beginning of the Demographic Transformation



Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

Supporting these claims, SOM-Figure 5-10 uses a recently developed "elite quality" index, showing that countries' managers, officers and politicians exhibit a stronger common good commitment in that they treat their consumers, clients, employees, citizens and voters more impartially benevolent where the CW-Condition is more strongly pronounced. Coinciding with this evidence, SOM-Figure 5-11 illustrates a strongly depressive effect of the CW-Condition on human fatalities in traffic and at work, which indeed suggests that the CW-Condition disfavors reckless behavior and favors benevolent human interaction instead.

Insight:

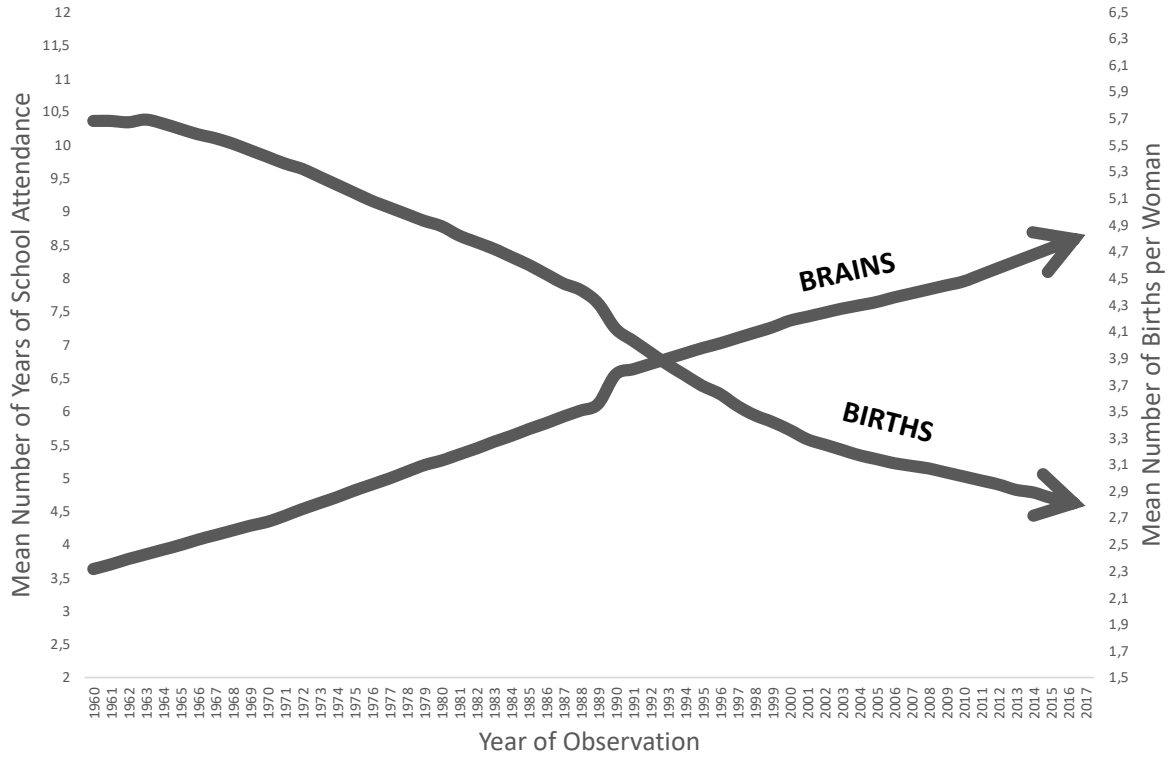
Factoring in marriage patterns and family structures, the upper-left diagram in Figure 3-3 in Chapter 3 summarizes various of the previously mentioned variables into a historic measure of lower-vs-higher female reproductive autonomy, with lower autonomy (i.e., heavier fertility pressures) evident in higher disease loads, higher child mortality, higher female fertility and the prevalence of endogamous marriages and extended families, in contrast to higher female reproductive autonomy (i.e., lighter fertility pressures) under lower disease loads, lower child mortalities, lower female fertilities and exogamous marriages and nuclear families. This bundle of variables can also be understood as reflecting tight-vs-light patriarchal control over women's sexuality, such that tight patriarchal control coincides with heavy fertility pressures and light patriarchal control with low fertility

> *pressures on women. The evidence is clear that a stronger CW-Condition operates in favor of weak fertility pressures on women and lighter patriarchal control over their sexuality. In other words, women are less urgently forced into early marriage and into early childbearing under tight control of older husbands and their extended patrilineal families, if the CW-Condition is strong—in contrast to what was the rule in all agrarian empires in history, especially those with labor-intense cultivation methods, most notably centrally coordinated irrigation. Consequently, heavy-vs-light fertility pressures, tight-vs-light patriarchal control over women's sexuality, quantity-vs-quality oriented reproductive investments, high-vs-low demands for hierarchically coordinated water, land and labor management and coercive-vs-contractual state institutions all are facets of the same phenomenon: impairing-vs-empowering human conditions (see Figures 4-1a and 4-1b). Moreover, as we have seen in Figures 3-3a to 3-3c, all these features originate in the same geo-climatic root: the gradual absence-vs-presence of the CW-Condition.*

For the small number of states in the world that were sovereign in 1789 (the year of the French Revolution), SOM-Figure 5-12 illustrates the significant positive effect of the CW-Condition on coercive-vs-contractual state institutions, with a stronger CW-Condition operating in favor of contractual state orders on an exponential slope. In the absence of universal suffrage, we cannot speak about democracy yet at this time. Still, contractual states with their representative institutions (i.e., assemblies entrusted with legislative powers and elected by part of the adult population) embodied the potential to evolve naturally into the full-fledged democracies of today, by the stepwise extension of the franchise into the entire adult population in parallel to the stipulation of universal civic obligations, including income taxation, school attendance and military service.

All of this closely relates to another concept known in development economics as the "demographic transformation," which describes the change in reproductive investments linked with the Industrial Revolution: a transition from higher to lower fertilities, which is predated by a decline in child mortalities and closely accompanied by an expansion of education.[336] As seen in SOM-Figure 5-7, CW-areas exhibited lower fertility in pre-industrial times. But then they also entered the industrial-era drop to even lower fertilities at an earlier time and at a more steeply slope than non-CW areas. Figure 5-5 presents the evidence. The Protestant countries of Northwestern Europe (led by Sweden, Germany, the Netherlands and France) pioneered the industrial-era fertility drop during the late 19th century, followed by the Catholic countries in Southern and Eastern Europe and Latin America in the early 20th century. The rest of the world (led by Japan, Israel and Taiwan) entered the fertility drop only in the second half of the 20th century, with sub-Saharan Africa trailing the trend. This demographic transformation operates on a massively important trade-off between people's lifetime investments into biological reproduction, on the one hand, and into

Figure 5-6a. The Global Transition from Female Fertility to School Attendance (**WORLD**)

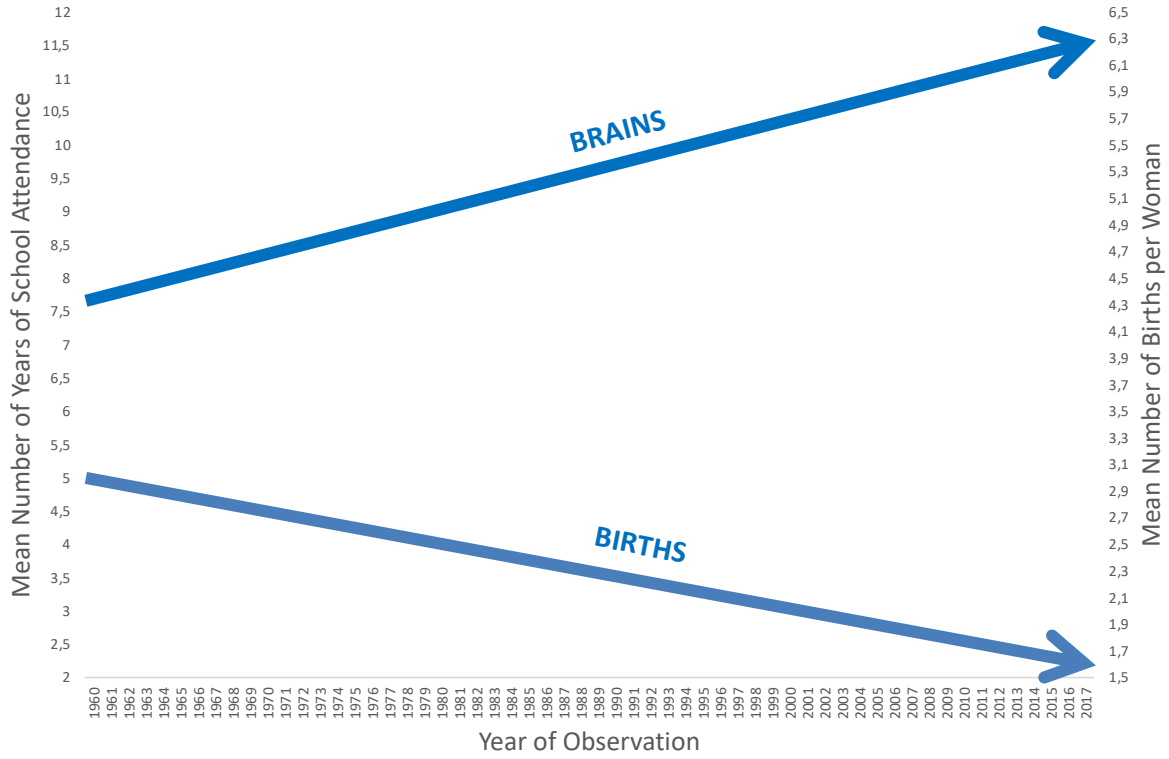


Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

human capital, on the other. Indeed, as mentioned, the cross-country correlation between national populations' total years of school attendance and the mean number of births per woman is strongly negative since the first available measurement in 1900 and remains consistently negative in every decade all the way until today.[337]

Reflecting the strong negative correlation between female fertility and school attendance, a time-pooled exploratory factor analysis[338] exhibits that female fertility and school attendance load on opposite ends of a single bipolar factor.[339] This single factor explains ninety-four percent of the joint variation in female fertility and school attendance and provides a perfect representation of the trade-off between quantitative-vs-qualitative reproductive investments. On the negative end, high female fertility and short school attendance represent the *quantity breeding* side of reproductive investments (indicating "*r*"-strategies and short life histories). On the positive end, low female fertility and long school attendance represent the *quality building* side of reproductive investments (representing "*K*"-strategies and long life histories). Reflecting the world's massive demographic transformation from the quantity-breeding to the quality-building end in reproductive investments (i.e., the "births"-to-"brains" transition), the global average on this continuum has steadily increased from a score of -.74 in 1960 to +.59 in 2017. Figures 5-6a to 5-6d document this quantity-to-quality shift in humanity's reproduction.

Figure 5-6b. The Global Transition from Female Fertility to School Attendance (**WEST)**

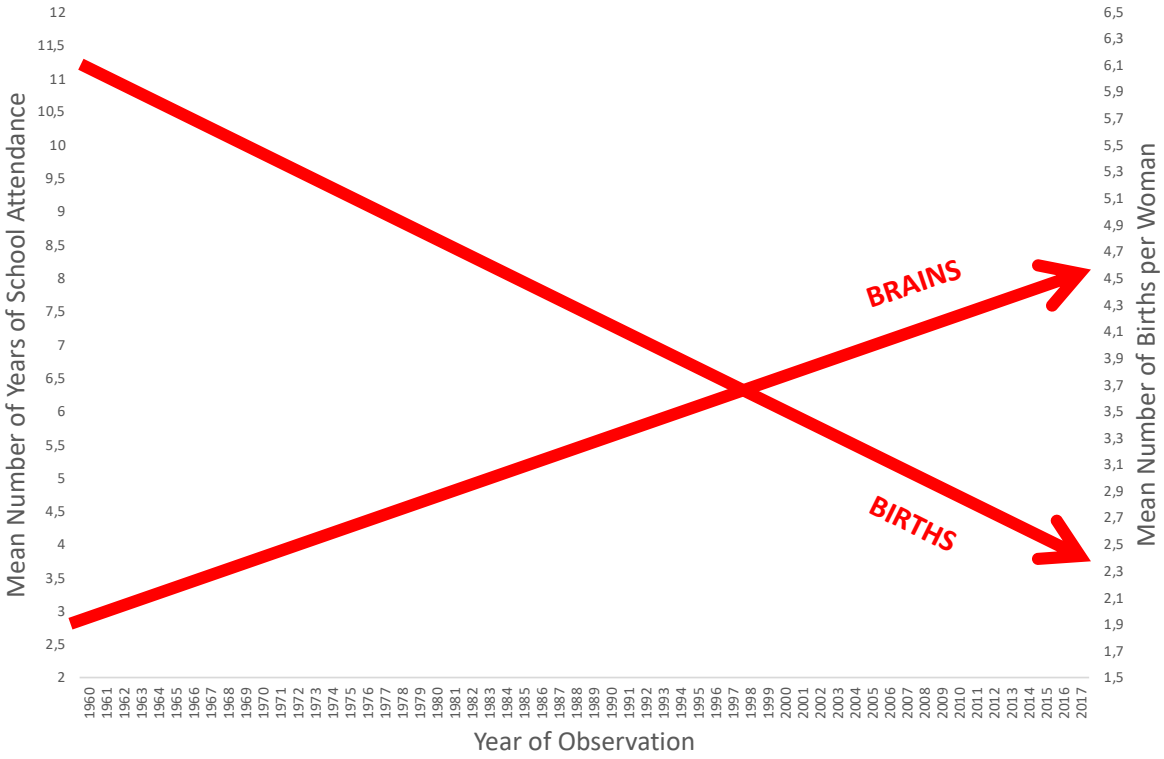


Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

Indeed, as Figure 5-6a shows for the world as a whole, female fertilities have dropped from an average number of 5.7 births per woman in 1960 to 2.8 births in 2017. At the same time, school attendance prolonged from a global average of 3.6 years of schooling to an average of 8.7 years over the same period. Although at different base levels and paces of progression, this massive demographic shift from quantity breeding to quality building proceeds literally everywhere in the world, like a force of nature. This is obvious from Figures 5-6b to 5-7d, illustrating the same process for Western civilization (5-6b), Eastern culture zones (5-6c) and the Global South (5-6d). For sure, the crossing points at which school attendance overtakes female fertility differ: The West reached the crossing point (by backward projection) already in 1930, the East in 1990 and the Global South will reach it in 2025. If so, the speed of this catching-up dynamic is doubling, pointing to convergence in humanity's reproduction in the near future. At any rate, the process follows the same logic everywhere and the sheer passage of time explains sixty to seventy percent of the fertility drop and seventy to eighty percent of the parallel rise of schooling (regressing a given year's female fertility and school attendance on the recency of the year in which it is measured).

Humanity's *"births"-to-"brains" shift* in lifetime investments fuels a pervasive process of cognitive mobilization that gradually liberates people's cognitive agency, with the consequence of growing emancipatory ambitions about what people want out of life—ambitions that weigh heavily on dictatorial rule and tilt the odds in favor of a liberal-democratic world, provided the

Figure 5-6c. The Global Transition from Female Fertility to School Attendance (**EAST**)



Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

demographic shift continues. Clearly, the "births"-to-"brains" shift in life planning is driven by a ubiquitous drop in mortality and the related expansion of life expectancies. This demographic shift is a triumph of scientific progress in medicine and related fields and their diffusion into all corners of the world.

In the meanwhile, per capita incomes rose from 3,987 international US-Dollars for the world's average person in 1960 (N = 133) to 18,538 US-Dollars for the equivalent person in 2016 (N = 160), which is an almost five-fold increase, even controlling for price inflation.[340] Since per capita income correlates negatively with female fertility[341] and positively with school attendance[342], the demographic shift from maximizing fertility ("births") to maximizing education ("brains") is a powerful engine of income growth and its subsequent emancipatory consequences, including most notably bottom-up rights struggles.[343]

Quantity Breeding versus Quality Building

The CW-Condition does not explain *whether or not* the demographic fertility-to-schooling shift is happening—because, as of now, it happens everywhere. But the CW-Condition does explain *how early* this demographic transition set in, as we have seen in Figure 5-5. The reason lies in the reduced fertility pressures under the CW-Condition, resulting from lower disease threats and labor

demands under the CW-typical forms of agriculture. Reduced fertility pressures allow women to enter marriage consensually and later in their fertile years, implying lower patriarchal control over female sexuality.[344] Thus, the CW-Condition incentivized the quality-building strategy already at pre-industrial times, as much as the limitations of this era in terms of contraception made family planning possible.[345] This incentive increased massively when the first states started to provide tuition-free public schools and made education compulsory late in the 19th century.[346] At this moment, the demographic transformation towards even lower fertilities kicked-in with a vengeance. Apparently, the idea of compulsory education made most sense where people were raising fewer children anyway, because then there was already a quality-building orientation among family households that state-sponsored educational programs could capitalize on.

Further supporting these thoughts, the evidence in SOM-Figure 5-13 suggests that marriage ages of women were lower in CW-areas back in time. Here we have data for only seventeen countries in 1800 CE, again from "Gapminder." But some of these territories are key representatives of major civilizations in East and South Asia, the Middle East and the different parts of Europe. Hence, this is a historically sensible selection of territories from Eurasia's axial civilization belt. Among them, the CW-Condition explains an astounding eighty-nine percent of the variation in female marriage ages, ranging from a mean age of women at first marriage as low as twelve and thirteen years in India and Bangladesh to a high of twenty-eight years in Germany, the Netherlands and Denmark. Mary Hartman[347] outlines in lucid terms how conducive a later (and consensual) marriage is to a more equal gender relation for a number of reasons. The most obvious reason is that a more mature woman who matches her husband in experience is more capable and determined to stand her ground in the relationship. Jan Luiten van Zanden, Tine de Moor and Sarah Carmichael further substantiate these points based on massive statistical data.[348]

As data from the World Bank's social indicators series in SOM-Figure 5-14 illustrate[349], still today the CW-Condition is linked with lower percentages of women married early and higher percentages of them enrolled in tertiary-level education—which is an inherently plausible and intimate connection. As before, the CW-effect on women's marriage and education is not absorbed by the CW-areas' higher prosperity today.[350]

Even more impressive, as we saw in Figure 5-5, the CW-Condition explains fully seventy-five percent of the variation in the time points at which countries entered the demographic transformation towards industrial-era low fertilities. According to the data collected by Fabrice Murtin[351], the leader of the trend is Sweden[352] where the transformation set in around 1870 CE, followed by Uruguay and France in 1880, and then Germany and the Netherlands in about 1890. At the upper end of the distribution are countries in Sub-Saharan Africa where the same transformation is just about to happen. Interestingly, the high-scoring CW-areas in East Asia—Japan and South Korea—are the first non-Western countries to enter the demographic transformation, namely in the 1950s. Hence, the CW-Condition accounts for *both* already low pre-industrial fertilities *and* the low-fertility areas' earlier transition towards even lower fertility levels during the industrial era. All this evidence makes it difficult to refuse the conclusion that the CW-Condition harbors an opportunity

endowment that predisposes populations to low fertilities and the quality-building strategies linked to them.

The option to delay one's biological reproduction and invest the spare time into other productive purposes with delayed gratifications, such as acquiring savings and skills, means "reproductive autonomy"—the quintessential form of autonomy in lifetime planning. Admittedly, given the fact that pre-industrial child mortalities and birth rates were high everywhere under today's standards, the differences that existed before industrial times might seem small. Nevertheless, the question of whether every second child or every third child dies before the age of five, whether women on average give birth to eight or to four children and whether their mean age at marriage is fifteen or twenty-five, all point to quite significant differences in reproductive conditions that existed already at pre-industrial times, apparently in close correlation with the CW condition.

Lower reproductive autonomy relates to tighter kinship ties in pre-industrial times. When kinship ties are tight, this sheds again a light on patriarchy because tight kinship ties force women early into marriages in which they live under full male control over their sexuality. As SOM-Figure 5-15 illustrates, the CW-Condition favored loose, instead of tight, kinship ties already at pre-industrial times.

Production Factors

Reproductive autonomy must be seen in connection with yet another economically consequential feature of the CW-Condition: its advantageous seasonality pattern. Near the equator and the low latitudes around it, there is little seasonality in daylight and air temperatures. Seasonality begins to become more pronounced as one moves to higher latitudes. Since the CW-areas are only found in higher latitudes, they inevitably exist in the context of considerable seasonality. Hernando Zuleta[353] argues that seasonality forces people to plan for winter—the season in which a more limited range of crops grow. Thus, people have to think about food storage, or storage of commodities like firewood, warm clothes and other winter equipment more generally, which implants the ideas of maintenance, preparation and planning early in people's minds. As soon as the economy becomes monetized and urban markets are within people's reach, the presence of seasonality in the CW-areas incentivizes financial savings. Higher savings per capita, in turn, create better conditions for technology development, as technologies are capital intensive. When many people have savings and are connected through dense urban networks of trade and commerce, the idea to pool capital savings for joint ventures emerges naturally, as does the idea of insurance to safeguard investments against risks. One might think of the Hanseatic League and the Dutch, British or Swedish East India Companies, all of which were mighty private organizations whose fiscal, logistical and even military capacities matched those of well-organized states. No question, these and other private corporations were also invested in the development of transportation, storage and production technologies as well as financial instruments. In short, they were potent innovators.[354]

Interestingly, although the CW-climates by necessity involve seasonality, their seasonality pattern is particular in its advantageous moderation. Indeed, the seasonality pattern of the CW-Condition lacks the excess extremity known from continental climates in high latitudes. The absence of seasonal extremity tilts the thermal challenge balance towards the productive side by avoiding exposure to the counterproductive thermal challenge of excess summer heat, while providing exposure to the productive challenge of winter cold, albeit at a level of moderation that avoids winter cold so extreme and prolonged that no crops would grow and waterways would be frozen for a long period to make them non-navigable for ships. Hence, it seems reasonable to assume that the incentive to accumulate savings, which is inherent in high latitude seasonality, germinates more fruitfully under the more productive thermal challenge of the CW-climates than the less productive one of continental climates.

This needs to be seen in connection with the fact that the CW-Condition also incentivizes lower fertility rates. Higher savings and lower fertility rates together reshape the ratio between the three production factors: land, capital and labor. Lower fertility rates keep cheap mass labor in short supply. If, under this condition, the labor demand of producers increases because the population's rising purchasing power makes mass production profitable, these producers need to invest in production technologies that multiply labor productivity—such that fewer workers produce a multiplicity of output in commodities. At the same time, higher savings are not only a reason for the population's rising purchasing power but also provide the capital for technological innovation. As Michael Mitterauer's[355] work on agrarian and urban production methods and on water and windmill technology in Northwestern Europe shows, the dynamic of technological innovation was already in full swing during the 15th and 16th centuries, especially since the Black Death (1347-1351) further tilted the ratio of production factors towards the scarcity of labor. The Thirty Years War (1618-1648) had a similar effect in shortening labor supply through death rates. The shortage of labor supply elevated the economic value and bargaining power of ordinary people, visible in the privileges that authorities offered to attract settlers to fill emptied stretches of land—a tendency strengthened by the rural exodus into the cities where residence meant personal freedom ("Stadtluft macht frei" – *city air makes free*, as a famous German proverb from Medieval times goes).[356]

State Building: Coercive versus Contractual

Building a state always means some form of authority concentration, which in turn implies the annihilation of local, corporate, sectoral and personal autonomies. This autonomy-reducing moment in the process of state formation operates in conflict with an evolved feature of human nature: agency. This has consequences for how far state formation's autonomy reduction can proceed without meeting mass resistance among human populations.

Because brain evolution has equipped humans with agency, humans live with an emancipatory drive to be free from external domination in their decisions, actions and life planning. The emancipatory drive is adaptive and recedes to the extent to which external pressures disallow humans

to live in self-determination and force them into subordination and conformity, thus bringing our submissive instinct to dominance over our emancipatory drive.

Still, there is an asymmetry in the power by which the two conflicting tendencies—submission-vs-emancipation—drive human aspiration, which can be summarized as follows: While the submissive instinct guides human behavior *only* as much as external circumstances dictate, the emancipatory drive guides human behavior *always* as much as external circumstances allow. Therefore, human striving on the submission-vs-emancipation spectrum is naturally directed towards the emancipatory end and guides humans to exploit their autonomies always to the limits possible under given circumstances. For all these reasons, the emancipatory drive infuses human nature with an inherent appraisal of the autonomies that people exercise. This inner appraisal generates willingness among humans to defend their accustomed autonomies and to resist power-greedy rulers' ambitions to curtail autonomies. Richard Ryan and Edward Deci's "self-determination theory" explicates and evidences the psychological foundation of this autonomy-seeking facet of human nature, in line with our depiction of humans' emancipatory drives.[357]

When grassroots autonomies are bestowed on humans by certain natural conditions, which is what they are in CW-areas, rulers cannot just take away these autonomies. In this case, grassroots autonomies effectively block ambitions for authority concentration, which puts the state building process on hold—until a formula for a social contract is found: a contract through which the exercise of state capacities is tied to mechanisms of social preference aggregation, namely elections and assemblies, which function as protective shields of original autonomies. Hence, under the CW-Condition, state capacities only start to expand once a template is found that guides state capacities to grow only in return for the society's control over these capacities—which is a recipe to transform the original autonomies from their pre-state presence into a state-protected form. Due to this recipe, certifying and sealing autonomies through entitlements and rights, written in charters and constitutions, becomes the quintessential legitimation of the state's existence, indeed its penultimate *raison d'être*.[358]

In Northwestern Europe, this formula was established with the principle of "no taxation without representation." When the rise of pre-industrial capitalism tempted rulers to levy taxes on prosperous city dwellers, the "burghers" demanded representation in return. And if they did not get it, they revolted. More often than not, these revolts effectively checked or ousted over-ambitious rulers, even to the effect of their outright execution. The cause of this grassroots resistance power lies in the fact that, when social groups coalesce voluntarily in the presence of local autonomies, the resulting associations—from local assemblies to leagues, guilds and corporations—are practiced in self-organization and coalition building. Because experience in self-organization and coalition building embodies the knowhow to initiate, coordinate and sustain resistance, purely coercive forms of rule are impossible to enforce under such conditions. Hence, some of the revolts—like the Swiss, Dutch, English, French and American Revolutions—ended in crushing victories for the rebels. Successful bottom-up revolts, sometimes manifest in the decapitation of kings (like Charles I of England in 1649 and Louis XVI of France in 1793), epitomized the emancipatory seed of Western identity.[359] Ever since the liberal revolutions, emancipatory social movements—from

the abolitionist, labor, suffragist and civil rights movement to the LGBTQ movement—have driven the pulse of Western civilization and the vibrancy of the West's civil societies. The *Occupy Wall Street, Me Too, Black Lives Matter* and *Fridays for Future* movements testify to the continued virulence of this emancipatory spirit. The absence of similar emancipatory struggles in all of the world's major civilizations outside the West's CW-environment is striking.

To qualify this statement, we acknowledge that from time to time severe grievance triggered popular upheavals in the coercive agrarian empires outside the West's CW-areas. The history of China's imperial dynasties, for instance, is plastered with spontaneous revolts of the local peasantry. Other agrarian empires experienced similar outbreaks of collective frustration—sometimes to the effect of the entire imperial order's collapse.[360] These sporadic moments of local resistance are actually part of the nature of coercive orders and the ways in which they suppress humans' emancipatory drives. And yet, these episodes of emancipatory inflammation are not to be confused with well coordinated, sustained and programmatically oriented dissidence movements aiming for regime change in the sense that the revolting groups enforce entitlements and rights, enshrined in written chartas and constitutions. The latter dynamic is entirely unique to the CW-areas and shaped their contractual orders.

As a consequence of emancipatory struggles and victories, income taxation in Northwestern Europe expanded in parallel to an expansion of the franchise.[361] The result was an entirely different type of state, actually a singularity in the history of states: the *contractual* state. The contractual state contrasts sharply with the *coercive* state that characterized all agrarian empires throughout pre-industrial history. In the coercive state, authorities take tribute and demand services without relying on any consent of the providers. By contrast, rulers in the emerging contractual state of Northwestern Europe strictly depended on the consent of elected assemblies when levying taxes or waging war.[362]

Ironically as it may seem, the very consent-dependence of the contractual state turned out to be an evolutionary novelty of decisive advantage. Precisely this dependence opens access to a grassroots psychological resource that no coercive state could ever harvest among a species composed of individuals who possess agency, intelligence and willpower. The foreclosed resource in question is the individuals' voluntary commitment to and active support of the state's existence, structure and operation, which—in the essence—means legitimacy.

At any rate, we claim that the same features of the CW-Condition account for both the slow arrival at the mature stage of pre-industrial state development and the rapid progress towards the industrial and post-industrial stages thereafter. Herein lies the key to understanding what some scholars call the "reversal of fortunes": a long lasting backwardness of Western civilization followed by a sudden rise to global dominance.[363]

The CW-Condition's Role in State Evolution

Because the emergence of a bureaucratic state depends on agrarian surplus, an earlier adoption of agriculture favors earlier statehood. The late adoption of agriculture in CW-areas, thus, implies a late emergence of statehood. Indeed, using the encompassing historic data that Valerie Bockstette and her team[364] collected, SOM-Figure 5-16 shows that the CW-Condition did *not* favor statehood evolution until about 900 CE, whereas crop yields from centralized irrigation[365] significantly favored the emergence and persistence of statehood until this time, albeit at a decreasing slope. The reason for the steady decline in irrigation's state building effect is that, over time, more and more non-irrigated territories also adopted agriculture and subsequently began to build well-organized states. Accordingly, centralized irrigation opened a fast track into state building which, once being taken, steadily ceased to favor further state development. By contrast, the effect of the CW-Condition on statehood evolution turns from insignificance into positive significance in about 900 CE and then increases in strength on a remarkably steep slope—all the way until the end of the observation period in 1950. In 1250 CE, the lines of centralized irrigation and the CW-Condition cross each other: From then on, the positive effect of the CW-Condition on evolving statehood outmatches that of centralized irrigation and continues to do so increasingly. In other words, centralized irrigation accounts for early state development, while emerging rain-fed agriculture under the CW-Condition accounts for late state development in the history of civilization.

SOM-Figure 5-17 supports similar conclusions. Beginning our observation in the year 50 CE[366], the CW-area of Northwestern Europe trails clearly behind Asia and the Middle East's statehood development until 400 CE—a period characterized by the massive population resettlements of the Migration Period, followed by the demise of the Western hemisphere of the Roman Empire. After this chaotic period, Christianity spread to Northwestern Europe and the first medieval kingdoms began to take shape. Accordingly, Northwestern Europe's statehood development caught up visibly until 1150 CE. From thereon, Europe's feudal kingdoms began to consolidate along emerging national fault lines, which places Northwestern Europe's catch-up onto a steeper trajectory. That steeper trajectory lasts until 1250 CE—the climax of the Holy Roman Empire of the German Nation. Thereafter, Northwestern Europe's statehood development remains on par with that of the Middle East and Asia until 1850-1900, when Northwestern Europe's statehood development suddenly runs away from the Middle East and Asia. This breakpoint marks the consolidation of the modern industrial nation state in Europe and its decolonized CW-areas in North America, Australia and New Zealand. The latter territories' statehood development literally shoots from zero to Northwestern Europe's level in the hundred years from 1800 to 1900. According to this perspective, too, the statehood development of none of the world's CW-areas matches that of the older CW-lacking civilizations before about 1300 CE.

Essence:

> *In conclusion, the global cross-cultural evidence confirms that irrigation-managed* ***non****-CW areas were early adopters of agriculture and early developers of statehood, whereas the CW-areas were late on both accounts. Thus, the CW-Condition also became a favorable force of state formation late in the history of civilization. In line with many historians'*

view, Northwestern Europe reached a level of statehood development matching that of the older civilizations in about 1500 CE.[367] *For Japan, the same happened arguably at the beginning of the Tokugawa era, in 1600 CE.*

Axial Principles of Social Organization

Female reproductive autonomy in the pre-industrial period touches upon the principles of social organization writ large. When there is more reproductive autonomy, marriage tends to be a matter of consent between mature adults. Household formation, then, concentrates on the nuclear family as an autonomous entity. If consent becomes the principle of organization already within the most embryonic unit of society (i.e., the family), bottom-up institutional growth towards larger social units is likely to transplant the consensus principle into these larger units as well. If a state evolves under these circumstances, it will establish power-sharing institutions at its top. Accordingly, the bottom and top layers of societies' entities—families and states—are linked through axial principles of social organization, which in turn have their roots in certain natural conditions.

In a stylized manner, we can juxtapose two opposite constellations. Under a strong CW-Condition, the axial principle of social organization is *contract*, which establishes a consensual marriage, household and family pattern at the bottom of a society and a multipolar state with power-sharing arrangements and representative institutions at its top. By contrast, in irrigation-managed agrarian settings under the absence of the CW-Condition, the axial principle of social organization is *coercion*, which establishes patriarchal family structures at the bottom and monocentric state structures at the top. In settings with neither a strong nor weak CW-Condition, intermediate constellations emerge, also at both the bottom and the top of society.

It is easy to see now how reproductive autonomy played together with hydration autonomy, nutrition autonomy and settlement autonomy in shaping social organization. Controlling water supplies is no option to concentrate power over people under widespread hydration autonomy. Thus, hydration autonomy blocks a major historic route to despotism: centralized irrigation management.[368] In the absence of any necessity for centralized irrigation, the fast track towards an agrarian economy and a coercive state is blocked. For this reason, agriculture and states emerged later and more slowly in CW-areas—all the more so as the populations in CW-areas struggled to shape social organization in ways that transplant their autonomies into newly emerging institutional bodies at higher levels of spatial aggregation.

Gestation Periods

What we call the *mature urban stage of pre-industrial development* consists of advanced agrarian settings with intense cultivation methods and large enough agrarian surpluses to feed sizeable and occupationally specialized urban populations, living in well-organized territorial states with armies, bureaucracies and central governments. At this stage, the launch of an industrial revolution

comes into reach. The key point is that no society could launch an industrial take-off, unless it has reached this urban stage of pre-industrial development. Getting there is a matter of maturation, which is a time-consuming collective learning process aiming at more effective ways to perform agriculture, manufacture and trade.

Taking into account maturation time is essential to evaluate potentials that originate in geo-climatic circumstances, such as the CW-Condition. Any such potential is a constant feature that is permanently present. Yet, potentials need to germinate and that takes time because local populations need to learn how to take advantage most effectively of their habitats' opportunity endowments. Now, when looking at things from the moment in time when territories adopted agriculture, we can estimate how much time passed by until the CW-Condition's inherent potential to launch an industrial take-off germinated.

For instance, the economist Paul Bairoch[369] argues that the Mediterranean region reached the mature pre-industrial stage at which industrialization became possible under the Roman Empire during the reign of Augustus in about 50 CE. According to Bairoch, the Middle East reached the pre-industrial stage under the Caliphates in the 10th century. China reached it in the 11th century under the Song and India in the 17th century under the Mughals. Nobel prize laureate Douglas North[370] provides similar estimates. When we combine these speculations with Louis Putterman's[371] estimates of when these civilizations adopted agriculture, the Mediterranean needed some 6,000 years from the adoption of agriculture to reach the mature pre-industrial stage. The Middle East needed 8,900 years, India 8,200 years and China about 8,000 years. If we agree that Northwestern Europe reached the mature pre-industrial stage in about 1500 CE, it needed only 5,500 years from the adoption of agriculture to reach that stage. Even if we follow Kenneth Pomeranz[372] and other proponents of the California School who advocate a late date of Northwestern Europe's catch-up, like 1700 or 1800 CE, we are still at 5,700 or 5,800 years, which compares favorably with India, China and the Middle East's 8,000 years and more of maturation time. Assuming that Japan reached the mature pre-industrial stage of development at the climax of the Tokugawa era at some time around 1700 CE, it actually needed even less time to get there from the adoption of agriculture: some 4,300 years. SOM-Figure 5-18 visualizes these suggested differences in maturation time.

In light of these estimates, the assumption of a particularly slow pre-industrial development of the world's CW-areas turns out to be mistaken, at least when we recognize these areas' later adoption of agriculture. Even if the estimates reported above are rough and may be wrong within a five-hundred years margin, they still represent sizable differences in maturation time linked with the presence-vs-absence of the CW-Condition. Overall, these estimates suggest a shorter maturation time in the presence of the CW-Condition.

Compared to the older civilizations in the world's non-CW areas, Northwestern Europe's CW-area reached the advanced pre-industrial stage clearly at a much *later date*. But this later dating obscures the fact that Northwestern Europe's CW-area took a *shorter timespan* to get from the adoption of intensive agriculture to the advanced pre-industrial stage. To make the latter point obvious, one only needs to recognize that the clock of societal development did not start to tick

everywhere in the world's habitable zones at the same time but that, instead, starting points depended on the variable dates at which modern humans first arrived at a location and began to colonize it. For instance, by comparison with the Middle East, the migratory distance of Northwestern Europe's CW-area to the human origin in East Africa is double as large. Modern humans, accordingly, began to populate Northwestern Europe's CW-area about 40,000 years later than they populated the Middle East, resulting in a corresponding delay of about 4,000 years in the adoption of agriculture. Taking this later dating in the adoption of agriculture into account, the timespan that Northwestern Europe's CW-area took to reach the mature stage of pre-industrial development was nevertheless about 3,500 years shorter than the Middle East needed to reach that stage.

Essence:

> *The CW-climates were a decelerating condition with respect to the earliest transitions to agriculture and the earliest emergence of recognizable forms of statehood. But this decelerating role quickly faded and actually became an accelerator of development once agriculture had been adopted and once the first seeds of statehood were in place.*

Oded Galor, Louis Putterman and others argue that—over the long pre-industrial era—one cannot use per capita income to examine differences in societal development. The reason is simple: Measured against the income differences that emerged after the Industrial Revolution, the range of difference in mass-level pre-industrial incomes is insignificant. Using Angus Maddison's estimates[373], we can see this in all clarity when inspecting the famous hockey stick shape in SOM-Figure 5-19, which reveals two insights. First, for millennia after the Neolithic Revolution, per capita incomes in CW- and non-CW areas stagnate on a low flat line that reflects the existential minimum. Second, suddenly after the Industrial Revolution, per capita incomes in the CW-areas shoot into the sky, quickly establishing a sizeable and growing income gap between the CW- and non-CW areas.

But unlike differences in per capita incomes, differences in population density have grown earlier and more quickly after the Neolithic Revolution, showing a two-fold pre-industrial pattern: (*1*) agrarian societies became more densely populated than foraging and pastoral societies; (*2*) among agrarian societies, those using labor-intensive methods of irrigation-managed cultivation became more densely populated than the ones using labor-extensive plow cultivation under rainfall.

Differences in population density are indicative of differences in social organization. Denser populations involve higher degrees of urbanization, which requires a sophisticated coordination of subsistence activities by means of occupational specialization, market regulation, taxation, administration, defense, construction and the like. Therefore, population density indicates complexity in social organization.[374]

If so, the historic data on population densities by Kees Klein Goldewijk and his co-authors are insightful.[375] SOM-Figure 5-20 displays population densities for India, China, Iraq and England from 5000 BCE till 1900 CE. These countries represent the major areas of agrarian civilization of the world's oldest and largest civilization belt across Eurasia, including the Middle East (e.g., Iraq),

South Asia (e.g., India), East Asia (e.g., China) and Northwestern Europe (e.g., England). Reflecting Northwestern Europe's initial backwardness, England is the laggard in population density at the beginning and remained in this position for fully 6,000 years until about 1000 CE when its population density overtook that of Iraq. Given that China reached the mature pre-industrial stage when its population density peaked in 1200 CE, we might consider this density level as the necessary threshold to be reached to launch industrialization. In case this speculation is accurate, it follows suit that China should have industrialized by then or at least in 1700 CE, when it reached and surpassed this density level again. Actually, China should have industrialized under this consideration at any point in time after 1700 because it never fell again below the supposedly critical density level. India reached the critical threshold already in 500 CE and should have industrialized at any time point ever since.

No doubt, in terms of organizational complexity, India and China belonged to the most advanced pre-industrial civilizations. Thus, from the viewpoint of organizational complexity, all was in place to launch an industrial take-off. In fact, all was in place for a very long time, spanning many centuries—but no industrial revolution took place. Baffling as this fact is (often addressed as the "Needham Puzzle"), it is in accordance with the lacking CW-Condition of these civilizations.[376] This suggests that the grassroots autonomies which the CW-Condition betows on its inhabitants are essential to launch an industrial take-off, once the pre-industrial stage is reached. But this is not only about India and China. More generally, *all* of the world's early civilizations lacked the CW-Condition and, accordingly, *none* of them industrialized before the CW-areas, despite their much earlier arrival and longer lasting persistence at the critical stage of pre-industrial agrarian development. This observation lends further credibility to the importance of the CW-Condition's embedded autonomies.

England reached China's density level in 1300 CE but this level was below the critical threshold. In fact, because of the Black Death in 1348 CE, English population density dropped sharply until it started to recover in 1400 CE. The key evidence, however, is that as soon as England met the critical density level for the first time, namely in 1750 (!), it actually started to industrialize almost immediately, quickly turning into the first industrial society in the world, followed suit by Northwestern Europe's entire CW-area.

If population density is a valid yardstick to judge societies' pre-industrial level of development and if England's trajectory is typical of Northwestern Europe, the evidence suggests that (*a*) Northwestern Europe matched China's level of organizational complexity for the first time in about 1300 CE, (*b*) was then set back by the Black Death and (*c*) returned to that matching level again at some time between 1600 and 1800 CE.

Supporting this conclusion, SOM-Figure 5-21 illustrates how the correlation between the CW-Condition and population densities deveoped over time. The graph also shows how the time point of the Neolithic Revolution in a given country correlates with population densities over time. The correlations are shown under mutual control and for all country-territories of the Old World.[377]

SOM-Figure 5-21 clarifies that the earliness of the adoption of agriculture starts out from a strong positive correlation with population density, which is logical because population densities

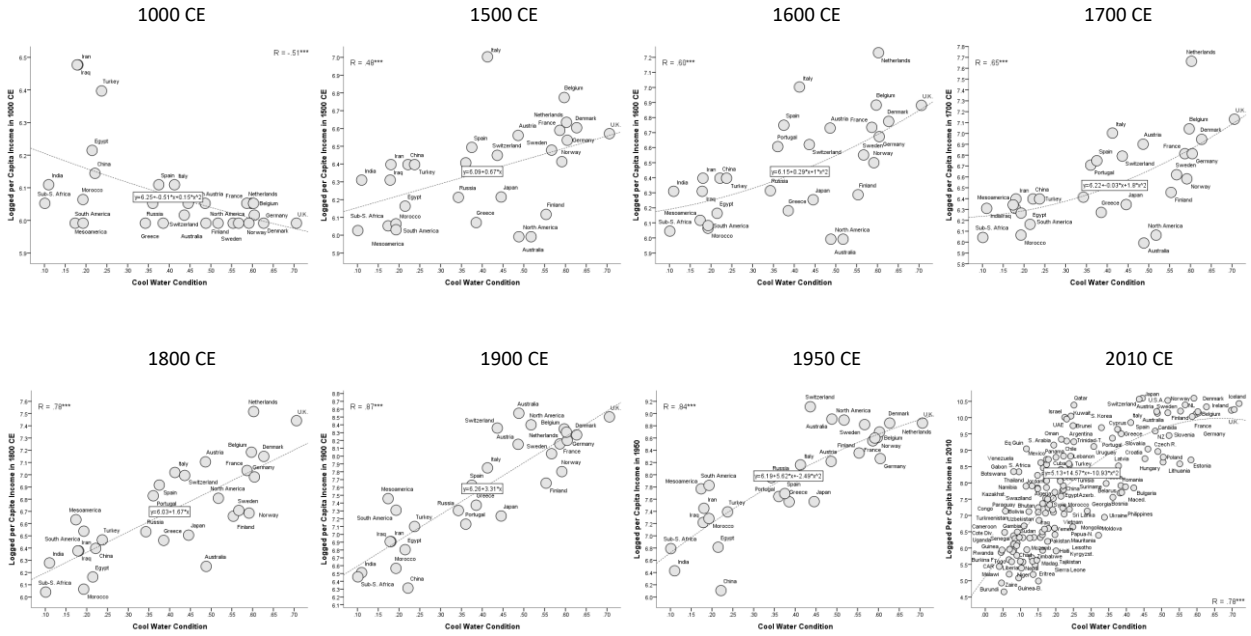
began to rise quickly with the adoption of agriculture. This correlation increases over the first 10,000 years of agrarian history and then begins to drop quickly from the year Zero onward: As more areas adopt agriculture and get denser populations, an early adoption of agriculture begins to matter less and less for population densities as time passes by. In 1700 CE, the earliness of agriculture drops below significance and has no more explanatory power over population density for the times to follow.

By contrast, the CW-Condition starts out from a negative correlation with population density: As late adopters of agriculture, the CW-areas remained less densely populated for the most part of our species' agrarian history, all the way from 10,000 BCE till 1200 CE. But after the adoption of agriculture and its slow maturation, Northwestern Europe's CW-areas become more and more densely populated, especially after the recovery from the Black Death starting in 1400 CE. This is evident from the continuously growing and positive correlation between the CW-Condition and population density between 1400 CE and 1900 CE.

Thereafter, the correlation drops quickly and continuously, turning negative again by 2010. The recent drop in the correlation between the CW-Condition and population density reflects the sharp industrial turn towards lower fertilities in the globe's CW-areas. Like the view on statehood evolution, the study of population densities as well singles out the time between 1400 and 1600 CE as the turning point from which the younger agrarian cultures in the CW-areas overtake the older agrarian cultures in the non-CW areas in developmental pace.

All of this supports the conclusion that the CW-Condition has been a profound delay factor in the adoption of agriculture and the emergence of statehood. However, once agriculture had been adopted, the CW-Condition was no deceleration factor in pre-industrial societal development. Quite the contrary, if we recognize when agriculture had been in place, the CW-areas reached the pre-industrial stage of agrarian society *faster* than non-CW-areas. Once there, the CW-areas were the first and, for a long time, the only regions that industrialized, which only took them about three hundred years (i.e., from 1500 to 1800 CE). Again, the non-CW civilizations reached the pre-

Figure 5-7. The Evolving Line-Up of Territories' per Capita Incomes with the CW-Condition



Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

industrial stage many centuries earlier without launching an industrial take-off. This striking observation makes it hard to deny that the ancient agrarian empire's coercive nature meant a manifest structural disablement to develop further and jump to the next level of civilizational progression.

Once CW-areas adopted agriculture, they continued to harbor more autonomies than was usual in other types of agrarian societies. In all respects, agriculture under the CW-Condition lacks the features of mass labor coordination known from cultivation methods with centralized water, land and work coordination. For one, no coordination of mass labor is needed because there is no reason to maintain large-scale irrigation infrastructures. In general, there is little need for centralized coordination anyways because a single farm household in possession of an iron plow and two draft animals can work a large area of land mostly on its own.[378] The labor demand is limited because there is no gain in crop yield by placing troops of workers on an acre that grows wheat, rye or barley. This condition contrasts starkly with the high labor demands of rice cultivation or that of tropical crops, like sugar cane, tobacco or cotton.[379]

Tracing the CW-Areas' Rise

As mentioned, a key question is when the advantages of the CW-Condition began to germinate. Given that the CW-areas on our planet were laggards in the civilization process for so long, this question is all the more critical. To answer it, Figure 5-7 shows how the CW-Condition associates with a country's per capita income at different points in history, using Angus Maddison's[380] estimates for thirty-two key historic territories from around the world. The evidence covers a time span of 1,000 years.

As is obvious from the upper-left diagram, the relationship between the CW-Condition and per capita income is modestly *negative* at our first observation point, in the year 1000 CE (r = -.51).[381] But five hundred years later, at our second observation point in 1500 CE, the previously negative relationship has turned into a significantly positive one (r = .48), although the correlation remains at only modest strength.[382] The correlation between per capita income and the CW-Condition actually cannot be too strong before modern times because ordinary people's incomes hovered everywhere around the existential minimum until the Industrial Revolution. Thus, before the rise of pre-industrial capitalism in the year 1500 CE, inter-regional differences in per capita income varied only between 450 Dollars (the existential minimum) and 610[383] Dollars per capita[384] (the prosperity level of Iraq at that time). This means that the richest territory was roughly 1.4 times more prosperous than the poorest. After the rise of pre-industrial capitalism in 1700 CE, inter-regional income differences varied between 450 and 1,220 Dollars per capita (the level of the Netherlands at that time). Accordingly, the richest territory was now 2.7 times more affluent than the poorest. After the onset of the Industrial Revolution in the year 1800 CE, inter-regional income differences varied between 450 and 3,400 Dollars per capita (the level of England and the Netherlands by then). These figures indicate a ratio of 7.6 in affluence for the richest over the poorest regions. In 1900 CE, when the Industrial Revolution was in full swing, inter-regional income differences varied between 604 and 6,252 Dollars per capita (the level of England by then). Thus, the ratio in prosperity of rich over poor has risen to roughly 10.4. In the artificial intelligence era, in 2016 to be precise, inter-regional differences vary between 619 and 61,884 Dollars per capita (the level of Switzerland, leaving out of consideration the Gulf states, Singapore and Luxemburg). In other words, the richest country today is a staggering 100 times more prosperous than the poorest one (which happens to be the Central African Republic).[385]

Still, it is interesting to recognize the significant turn in the direction of the relationship between prosperity and the CW-Condition from a negative correlation into a positive one, at some time between 1000 CE and 1500 CE. When exactly within these five hundred years the turn happened is unknown, but it is plausible to assume that it occurred a century or so after the demographic recovery from the Black Death in 1348 CE, coinciding with the rise of pre-industrial capitalism—in other words, at some time during the 15th century. Since then, the relationship turned ever more positive and did so continuously with every century passing by: r = .60 in 1600, r = .65 in 1700, r = .78 in 1800, and r = .87 in 1900. Still in 2016, the relationship between the CW-Condition and per capita income remains significantly positive, although it is now appreciably weaker (r = .66, p < .001, N = 155). The latter is in part due to the exceptional income levels among the oil-exporting Gulf monarchies, which are super-rich despite having a weak CW-Condition.

Another reason is the slow but steady decoupling of developmental outcomes with an emancipatory signature from the CW-Condition—a phenomenon that we explore in greater detail in Chapter 12.

The negative relationship in the year 1000 CE reflects the fact that the areas with a strong CW-Condition—namely Northwestern Europe and its later settler colonies outside Eurasia—lagged behind the development of intensive agriculture, urban markets and organized statehood in the Mediterranean, the Middle East, India and China. For reasons outlined earlier (e.g., greater migratory distance from the earliest human population centers), the CW-areas' agricultures were less advanced, provided these areas adopted agriculture to begin with. The derivatives of surplus agriculture, including urbanization, commercialization and state organization, accordingly were behind as well. Had we more data, the laggard position of the CW-areas relative to the older civilizations would probably show up in a consistent, albeit modestly, negative relationship between the CW-Condition and per capita income not only in the year 1000 CE but several thousand years back, most likely all the way back to the very beginning of civilization itself.

The turn of the negative relationship into an increasingly positive one, visible in Maddison's data for the first time in 1500 CE, reflects a sequence of stages that moves one CW-area after the next to the forefront of prosperity. Reading the diagrams in Figure 5-7 in their temporal order, the stages of the sequence are well recognizable:

(1) *First* Stage: the countries of Northwestern Europe—especially the Netherlands and England—start to catch up and then to overtake other areas in the world, although Italy, with a moderate CW-Condition in its North, remains on top for a while.

(2) *Second* Stage: Northwestern Europe continues its steep ascension due to its scientific, commercial and industrial revolutions.

(3) *Third* Stage: Japan begins to catch up, first through the commercial fluorescence during the Tokugawa period but then more vigorously through the concerted effort of the Meiji Restoration beginning in around 1870.

(4) *Fourth* Stage: after massive immigration by settlers mostly from Northwestern Europe, the CW-areas outside of Eurasia—i.e., North America, Australia and New Zealand—join the progressive path and climb it quickly. As a result, all CW-areas on the globe are advanced today and continue to remain ahead of other areas, albeit at a shrinking distance for the reasons suggested in Chapter 12.

The appearance of Northwestern Europe's advantage in 1500 CE coincides with the Great Discoveries, Renaissance-Humanism, the Copernican Revolution, the Reformation, the invention of Gutenberg's printing press and, more generally, the florescence of pre-industrial capitalism as well as the consolidation of contractual state orders with their vibrant representative institutions and myriad of voluntary associations—all of which are indications of a massive outbreak of grassroots human creativity and initiative. So, what happened between 1000 CE and 1500 CE to turn a cultural backwater into a paragon of mass-scale dynamism?

Scholars[386] argue that, starting from a rather primitive level, incremental improvements—such as the invention of the heavy iron plow, the use of draft animals, the spread of three-field rotation, and excessive use of water and wind power—led agrarian production to levels allowing to sustain expanding urban populations whose members then specialized on manufacture, commerce, trade and other productive activities.[387] A similar process started in Japan in 1600 CE, beginning with the Tokugawa era.[388] Thus, the two agrarian areas with the most pronounced CW-Condition in Eurasia—Northwestern Europe and Japan—slowly approached the mature stage of pre-industrial civilization, long known from the older civilizations. This mature stage originated in improved forms of agriculture, which became productive enough to feed a growing and increasingly specialized urban workforce. As a consequence, civilizational features such as writing, money, law, science and the fine arts surfaced and blossomed.

But here is our paradox again: The mature stage of pre-industrial civilization turned into a perpetual trap for the old civilizations from which none of them managed to escape into launching the industrial take-off, not even over the duration of several millennia. In sharp contrast, in the moment at which the much younger civilizations of Northwestern Europe and Japan reached the mature pre-industrial stage, they quickly headed for the industrial breakthrough and took off.[389]

We believe that the CW-Condition makes all the difference. This condition, we suggest, avoids the Malthusian cycles in which societies get otherwise caught when they reach the mature level of pre-industrial civilization. One source of this difference is that agriculture in the presence of the CW-Condition establishes different fertility incentives. As Oded Galor points out, the old civilizations did not experience significant progress in ordinary people's basic living conditions, neither in terms of income nor longevity, because productivity gains have been entirely channeled into population growth and the expansion of the cultivated territory.[390] A reason for this phenomenon is the high labor intensity of irrigation-managed agriculture: Rice cultivation or that of other irrigated tropical crops, like sugar cane, tobacco, tea and cotton, requires the deployment of large numbers of laborers per unit of land. To sustain the workforce, high fertility rates are required, which favors early marriages and the reduction of women to the role of reproduction—a tendency further supported by high child mortalities in disease-vulnerable environments. Thus, irrigation-managed agricultures tend to establish fertility practices of the quantity-breeding type. As is well understood, when producing children absorbs more of people's (and especially women's) lifetime, less time is left to build human capital. Hence, high fertility blocks the quality building strategy that must spread broadly to release on a mass-scale the explorative energies and initiatives needed to launch an industrial take-off.

By contrast, rain-fed agriculture in CW-areas has a lower demand for human labor per unit of land, especially when the production centers on grains such as rye, wheat and barley, with pastures held for draft animals.[391] This setting incentivizes fertility practices of the quality building type. These practices limit the size of the workforce while increasing its skill. If, in this situation, rising urban markets increase the labor demands of producers, cheap mass labor is in short supply.[392] To meet their labor demands, producers then must invest in technology. To do this, they need to allocate resources to experimentation and research. They also must hire creative minds with

knowledge. As this becomes obvious, a market for ideas emerges, which further increases people's incentives to invest in their own skills—thus, reallocating lifetime otherwise spent raising large numbers of children. Low fertility practices later on increase the state's incentives to promote universal schooling, as a tool to unlock a population's intellectual potential for economic productivity (which also elevates a state's military capacity and power status on the international stage). All these tendencies flow together in a broad process of cognitive mass mobilization, which eventually allows societies to escape the Malthusian trap.

The advantages of the CW-features are conditional. They require the emergence of the mature level of pre-industrial civilization at which the old civilizations remained stuck for centuries and millennia ever since they got there. For the reasons outlined, this maturation happened late in history in the world's CW-areas, and so the advantages of the CW-Condition, too, germinated rather late. But once they did, they did so with a vengeance as the sequence in Figure 5-7 illustrates beyond reasonable doubt.

Summary

Societal development is a slow process that progresses at glacial pace at best. It usually takes at least the timespan of a generation to make an improvement in mass-scale living conditions truly felt, even if economic growth advances at an exceptional rate. Still, the developmental differences of today are recent on the time scale of history and began to surface only with the Double Emancipatory Turn towards industrialization and democratization, beginning just some 250 years ago. Before this turn, mass-scale living conditions in terms of per capita incomes and life expectancies were miserable in all agrarian societies, albeit at higher levels of grassroots autonomies in the world's CW-areas. The mighty agrarian empires along Eurasia's semi-arid civilization belt provided no escape from the misery of this seemingly perennial Malthusian era. On the contrary, the agrarian empires augmented mass-scale suffering by adding oppression under coercive state orders. Against the backdrop of the long agrarian misery, the Double Emancipatory Turn was a groundbreaking game changer that started to liberate at least significant portions of the people in the world's CW-areas from existential constraints on their lives—although the process remains profoundly incomplete until this day, as the continuing struggles against sexism, racism and other forms of group discrimination still testify.

Centralized irrigation opened societies in the semi-arid Eurasian East-West belt a fast-track road into intensive forms of high-surplus agriculture, urban settlement and organized statehood—hence, the early emergence of civilization among the agrarian empires alongside this belt, reaching from the Eastern Mediterranean to the Middle East to India to China. But all of the agrarian empires turned out to be evolutionary dead-ends. Their coercive orders entrapped them in recurrent cycles of decay and rebuilding, until they went extinct upon confrontation with European colonial powers in the aftermath of 1500 CE. Thus, the double industrial-democratic revolution occurred so late in the history of humanity because the CW-areas, which embodied the potential to launch

this turn, matured so late. The critical question is why the CW-area's civilizational potential germinated so lately.

Indeed, despite the CW-areas' suitability for agriculture, the populations inhabiting these areas adopted mature forms of agriculture suspiciously late, if they adopted it at all. There are several plausible reasons for this apparent belatedness.

For one, the CW-areas in the Old World (i.e., Northwestern Europe and Japan) were populated by humans several thousand years later than the semi-arid areas in Eurasia's pristine civilization belt. And the CW-areas of the New World (i.e., the coastal North of the US, the coastal South of Canada, the Southern cone of South America, the Australian Southeast, Tasmania, New Zealand and some Pacific islands) have been populated even later. The later peopling of an area means that the inhabitants had several thousand years less time at their disposal to develop sophisticated cultivation methods. Also, with no exposure to major agrarian civilizations in their direct vicinity (as was the case for most of the New World's CW-areas), the CW-areas' inhabitants had no possibility to adopt agriculture by imitation.

Moreover, the entry barrier into advanced forms of cultivation was high in CW-areas. The reason is that cultivating the densely wooded CW-areas with their thick, moist and heavy soils requires forest clearing, swamp draining and other demanding landscaping efforts. These efforts require tools and technologies—including metal axes, saws, picks and rakes—that only people with an advanced knowhow in metallurgy can produce. Similarly, the dense and heavy soils of the CW-areas can only be farmed with the help of the heavy iron plow whose production requires—again—advanced knowhow in metallurgy.

Finally, and most importantly, the CW-areas are not only suited to agriculture but also particularly well suited to the foraging lifestyle without over-depleting local resources. The ubiquitous availability of freshwater, lush hunting and fishing grounds and a rich fauna with mushrooms, herbs, berries, tubers and the like all are conducive to foraging—hence, no need to adopt agriculture, at least not until neighboring agriculturalists make this step necessary to avoid being outnumbered and finally being replaced by the denser and faster growing agrarian populations. In light of the CW-areas' suitability for hunting-gathering, foragers in these areas would naturally avoid efforts to adopt intensive forms of agriculture as long as possible. Anthropologists agree that humans naturally prefer foraging over an agrarian subsistence because foraging is connected with less labor intensity, less of a rigid work schedule, freedom from oppression by overlords, a more variegated diet, more leisure and more exciting activities, such as camping, hunting and partying. For all these reasons, CW-areas adopted agriculture significantly later among areas with the same agricultural suitability.

Once they adopted agriculture, the CW-areas continued to differ in significant manner from the non-CW agrarian areas. A key point in this context is fertility pressures and the resulting patriarchal control over female sexuality. CW-areas emit lower fertility pressures on their inhabitants for a number of reasons. To begin with, in the absence of tropical and sub-tropical diseases and heat-induced water infestation, CW-areas benefit from a naturally lower pathogen load. The lower pathogen load reduces child mortality, which is one source of reduced fertility pressure on women

because lower child mortality allows for lower fertility to sustain one's bloodline. Furthermore, the type of rain-fed agriculture suited to the CW-Condition—namely cereal (rye, wheat, barley) cultivation combined with cow herding—nurtures local autonomy in labor organization because this form of subsistence allows a nuclear family household to farm a sizeable area of land largely on its own, with little need for hierarchical labor management or extended family support. A low demand for human labor per area unit further reduces fertility pressures. Lower fertility pressures, in turn, shape sex norms as well as the patterns of household and family formation in a fashion that avoids patriarchal control over female sexuality. The nuclear family configuration is the grassroots manifestation of this scenario. In this scenario, families' reproductive investments focuses less on the number of children than on their skills: quality building instead of quantity breeding.

A social order emerging from such a grassroots setting is likely to transplant this setting's inherent cohesion logic—namely, consent instead of command—into the dominant pattern of state organization: hence, contractual rather than coercive institutions. Contractual state institutions check the central ruler's executive power by elected assemblies. In the absence of universal suffrage, the contractual state order and its representative institutions are not a democracy—at least not yet. But the contractual order embodies the potential to evolve naturally into full-fledged democracy by the stepwise extension of suffrage in parallel to the extension of income taxation and other civic obligations, like military service and school attendance. As late as the CW-areas developed well organized forms of statehood, they gave it an entirely new shape, namely the contractual shape that stays in sharp contrast to the coercive shape that predominated everywhere else in the world where states emerged.

Our findings reveal an intriguing irony. The CW-areas lost the first civilization race to the Neolithic Revolution but won the second civilizational race to the Industrial Revolution. Relatedly, the CW-areas adopted intensive forms of agriculture later than other civilizations but, when they did, they were faster in getting to the mature pre-industrial stage of development, from which an emancipatory turn of the civilization process came into reach. Signficantly, both components of this irony are explained by the same phenomenon: The fact that the CW-Condition bestows grassroots existential autonomies on its inhabitants.

Essence:

> *The Neolithic Revolution was a race towards eradicating freedoms, whereas the Industrial Revolution race was a race towards gaining back freedoms. As a consequence of this contradiction, the CW-Condition's embodiment of natural freedoms impacted in opposite ways on these two races: decelerating the Neolithic Revolution but accelerating the Industrial Revolution.*

6 The CW-Condition's Egalitarianness

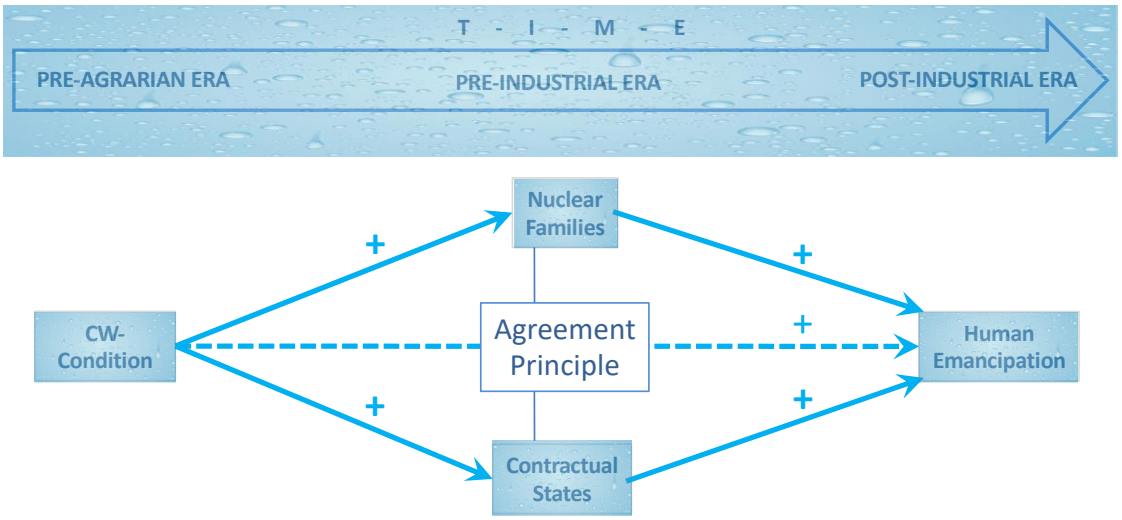
Joseph Henrich, Steven J. Heine and Ara Norenzayan[393] have coined the term WEIRD (***W***estern, ***E***ducated, ***I***ndustrialized, ***R***ich, ***D***emocratic) to describe the condition of the West's prosperous, literate and liberal populations, claiming that this condition continues to remain untypical for most of humanity. WEIRD societies are also rather individualistic and "impersonally pro-social" as Jonathan Schulz and his co-authors call it.[394] "Impersonal pro-sociality" denotes a *transcendent* version of solidarity with others that cross-cuts kinship ties and other divisive group barriers. Additional features of WEIRD-ness include higher degrees of gender equality and impartial, rather uncorrupt forms of government that pursue a more indiscriminate provision of the common good. Hence, the WEIRD theme is all about human emancipation and, hence, catches the pulse that defines the West. As we argue in this chapter, these WEIRD features are typical of societies with a pronounced CW-Condition and root in the CW-Condition's tendency to favor the nuclear type of family at the grassroots of society and the contractual type of state at its top. Figure 6-1 illustrates this proposition.

The Nuclear Family Pattern

John Hajnal's pioneering work attributes to Northwestern Europe a unique pattern of family and household formation that already existed way back at agrarian times, long before the Industrial Revolution.[395] This so-called "nuclear family pattern" consists of consensual marriages at relatively late female wedding ages, sizeable proportions of celibate women who never marry, lower female fertilities and a predominance of two-generation households, without lateral relatives (e.g., cousins, uncles, aunts etc.) but with non-kin contracted servants, in neo-local settings. In recent work, Mary Hartman as well as Jan Luiten van Zanden and his co-authors present conclusive evidence in support of this portrayal.[396]

The focal point of the nuclear family pattern is (*a*) the independence of married couples from obligations towards the wider family circle, (*b*) their autonomy as subsistence units from the support of extended kin and (*c*) a type of farm work organization free from the need of centralized water, land and labor management. This pattern contrasts with the exact opposite features in *all* other civilizations that have matured to intense forms of cultivation, with the noteworthy exception of Japan.[397] Thus, the norm in agrarian civilizations outside the CW-Condition consisted of: (*a*)

Figure 6-1. The Emancipatory Effect of the Cool Water Condition



pre-arranged marriages at young ages, (*b*) the universality of marriage among women, (*c*) high female fertilities, and (*d*) a predominance of extended families in patrilocal settings. The crucial feature of this pattern is the deep embedding of married couples and their offspring in tight obligations towards their extended family, and all of this under rigid male control over female sexuality. Supporting this insight, we see in SOM-Figure 5-15 how closely tight-vs-loose kinship bonds map on the absence-vs-presence of the CW-Condition, with growing presence of the CW-Condition favoring loose kinship ties. The cause of this patriarchal family pattern consists in the fact that pastoral and agrarian civilizations usually emerged in the absence of the CW-Condition and that means in (semi-)arid areas in which intense cultivation methods mandate centralized water, land and labor management.

Recently, Selin Dilli and Sarah Carmichael coded pre-industrial family systems around the world along these lines.[398] Based on a typology proposed by Emanuel Todd[399], they create a seven-category classification. It needs indeed to be emphasized that this classification relates to times *before* the Industrial Revolution for the overwhelming majority of countries.[400] For our purposes, we re-order Carmichael and Dilli's classification from the most patriarchal type of family system at the low end to the most emancipatory one at the high end.[401] As it turns out, Carmichael and Dilli's re-ordered distinction of historic family systems maps closely onto territories' CW-Condition. Specifically, across 148 countries from all over the world, differences in family systems

correspond to seventy-two percent with differences in the CW-Condition, as shown in SOM-Figure 6-1. Indeed, the more pronounced a country-territory's CW-Condition is, the more its family system tends to the emancipatory end; the weaker the CW-Condition is, the more the family system leans toward the patriarchal end. It is noteworthy that Japan is no exception here: As its decent CW-Condition suggests, the Japanese family system leans towards the emancipatory end in Dilli's typology, belonging to the second-highest category ("Nuclear, type B") in our re-ordered classification.

A crucial point about the characteristics of pre-industrial family systems is that they precede in time most other institutional features considered responsible for the Industrial Revolution, such as independent science, market capitalism, rational bureaucracy, rule of law, property rights, societal pluralism and representative institutions.[402] The reason for the temporal primacy of family structures is straightforward: The family is the most cellular entity and, hence, the most primordial organizational unit of any society. Accordingly, we suggest that more emancipatory household structures represent the quintessential link between the CW-Condition and emancipatory outcomes in our recent history. We have previously referred to emancipatory household structures interchangeably as "heavy-vs-light fertility pressures on women," "tight-vs-loose patriarchal control over female sexuality" and "smaller-vs-greater female (reproductive) autonomy." We continue to use this terminology but, for brevity reasons, will from now on mostly denote the emancipatory household pattern as "female autonomy."

To measure historic female autonomy for the pre-industrial era, we combine Carmichael and Dilli's re-ordered family typology with some other family characteristics from about 1800 CE. As explained in SOM-Section S4, these additional characteristics include inverse female fertilities, inverse child mortalities and inverse disease threats, which all merge in a joint overall dimension representing naturally lower fertility pressures on women and less patriarchal control over female sexuality at pre-industrial times—or in short: greater female autonomy (i.e., autonomy in terms of women's reproductive freedom and life planning).[403] Using this composite measure of female autonomy, Figure 3-3a shows that the country-territories' CW-Conditions explain a striking eighty-four percent of the global variation in weaker-vs-stronger female autonomy.

The Western Church

Jack Goody followed by Francis Fukuyama and then by Jan Luiten van Zanden and his co-authors describe the nuclear family pattern as a novelty that emerged at some point during the Medieval age. Significantly, the novelty thesis assumes a transition from a more traditional, patriarchal and kin-tight family pattern toward the nuclear family configuration. Advocates of the novelty thesis argue that the marriage policy of the Catholic church, especially a strict ban on cousin marriage, was responsible for generating the nuclear family configuration. Jonathan Schulz and his co-authors re-invigorate the novelty thesis and show that the endurance of a country's exposure to—what they call—the "Western" church explains Western civilization's historic WEIRD-ness,

including the nuclear family configuration and its center piece: female reproductive autonomy.[404] In their definition, the Western church is identical with the Catholic church before the Protestant Reformation and then includes both the Catholicism and Protestantism after the Reformation, yet not the Eastern-Orthodox Christianity.[405]

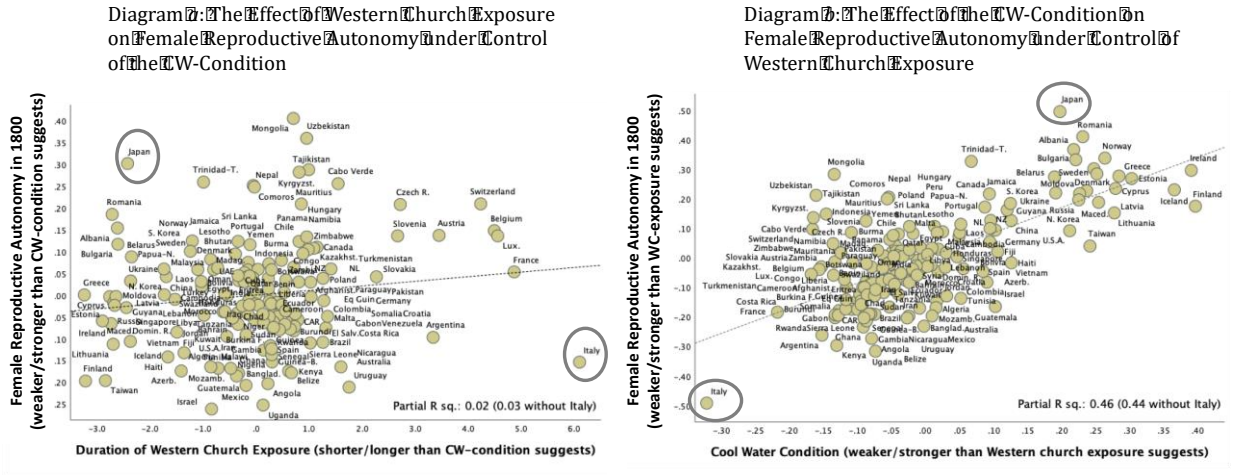
Schulz and his co-authors postulate that the Catholic church initiated and enforced a ban on cousin marriage because of the church's material interest. Forbidding cousin marriage weakens kinship ties, which makes it more difficult for families to retain property through extended inheritance among their wider families, thus increasing the church's own chances to acquire property (especially land) that goes afloat because of forbidden inheritance lines. In other words, the church's hunger for land created a material interest in loosening kinship ties, enforced through ecclesiastically designed marriage rules.

We find the Catholic church argument unconvincing for various reasons. For one, the argument does not answer the question of why the Catholic church was the only religious institution in the world capable of utilizing marriage rules skillfully to its own benefit. Next, the nuclear family pattern is considerably more pronounced precisely in Europe's Protestant and CW-strong Northwest than in its Catholic and CW-modest Mediterranean South. This observation represents a striking counterfactual to the exposure argument because Western Christianity established itself much earlier in Europe's Catholic South and East than in the Protestant Northwest, which actually rebelled against and broke off from the Pope and the Catholic church with the Protestant Reformation. It is also no coincidence that the Protestant Reformation has been welcome most openly in the CW-areas of the European Northwest, while the Reformation did not expand into the CW-weaker European South and East. Most likely, the grassroots autonomies that the CW-Condition bestows on its inhabitants predisposed people in the Northwest more than those in the European South and East to find appeal in Protestantism's individualistic-egalitarian doctrine.

What is more, we see no evidence that there was once an extended, kinship-tight family system that thereafter—upon intervention by the church—transformed itself into the nuclear family configuration. At least, there is no evidence for such a transition concerning living arrangements in Europe's CW-strong Northwest. Instead, a sizeable literature maintains that there never was an extended, kinship-tight family system in Europe's mostly Germanic populated Northwest. Indeed, this literature suggests that the nuclear family configuration is much more original and that the CW-Condition allowed to transplant this configuration from its natural presence in the hunter-gatherer stage to the pastoral stage of the Germanic warrior tribes and then from there to the settled stage of the Medieval feudal kingdoms with their typical family farm version of cereal growing/livestock herding agriculture.

In the ethnography *Germania* (published in 98 CE), the Roman writer Tacitus describes with amazement the customs of the "barbarian" Germanic tribes in Northern Germany and portrays a lifestyle that includes all the features of the nuclear family configuration. At this point in time, the Germanic warrior tribes were still pagans, for which reason the nuclear family configuration in

Figure 6-2. The Cool Water Condition, Western Church Exposure and Female Reproductive Autonomy



Reading Assistance:

Left-hand Diagram: Countries whose exposure to the Western church reaches farther back in time relative to their CW-condition show ***NO*** significant tendency towards greater female autonomy in around 1800.

Right-hand Diagram: Countries whose CW-condition is stronger relative to their exposure to the Western church ***DO*** show a significant tendency towards greater female autonomy in around 1800.

Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

Northwestern Europe predated any exposure to the marriage policy of the Catholic church. To cite Tacitus himself:

> "The [Germanic] young men marry late and their vigor is thereby unimpaired. The girls, too, are not hurried into marriage. As old and full-grown as the men, they match their mates in age and strength, and the children reproduce the might of their parents."[406]

All of this suggests that the Germanic tribes lived in nuclear families with loose kinship ties and a higher than usual degree of female autonomy already at pagan times, long before any exposure to the Catholic church.

Tacitus' portrayal might be dismissed as purely anecdotal. Yet, literature exegeses of the Nordic sagas and—more importantly—recent examinations of skeleton evidence from numerous archeological sites confirm that the Germanic tribes of Northwestern Europe's CW-area lived in nuclear family arrangements, under rather loose kinship ties with relative egalitarian gender relations and consensual forms of decision making with strong elements of local democracy long before any exposure to the church's marriage policy.

The reason why the CW-Condition facilitates an uninterrupted transplantation of the nuclear family configuration from pre-settled to settled stages of development is that the type of agriculture favored by the CW-Condition (cereal cultivation combined with cattle farming) allows nuclear

households to manage sizable land plots on their own, with little need for support by extended kin and no need for hierarchically coordinated irrigation or other features of centrally orchestrated land and labor management. Therefore, the nuclear family pattern is natural to the subsistence methods and forms of work organization favored by the CW-Condition. In conclusion, we agree with recent critics of the Western church thesis, which argue that the church's ban of cousin marriage is more likely an official expression of an already existing informal marriage practice, rather than the origin of it—hence, a symptom rather than a cause.[407]

Testing our assumption against the arguments of Jan Luiten van Zanden and Jonathan Schulz and their co-authors, we find that differences in the endurance of the country-territories' exposure to the Catholic church indeed explain roughly fifty-two percent of the global variation in female reproductive autonomy in about 1800 CE. But the influence of Western church exposure turns negligable in size and statistically insignificant, once we control for the CW-Condition, which retains its own highly significant and strongly positive influence on female reproductive autonomy. The two diagrams in Figure 6-2 visualize the evidence.[408]

Critical Cases: Japan and Italy

In terms of illustrative evidence, Japan and Italy provide the most critical test cases of the CW-Theory, especially in juxtaposition to Western Church (WC-)Thesis. To begin with Japan, what is so critical about this country is that Japan is *the* one non-Western country in Eurasia's civilization belt that comes closest to Northwestern Europe's CW-Condition, all the while Japan had no WC-exposure at all.[409] Thus, Japan's pre-industrial population benefited to a certain extent from the existential autonomies that the CW-Condition naturally bestows on its inhabitants.[410] From this point of view, one would expect to see some of the supposed long-term consequences of the CW-Condition to surface at one point in Japan's history. And we do.

Like Northwestern Europe, Japan adopted agriculture much later than the areas in Eurasia's axial civilization belt. Accordingly, a bureaucratic state also emerged much later in Japan. Moreover, in Selin Dilli's typology of family systems, Japan falls into the same category as many Northwestern European countries—the "stem" family—which is indicative of nuclear family households' relative autonomy from extended kin support.[411] Likewise, John Powelson's[412] characterization of feudal systems arranges Japan into the same category as Northwestern Europe: "contractual feudalism," which involves personal, local, corporate and sectoral autonomies and a multipolar power structure—in sharp contrast to the "coercive feudalism" that was typical of the agrarian empires outside the CW-areas. In light of these similarities at the pre-industrial stage, it appears as less of a surprise that Japan was the first non-Western country to follow Northwestern Europe in the Industrial Revolution. This happened during the Meiji Restoration starting in 1870.

In 1890, Japan was the first non-Western society to adopt a representative constitution, the "Meiji Constitution," with an elected assembly called the "House of Representatives." Although the right to vote the representatives of the House was limited by a tax census (as it was in European

constitutional monarchies at the time), the sheer existence of an elected assembly with legislative power is already in and by itself the sign of the contractual form of statehood in which executive power is checked and in which subjects are treated as citizens who are entitled to individual rights, most notably the right to private property as well as freedom of speech, assembly and association, as stipulated in Articles 27 and 29 of the Meiji Constitution.[413]

The two diagrams in Figure 6-2 encircle the location of Japan. The left-hand diagram isolates the effect of the WC-exposure on pre-industrial female autonomy in 1800, while holding the CW-Condition constant. Under this control, Japan is an extreme upper-left outlier in the distribution. This means that Japan exhibits a much stronger degree of pre-industrial female autonomy than its literally inexistent WC-exposure would otherwise suggest.[414] By contrast, the right-hand diagram isolates the effect of the CW-Condition on female autonomy holding the WC-exposure constant. Under this control, Japan is located much closer to the overall trend of the distribution. This means that pre-industrial female autonomy in Japan is pretty much in line with the moderate presence of the CW-Condition in this country, but completely out of line with its non-existing WC-exposure.

Besides Japan, Italy is the other telling case in point, albeit in the exact opposite direction. Italy is the origin of the church's Western branch, still visible in the fact that Italy's capital city Rome hosts the Vatican State—home of the Pope. Accordingly, Italy has by far the longest WC-exposure, much longer indeed than the modest CW-Condition of Italy's North suggests.[415] But this does not bring Italy into a better position concerning pre-industrial female autonomy than other countries with a similarly modest CW-score. This is evident in Italy's extreme lower-right position, far away from the overall trend of the distribution in Figure 6-2's left-hand diagram. Thus, Italy exhibits a much lower degree of pre-industrial female autonomy than its long WC-exposure can explain. Vice versa, Italy's CW-score is much lower than its very long WC-exposure suggests—and this does explain its lower degree of pre-industrial female autonomy relative to what its long WC- exposure suggests: hence, Italy's lower-left position close to the regression line in Figure 6-2's right-hand diagram.

EXCURSION: THE CW-CONDITION'S CONDITIONAL GERMINATION

The contrasting examples of North and South Korea—which share a roughly similar CW-Condition—teach us an important lesson as concerns the germination thesis of the CW-Theory: The emancipatory seed embodied in the CW-Condition can only germinate if the territory on which this condition exists remains shielded from disruptive outside intervention. This conditionality explains why the emancipatory seed failed to germinate in a few CW-territories, namely China's Northeast around Dalyan and Russia's Northwest around St. Petersburg[416]: Encapsulated in large land empires whose authoritarian power centers (i.e., Beijing and Moscow) are located in less CW-strong sites, neither China's Northeast nor Russia's Northwest could develop their CW-rooted economic potential freely. Thus, the inner seed is locally there but the bigger geopolitical constellation hinders its germination. Still, we will see in Chapter 10 that regional variation in the CW-

Condition within both China and Russia explains inner-national differences in various emancipatory outcomes.

A brief look into Russian history reinforces the conclusion that the germination thesis is conditional: For a CW-territory's emancipatory seed to germinate, the territory needs to be shielded from conquest by foreign despotic powers. Russia as a whole certainly has a considerably weaker CW-Condition than Northwestern Europe, but Russia's CW-Condition is not as weak as one would expect seeing the recurrent strength of authoritarian tendencies in the country's history, spanning from the Tsarist Empire to the Soviet Union to Putin's neo-autocratic imperialism. In light of these tendencies, it is easy to overlook that Russia also had some liberal moments, if we think for instance of the prospering phase of the trade city Novgorod, the free Cossack republics and the liberal ideas of the "Westerners" vis-à-vis the "Slavophiles" among Russian intellectuals.[417] However, the struggle between authoritarian and liberal forces in Russian history unfolded on a heavily uneven playing field, tilted massively by a foreign power towards the advantage of authoritarianism. That foreign power has been the Mongol Empire (and its succeeding Khanates), which reigned several hundred years over Russia, thus shielding the country from liberal Western impulses and leaving it with a despotic imperial apparatus. Once in the hands of Russian rulers, this apparatus gave the upper hand to authoritarianism, placing the country on a long-term autocratic trajectory from Czarism to the Soviet system to Putin's regime. As a thought experiment, it is reasonable to assume that Russia's emancipatory achievements would be closer to what its CW-Condition alone suggests, had the country been exempted from Mongol conquest—a scenario in which the liberal trade city Novgorod, rather than Moscow, might have become the center of Russia's nation building.

In light of these considerations, we conclude that the existential autonomies embedded in the CW-Condition naturally predispose the CW-areas to emancipatory dynamics. Thus, if state structures evolve from inside a CW-area, these structures crystallize in a pluralistic, power-sharing shape—what we call the contractual state. By its inner potential, the CW-Condition defies imperial despotism. But again, this characterization is conditional. It only holds with an important qualification: The anti-despotic, emancipatory nature of the CW-Condition can freely unfold, only if the territory with this condition remains *on its own*. In other words, in order to realize their potential, territories with the CW-Condition must not be absorbed by outside conquest into bigger empires whose power centers reside in territories that lack the CW-Condition and favor coercive state structures for this reason.

The Double Emancipatory Revolution

Judged by their inherent tendency, CW-areas should favor pluralistic power structures. Today, this would be visible because countries with a stronger CW-Condition show a stronger degree of contractual—as opposed to coercive—statehood. Contractual statehood combines democratic checks on rulers' executive power with uncorrupt government practices by which officials exercise their political authority for the common good, rather than for their own and their cronies' private benefit.[418] SOM-Figure 6-1a confirms this expectation. As the lower-right diagram shows, across the 168 countries with available data, the gradual absence-vs-presence of countries' CW-Condition correlates significantly and positively with their degree of contractual statehood in 2016.[419] This

correlation remains robust when controlling for a country's per capita Gross Domestic Product (GDP) in 2016 (or any other year). In fact, the CW-Condition shows an even stronger effect on contractual statehood than does per capita GDP itself (also when using a logged measure of GDP).[420] This is not surprising because the CW-Condition accounts for a large share of the cross-national differences in prosperity, which demonstrates that the CW-Condition lies at the origin of both economic and political emancipation, visible in the pairing of industrial productivity in the economic sector with democratic representation in the political domain—testifying the CW-Condition's double emancipatory effect.

SOM-Figure 6-1a visualizes the origin of the Double Emancipatory Revolution's two elements in the CW-Condition, showing the emancipatory impact of the CW-Condition on countries' industrialization in the left-hand panel and its impact on democratization in the right-hand panel. Indeed, the two left-hand diagrams illustrate a significantly and strongly positive impact of the CW-Condition on the countries' material prosperity, (*a*) when the beginning Industrial Revolution started to magnify cross-national differences in living standards (upper-left diagram) and (*b*) today (lower-left diagram). The two right-hand diagrams illustrate a similarly significant and strongly positive impact of the CW-Condition on the countries' contractual statehood, (*a*) when the French Revolution started to magnify cross-national differences in contractual statehood (upper-right diagram) and (*b*) today (lower-right diagram).

Daren Acemoglu and James Robinson[421] have re-examined Seymour M. Lipset's famous modernization-thesis, which postulates that growing per capita income makes countries more likely to become and remain democratic: "the more well to do a nation, the better the chances that it will sustain democracy."[422] As a result of their re-examination, Acemoglu and Robinson point out that the strong cross-sectional correlation between the countries' per capita incomes and their levels of democracy only exists because of a hidden legacy factor from back in the past that caused certain countries to embark on a trajectory leading them towards both prosperity and democracy. Acemoglu and Robinson label this legacy factor "inclusive institutions" but they do not substantiate where exactly the legacy of these institutions comes from.

A plausible candidate for this legacy factor (much more so than the Catholic church) is Protestantism and its encultured individualistic-meritocratic ethos. It is indeed too obvious to overlook that the first industrial economies and the first modern democracies all were predominantly Protestant in composition.

Yet, the CW-Condition reaches much farther back in time than Protestantism and actually explains where the Protestant Reformation was most successful and sweeping. The Reformation started in Northwestern Europe's CW-area. And all regions of Protestant success exhibit, without exception, a strong CW-Condition. By the same token, the Counter-Reformation managed to stop the Protestant expansion into exactly the *lower* CW-scoring regions of Europe's Catholic South. Likewise, Protestantism failed to make any progress into the also *lower* CW-scoring areas of Europe's Orthodox East. Consequently, the CW-Condition explains in which regions the individualistic-meritocratic ethos of Protestantism was so appealing that people readily adopted it, namely in places in which the autonomies that a strong CW-Condition naturally bestows on its inhabitants

had already predisposed these people to find appeal in an individualistic-meritocratic doctrine. In other words, the CW-Condition operated as the decisive selective force behind Protestantism's emergence and expansion and explains the positive impact of Protestantism on both industrialization and democratization.

To illustrate these points in numbers, SOM-Figure 6-1b chooses a time when global cross-national differences in industrial productivity and democratic representation began to surface in full scope: the turn from the 19th to the 20th in 1900 CE. For this critical era, the extent to which a country has been imprinted by Protestantism explains a significant 23 and 28 percent of the global cross-national differences in both industrial productivity and democratic representation, before controlling the influence of the CW-Condition. After controlling the countries' CW-Condition, the effect of Protestantism turns insignificant, while the CW-Condition exhibits a powerful impact on both industrial productivity in 1900 (80% of a partial explained variance) and democratic representation in 1900 (65% partial explained variance). The two diagrams in SOM-Figure 6-1b document the evidence for both industrial productivity (left-hand diagram) and democratic representation (right-hand diagram).

This evidence suggests that it is precisely the CW-Condition in which Acemoglu and Robinson's supposed legacy of "inclusive institutions" originates. Contractual statehood is a formidable measure of inclusive institutions as it combines representative institutional elements (i.e., checks of the rulers' executive powers by elected assemblies) with a rather indiscriminate common good orientation in government action (evident in rule of law).

Let us look again at coercive-vs-contractual statehood[423] in about the year 1900 CE, which happens to be the birthdate of modern democracy.[424] This time, we reconsider the impact of the CW-Condition on the country-territories' contractual statehood[425] in its raw presence, without any controls. Thus, the right-hand diagram in SOM-Figure 6-2 replicates the association already shown in the right-hand diagram of SOM-Figure 6-1b, yet without controls for Protestantism. The label "democratic representation" on the vertical axis indicates degrees of contractual statehood. As we can see, the CW-Condition impacts on democratic representation in 1900 in a curvilinear fashion with increasing marginal returns, meaning an exponential gain in democratic representation as the CW-Condition approaches the top-end of the scale. Given that the impact of the CW-Condition on such emancipatory outcomes as democratic representation endures until this day (as the lower-right diagram in SOM-Figure 6-1a shows), we can conclude that the CW-Condition has a lasting effect on emancipatory outcomes, ever since truly sizeable cross-national differences in these outcomes began to surface at the eve of the modern era. This conclusion holds true not only for the *political* domain of emancipatory outcomes (i.e., *democratization*) but also—and even more strongly so—for emancipatory outcomes in the *economic* sector (i.e., *industrialization*), as is evident from the lower-left diagram in SOM-Figure 6-1a and the left-hand diagram in SOM-Figure 6-2.

For the purpose of further qualification, certain counterfactuals are noteworthy. The German Empire is an intriguing outlier from the CW-Condition's effect on democratic representation in 1900, while it is no outlier from the CW-Condition's effect on industrial productivity. In other

words, in around 1900 the German Empire is about as industrialized as its strong CW-Condition suggests but considerably less democratized than this condition suggests. Therefore, the German Empire in around 1900 also contradicts the Lipset-thesis due to which industrial productivity favors democratic representation. Indeed, as the two diagrams in SOM-Figure 6-2 illustrate, the German Empire's high industrial productivity closely corresponds with the country's strong CW-Condition (left-hand diagram), whereas the German Empire ranks much lower in democratic representation than Germany's high CW-score would otherwise suggest (right-hand diagram). This is true in 1900 and in any other year from the founding of the empire in 1871 until its dissolution after WWI in 1918. Thus, the German Empire did not exploit the democratic potential rooted in its CW-Condition.

EXCURSION: GERMANY'S SPECIAL HISTORY

Why did the German Empire take such an abnormal path that derailed its political, albeit not its economic, dynamic from the emancipatory potential inherent in the country's CW-Condition? The reason is a historic peculiarity that determined the outcome of the liberal March Revolution in 1848 and its impact on the course of the subsequent unification process from which the German Empire arose in 1871.

Starting in Paris, the Northwest European March Revolution of 1848 swept with a vengeance all over Germany, which by then was a collection of some thirty-plus sovereign kingdoms, principalities and duchies—loosely allied in what was called the German Federation. The March Revolution qualifies as an emancipatory movement in the very sense of our definition of the term: a bottom-up upheaval against unconstitutional rule aimed at unifying Germany in a federal state with a liberal constitution that protects people's life, integrity, property and civic freedoms by law and which checks executive power by a nationally elected assembly with legislative authority. A splendid episode of parliamentarism, an all-German national assembly in Frankfurt's *Paulskirche* crafted this constitution and adopted it in 1849. The Prussian king, however, denied his designated role as German Emperor because the crown was offered by a popular assembly "made of mud" from below when his legitimacy allegedly came "from above" due to the divine order. Prussia then led the swift military crackdown of the revolution exactly at a time when the movement had lost its rebellious momentum because the masses no longer filled the streets to exercise armed resistance against military force. Months before, military force was not a viable option when the masses stormed royal courts and government residences all over the country.

Germany's fragmentation into a multiplicity of sovereign kingdoms and principalities came at a dramatic disadvantage for the revolutionaries because they had to be successful simultaneously in dozens of provinces and not just in a single capital city—the situation if the country had been a unified state at the time. After the crackdown of the revolution, widespread frustration led masses of German liberals to emigrate to the US and other liberal countries. This brain-drain decisively weakened the liberal movement in Germany and paved the way for German unification under the leadership of the Prussian kingdom's militaristic nationalism. Unified by a militaristic war campaign from above, rather than by a liberal revolution from below, the German Empire founded in 1871 adopted the Prussian legacy in establishing a semi-autocratic form of imperial militarism that

led into WWI, followed by a turbulent democratic episode during the Weimar Republic in the 1920s, and the subsequent rise of the Nazis, WWII and the Holocaust.

Seeing German history in this light, the failure of the 1848 liberal revolution derailed the country's political trajectory from the democratic potential that Germany's strong CW-Condition embodies. Once derailed onto a non-democratic trajectory, rulers of the semi-autocratic German Empire and the totalitarian Nazi regime understood well how to foment authoritarian conformity cults to weaken democratic ambitions, thus intercepting the emancipatory psychological consequences that Germany's advanced industrial development should otherwise have shown.

These emancipatory consequences kicked in lately but then with a vengeance after WWII when German militaristic nationalism had been penultimately discredited, thus paving the way for a healthy civic culture that made democracy quickly appear as the natural system of government, first in West Germany and then after reunification also in East Germany. Today, Germany is one of the most stable and flourishing liberal democracies worldwide and the fact that democracy seems natural to the country supports, from hindsight, the view that the previous periods of militaristic imperialism have indeed been a catastrophic detour from the democratic potential that Germany's CW-Condition naturally entails—a detour caused by the tragic failure of the 1848 liberal revolution in a fragmented country.

Had the liberal revolution of 1848 succeeded, from which it was only a breath away, the resulting German state would have been on a democratic trajectory and would have turned into a closely allied soulmate of the other liberal powers of the West, which would have saved humankind from two world wars and the Holocaust.

Case-specific episodes of exceptionalism, like those of Russia and Germany, show that the CW-Condition entails merely a potential whose presence alone does not guarantee that it will come to fruition. Indeed, the potential for emancipatory civilizational dynamics that resides in the CW-Condition can be kept dormant by geo-political power constellations that exist in disregard of the CW-Condition, like Russia's conquest by the Mongol Empire and the political fragmentation of the German nation at the time of its most important liberal moment.

Of course, there are other noteworthy counterfactuals seemingly indicating that things are out of line with what the CW-Condition predicts. The oil-exporting Gulf monarchies, including Qatar, Bahrain, the Emirates and Saudi Arabia, provide a most obvious example. As the lower-left diagram in SOM-Figure 6-1a illustrates, the CW-Condition significantly predicts today's countries' overall material prosperity. But a particular set of outliers weakens the accuracy of the CW-Condition's prediction, namely the oil-exporting Gulf monarchies whose populations are materially much more prosperous than their weak CW-Condition predicts.

But instead of altogether questioning the CW-Condition's prosperity effect, this observation rather calls for an additional qualification related to the structure of prosperous economies. The key question is in how far the prosperity level achieved under a certain economic structure actually emancipates people from material dependence. From this point of view, it is crucial to distinguish wealth deriving from investments in human capital and wealth deriving from monopolizing natural resources. Wealth deriving from human capital investments elevates economies on the knowledge ladder and moves them ahead on the value-added chain, from a position at which economies produce barely processed low-end products to a position at which they produce intensely processed

high-end products. By contrast, wealth deriving from oil, gas, ores and other natural resources actually hinders an economy's ascension on the knowledge ladder. The reason for this "resource curse" is that natural resources are locally concentrated and can, hence, be easily controlled and exploited by state monopolies, which eliminates the need to invest in human capital. State monopolies weaken the private sector economy and proliferate patrimonial funding sources that allow governments to lavishly aliment their supporters, while monitoring, intimidating and oppressing their opponents.

Insight:

Unlike knowledge-induced economic growth, resource-induced growth is categorically different in terms of its emancipatory consequences. In the case of knowledge-induced growth, emancipatory consequences are abundant, which is most obvious when one thinks about the mass-scale cognitive mobilization that comes with knowledge-induced economic development. By contrast, the consequences of resource-induced growth are outright anti-emancipatory, visible in the strengthening of coercive elements in state orders.[426] *The key point about the CW-Condition in this context is its documented tendency to shift people's reproductive investment from fertility to schooling ("births"-to-"brains"). This educatory tendency is the central element of entire populations' cognitive mobilization and fuels knowledge-induced growth and its emancipatory consequences, in particular rising emancipative values.*

In light of these findings, mere prosperity is not what matters from an emancipatory point of view. Instead, what matters is whether the prosperity achieved liberates people from material dependence, which it only does in the context of contractual states, yet not within coercive states.

The CW-Condition is critical in this respect because it places prosperity into a contractual state context. Indeed, as we have seen, the CW-Condition shows a consistently favorable effect on contractual (i.e., liberal and impartial) institutions, ever since these features are measured across countries. The evidence we mentioned above on the absence of serfdom in CW-areas, or the earlier abolition of serfdom in these areas, further corroborates the CW-Condition's inherent resistance against despotic tendencies (see SOM-Figure 5-5).

In the same vein, royal absolutism either has not established itself at all or remained only a temporary episode in the CW-areas.[427] *It is probably also no coincidence in this context that successful liberal revolutions (like the Dutch, Swiss, English, American and French revolutions) and also some failed liberal revolutions (like the March Revolution of 1848 in Germany) all happened in CW-areas, thus testifying to these areas' inherent emancipatory drive towards freedoms.*[428]

The CW-Condition and Individualism

We postulate that the existential autonomies which the CW-Condition bestows on its inhabitants provide the original source of individualism, properly understood.[429] Individualism constitutes an encultured psychological orientation that lets people see other persons first and foremost as agents of their own personhood, and not primarily as representatives of their group of origin. Individualism also guides people to form social alliances following their own deliberate and voluntary consent. Already John Powelson's description of "contractual" feudalism, as opposed to "coercive" feudalism, presumes at least a nascent version of individualism. The contractual form of statehood elaborated at length throughout this volume also presumes the presence of individualism as the dominant encultured orientation in people's mindset. The reason is that, as a principle to build alliances, contract requires agreement, which is a voluntary act that assumes free will—something that only individuals possess by means of their personal agency.[430]

Since Harry Triandis, cross-cultural psychology juxtaposes "individualism" and "collectivism" as antonyms. However, this juxtaposition is misleading because it insinuates that individualistic societies lack collective cohesion, social alliances and communal solidarity. This juxtaposition, however, is dramatically misleading. For humans evolved as a cooperative species whose achievements depend on teamwork and the social coordination of individual actions. Hence, collective coordination is an inseparable part of human nature and characterizes *every* society, whether individualistic or not. Consequently, societies do not differ in whether and how much collective coordination they sustain. Instead, they differ in which *type* of collective coordination is predominant. In this respect, the key difference is the degree to which kinship ties force human cooperation into the confines of joint ancestry. Individualistic societies are special in this regard because their voluntaristic manner of forming social entities—including family households, business corporations, civic associations, political coalitions and representative assemblies—liberates human cooperation from the chains of extended kinship and personal intimacy. Therefore, individualism feeds more human cooperation between strangers. Accordingly, the opposite of individualism is not collectivism but the double-edged phenomenon of ingroup favoritism/outgroup discrimination, also known as "amoral familism" to use Edward Banfield's characterization.[431]

Essence:

> *In a nutshell, collectivism does not differentiate human societies. What differs instead among human societies is the extent to which the dominant type of collectivism is familistic, discriminatory and based on kin-like intimacy (i.e., familism) or individualistic, egalitarian and based on voluntary agreement (i.e., individualism). In recognition of this insight, it is wrong to portray familism as collectivism and individualism as anti-collectivism. Instead, familism equates with discriminatory collectivism while individualism corresponds with egalitarian collectivism.*

Under familism, people are placed into their groups by the force of ancestry and lineage—something one cannot choose. Under individualism, by contrast, a person's group affiliations and

community engagement are largely a matter of personal choice. The multiple ways in which humans socialize and interact turn more into voluntary acts under individualism. Of course, no society's collectivism is either completely individualistic or familistic. Instead, the social alliances that shape societies always include elements of both individualism and familism. Yet, the elements coexist in different mixtures that reflect different degrees of prevalence in one direction or the other. Our argument is that the existential autonomies inherent in the CW-Condition shift the balance towards individualism and the related egalitarian type of collectivism.[432]

Individualism does not erode but enhances a society's self-regulatory potential, collective action capacity and enculturation of transcendent forms of inter-human solidarity, beyond extended kinship. The reason is that individualism allows people to disconnect from kinship, clan, lineage and other ties of ancestry that force people into unchosen group obligations—obligations that can paralyze people's individual initiative and, thus, whole societies' civic energy and synergetic potential. Precisely this liberation from the "social cage"[433] of familism gives people opportunities to join forces for mutual benefit with whomever they like. *Connective freedom* in this understanding makes it easier for people to create alliances that cut across group divisions of the ancestral type.

For this reason, individualism is conducive rather than detrimental to the common good: When it is easier for people to find like-minded others, join forces with them, agree on and pursue a common cause and voice shared concerns, it is more likely that (*a*) cross-cutting concerns beyond people's ingroup horizon find a voice and (*b*) that authorities act under the bottom-up pressure of the voices raised from below. Should there be any chance that the authorities listen and respond to voiced demands in ways that resolve cross-cutting societal concerns, this very chance increases under the bottom-up pressure of civic activism.[434] For this reason, individualism is a powerful social force that unleashes a population's collective synergy, whereas familism is a limiting factor that under-exploits societies' synergetic potential.

Harry Triandis and other social psychologists ascribe familism to traditional societies and individualism to modern societies, suggesting that individualism becomes prevalent alongside the increasing choices and opportunities that prosperous, literate and democratic societies offer their people.[435] Joseph Henrich, Steven J. Heine and Ara Norenzayan[436] have coined the term WEIRD (***W***estern, ***E***ducated, ***I***ndustrialized, ***R***ich, ***D***emocratic) to describe prosperous, literate and liberal societies, claiming that the conditions of these societies continue to remain untypical for most of humanity. This includes individualism and its related impersonal form of pro-sociality: These phenomena are a singularity of Western culture and part of its WEIRD-ness. Jonathan F. Schulz and his co-authors invented the term "impersonal pro-sociality" to describe a logic of forming social alliances in individualistic societies that is detached from kinship and its related web of personal intimacy bonds.[437] Instead, social alliances in individualistic societies are built on the basis of deliberate agreement, visible in a plethora of voluntary associations. Solidarity, for its part, exists in individualistic societies but is organized through anonymous universal schemes, including health care systems, pension schemes and other institutions of the welfare state that benefit *indiscriminately* every individual who meets the legally stipulated entitlements. Anonymous institutions,

instead of familistic bonds of intimacy, coordinate social actions in individualistic societies. In performing social functions and achieving an indiscriminate provision of public goods and services, anonymous institutions are clearly superior to intimate familism.

The emphasis on "impersonal pro-sociality" is important because it contradicts the widespread notion of individualism as a culture of selfishness and egoistic competition that lacks pro-sociality altogether. Often, this misperception goes hand in hand with another one: the idea that the growth of individualism in modern society replaces strong personal ties with weak impersonal ties between people, which supposedly destroys social capital and creates communities of isolated individuals who are no longer capable of cooperating for a common purpose.[438]

This stereotypical stigmatization of individualism is frequently couched in a caricaturist critique of our supposedly capitalist lifestyle. The criticism claims that modern capitalism deprives inter-personal relationships of the psychological comfort that only the close social bonds of traditional familism could provide. Juxtaposing the "cold" anonymity of city life with the "warm" intimacy of living in the countryside is the stereotypical element of this exercise in romanticizing pre-modernity. These views describe individualism as an abnormal condition that operates against human nature and, for this reason, plunges societies into mass depression and other mental pathologies. According to this perspective, too many freedoms overwhelm the human mind and create a "tyranny of choice" that makes people sick.[439]

None of this is true, however.[440] Far from it, prevailing individualism in societies goes together with greater cooperation among strangers, less widespread misbehavior in the public (like littering, spitting, shoving, honking), less violence, crime and corruption, more impartial and democratic governance, stronger civil societies, more vibrant voluntary associations and more bottom-up social movement activity, more outgroup trust, more tolerance of social diversity and, perhaps most importantly, higher levels of life satisfaction overall.[441]

Depicting individualism as social isolation is mistaken because *no* society lacks interpersonal ties, pro-sociality and social capital. What differs are the *types* of social glue that prevail. Humans evolved as an inherently cooperative species whose achievements derive entirely from teamwork and social coordination.[442] Human interactions are more powerfully driven by our social recognition needs than by material greed.[443] Experimental economics proves time and again that human behavior in cooperation games is more strongly determined by social justice feelings than by greed for individual profit.[444] In fact, humans act easily against their material self-interest when the action strengthens their reputation among the reference groups with which they identify. If, for instance, generosity is the norm in our reference group, we behave generously, even if this means a material sacrifice.

What is more, humans tend to internalize group norms as their own values and follow this inner moral compass, even if they are unobserved: Norms internalized as moral values shape personal identity. And normative pressures within groups tend to be tailored towards social fairness rules to disincentivize harmful cheating and defection. Individualism generalizes these normative pressures such that they cut across the boundaries of narrow ingroups. In other words, individualism socializes people in such a fashion that they internalize universal justice norms that apply to

everyone, instead of particularistic justice norms that only apply to the ingroup.[445] These mechanisms operate on the ground of our hard-wired social emotions, which evolved alongside our cooperative ability. Particularly noteworthy in this context is the human sense of justice, which—when violated—generates the strongest reactions to bring perpetrators back to schedule. Individualism expands the human sense of justice to reach beyond the boundaries of the ingroup. Therefore, individualism goes hand in hand with anti-discriminatory norms and a tendency to treat others with indiscriminate benevolence.

Sometimes, theorists and observers describe modernization and its individualizing tendency as a process that replaces strong personal ties with weak impersonal ties. What is true is that weak impersonal ties play a major role in individualistic societies, while they are negligible for the social glue in familistic societies. But strong personal ties do not vanish in individualistic societies because people always need to sustain such ties to feel emotionally comfortable and to achieve happiness. What is changing with individualization is that people are more picky about the personal ties they chose to sustain. Indeed, individualization makes people freer to connect and disconnect as they like and with whom they like. This is the reason why divorce rates go up with ongoing individualization, which is not necessarily a social pathology. Quite the contrary, it is better for people's mental health to end a relationship that has turned sour than to be forced by social norms to sustain a psychologically harmful marriage. Divorce rates are a prime testimony to the fact that especially women are allowed to exercise their connective freedom, which includes the freedom to *dis*connect upon one's own choice.[446]

Against this backdrop, it is dead wrong to equate familism with solidarity and individualism with egoism. The truth is that familism and individualism do not differ in the presence or absence of solidarity but, once more, in the prevalent *type* of solidarity. The type of solidarity characteristic of familism is *discriminatory*, that is, limited to the ingroup of people to whom one has an intimate connection. To enable interpersonal cooperation under familism, it is always necessary to create a bond of intimacy. Having sumptuous dinners and carousals to seal a business deal is a typical symptom of familism. Under individualism, by contrast, the prevalent type of solidarity is *egalitarian*.[447] It is no coincidence that the modern welfare state with its universal redistribution schemes—like general pension and healthcare plans—has developed the farthest in the most individualistic societies. By maintaining universal schemes, the welfare state organizes solidarity across, not within, group boundaries.[448] Consequently, the true opposite of familism's *discriminate* version of solidarity is not non-solidarity but individualism's *indiscriminate* form of transcendent solidarity.[449]

Individual autonomies loosen people's wholesale commitment to lineage, kinship and clan. Accordingly, people become freer to associate with whom they agree to associate. And when *agreement* replaces *lineage* as the organizing principle of cooperation, the possibilities of cooperation literally explode in ways that perforate and bridge otherwise impermeable group barriers. Hence, individual autonomies strengthen the role of voluntary agreement in shaping human associations. When this happens, a community's capacity for self-initiated and self-sustained joint action grows. Joint action capacity embodies resistance power against the autocratic ambitions of

power-greedy would-be despots and their rent-seeking interests. Thus, individualism creates an elite-challenging mentality that nurtures effective resistance against attempts at power usurpation at all layers of society. Under these circumstances, state capacities can grow only in exchange for concessions that guarantee autonomies. Such concessions—sometimes enforced from below through a liberal revolution—establish social contracts, visible in charters and constitutions, which operate on a power-sharing logic. Under the rule of this logic, income taxation expands in exchange for political representation—due to the root principle of contractual statehood: "no taxation without representation."[450]

Insight:

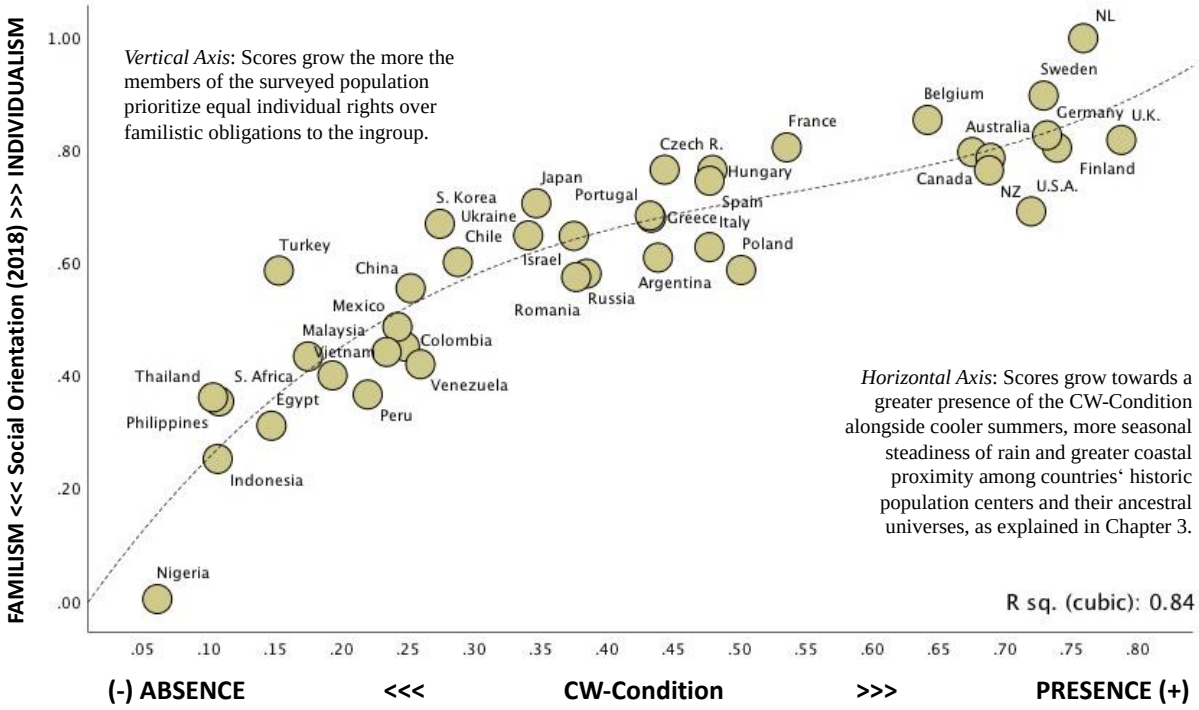
> *Because humans are a cooperative species, the most potent driver of human activity is to increase social recognition inside the group with which one identifies. Individualism is critical in this respect because it unchains people's social reputation from ancestry and ties it instead to merit. The possibility to enhance one's social reputation through merit places the locus of control into the self and motivates people to perform their tasks as best as they can. This motivation includes the ambition to acquire a maximum of the skills needed to perform required tasks. Consequently, the more firmly a society encultures individualistic orientations, the more broadly it mobilizes each of its members' achievement motivation and, hence, the entire population's talent pool, thus unleashing the society's collective human potential writ large. All of this is connected with greater cognitive mobilization, social mobility, human initiative and civic synergy—the engines of progress. In that sense, individualism is actually the most potent form of collectivism.*

Impartial Government

When state capacities expand among a sovereign population living under the CW-Condition, this is a conflictual process during which the top-down power ambitions of central authorities meet the bottom-up resistance of local groups and associations in defense of their grassroots autonomies. These conflicts generate negotiations, as a result of which expanding state capacities in terms of taxation and legislation become tied to mechanisms of preference aggregation, namely elections and assemblies, enshrined in statutes, charters and constitutions. As this happens, the emerging contractual state is tailored to the preferences of the society over which it reigns. Through successive extensions of the franchise, the orientation of the state towards the society becomes increasingly inclusive until universal suffrage creates a fully common-good committed state governed by responsible and accountable officers who see themselves in power "to protect and serve," rather than to cream off and confiscate.

The benevolent orientation of the contractual state is permanently checked by elected assemblies and monitored by free media as well as voluntary associations and social movements—the backbones of civil society. The embedding of state capacities within these social forces creates civil services whose office holders are commitment to the common good. Within a common-good

Figure 6-3. The CW-Condition and Familism-vs-Individualism



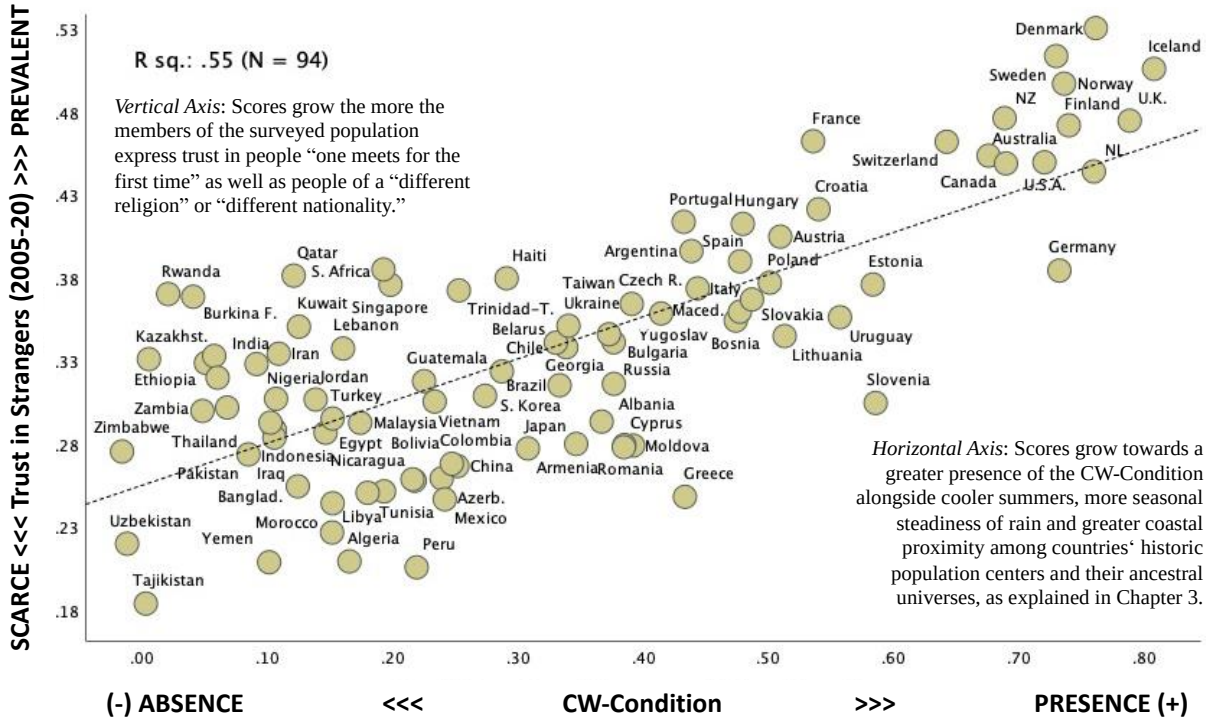
Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

oriented state apparatus, corruption, patronage, nepotism and other forms of favoritism do not vanish but they are treated as vices and persecuted, leading to officers' suspension when uncovered. As a consequence, rule of law and impartial governance are more prevalent in contractual than in coercive states.[451]

Should these rationales be accurate, then the CW-Condition constitutes an original source of individualism and its common-good consequences. Accordingly, the country-territories' CW- condition should offer a powerful explanation of population differences in (*1*) cultural individualism, (*2*) trust in strangers, (*3*) voluntary engagement in grassroots social movements and (*4*) emancipative values with their indiscriminately egalitarian orientation, as for instance in matters of gender and nonconformist sexualities.

Available evidence confirms all four assumptions clearly. Indeed, the countries' CW-Conditions correlate significantly and strongly positively with global variation in cultural individualism (r = .92), trust in strangers (r = .74), voluntary engagement in grassroots social movements (r = .74), emancipative values (r = .87) and a civicness factor that summarizes the latter three variables in a single index (r = .87), today.[452] Figures 6-3 to 6-7 visualize the evidence.[453]

Figure 6-4. The CW-Condition and Trust in Strangers



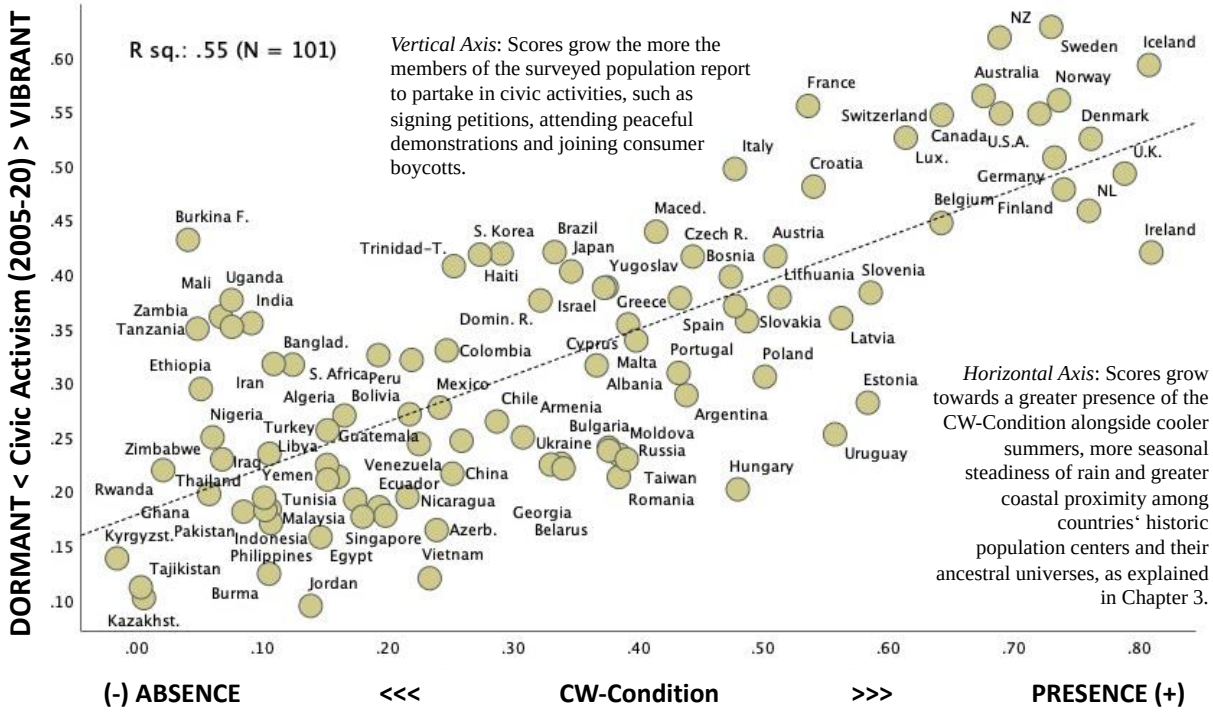
Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

The data in Figure 6-7 depict the countries' civicness today. But going back a hundred years to 1900, a time for which we have data on a complementary aspect of civicness—namely, contractual statehood (i.e., liberal and impartial institutions)—the CW-Condition already explains seventy-two percent of the cross-national variation. SOM-Figures 6-1c (right-hand diagram) visualizes the evidence. Moreover, SOM-Figure 6-1a (upper-right diagram) documents that the effect of the CW-Condition on the two elements of contractual statehood reaches back all the way to the French Revolution in 1789, explaining fifty-three percent of the global variation in the sovereign countries' liberal as well as impartial governance. Hence, the common-good effect of the CW-Condition is temporally persistent ever since the rise of the modern nation state.[454]

Gender Equality

Arguably, when individualistic, meritocratic, egalitarian, cooperative and inclusive orientations converge and become prevalent, this should manifest itself most visibly in the most original and perennial form of inter-human discrimination: gender inequality. In other words, if the CW-Condition favors these kinds of anti-discriminatory orientations, this should be evident in that the CW-Condition also favors gender equality. Indeed, as Figure 6-9 shows, the CW-Condition in and by

Figure 6-5. The CW-Condition and Civic Activism



Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

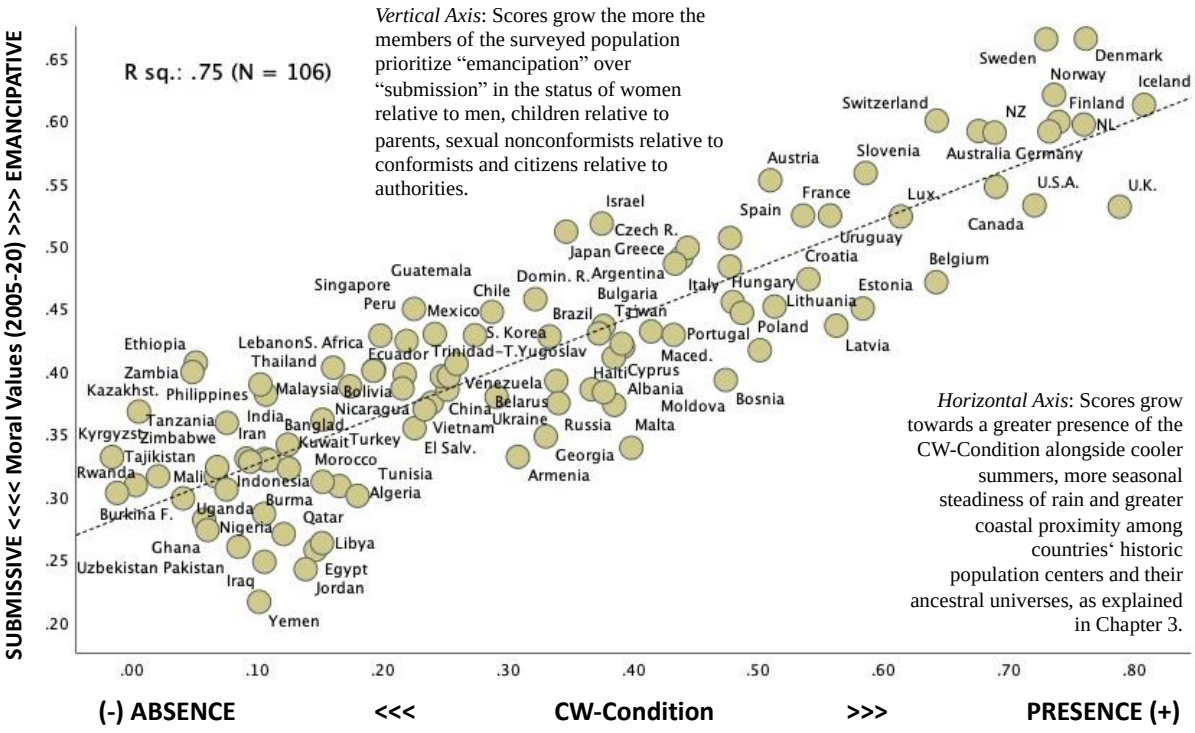
itself explains fully sixty-eight percent of the global variation in the "gender inequality index," a measure of women's inequality relative to men in terms of income, education and health.[455]

Again, the evidence in Figure 6-8 is contemporary, but once more, it is by no means limited to circumstances as we find them in the world today. Instead, we can trace back the gender-egalitarian effect of the CW-Condition to 1900, using a measure from the V-Dem database[456] that indicates the extension of women's civil liberties. As Figure 6-9 shows, the CW-Condition exerts a clearly positive effect on women's civil liberties already in 1900. Moreover, we have seen in Figure 3-3a that the gender-egalitarian impact of the CW-Condition can be traced back even further, way into pre-industrial times. The evidence there refers to "weaker-vs-stronger female (reproductive) autonomy," which definitely involves greater gender equality at the stronger autonomy end of this polarity. At this end, women have a say in when and whom they marry, are less reduced in their life planning to birthing and raising children and are less absorbed by service obligations to members of the extended family.

Essence:

In conclusion, we can vary the indicator of emancipatory outcomes and the time point since developmental differences in matters of emancipation began to surface, yet we always find a powerful, pro-emancipatory impact of the respective country-territories' CW-Condition.

Figure 6-6. The CW-Condition and Submissive-vs-Emancipative Values



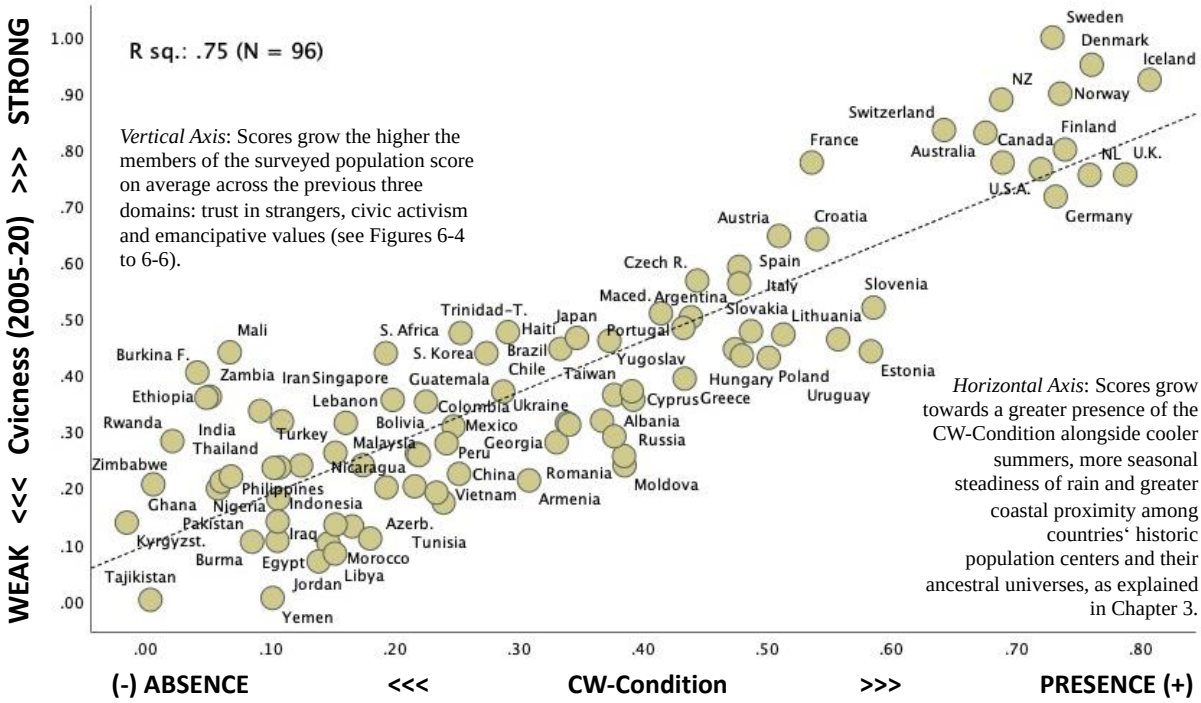
Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

Again, none of these findings vanishes or weakens upon consideration of the endurance of the country-territories' exposure to the Western church. The extensive supplementary analyses in SOM-Section S4 demonstrate this point in striking clarity. For this reason, the CW-Condition's emancipatory effect roots *naturally* in this condition's environmental features and is not a product of the church's marriage policies. Quite the contrary, the fact that the CW-Condition and Western church exposure show a sixty-six percent overlapping variance allows for only one causal interpretation: Given that the CW-Condition is temporally prior to the church's marriage policies, the CW-Condition incentivized the selection of a marriage doctrine that normed the marriage patterns to which the CW-Condition had already predisposed its inhabitants.[457]

The Power of Contractualism

We have emphasized that when a territory with the CW-Condition develops a state from inside itself, this state will not be coercive but contractual. The contractual state involves a social agreement that ties the usage of the state's regulatory capacities to collective consent and directs state action towards the common good. Unlike the coercive state, which exercises its powers in an unchecked manner and solely to the benefit of the thin hereditary ruling caste, the contractual state

Figure 6-7. The CW-Condition and Civicness



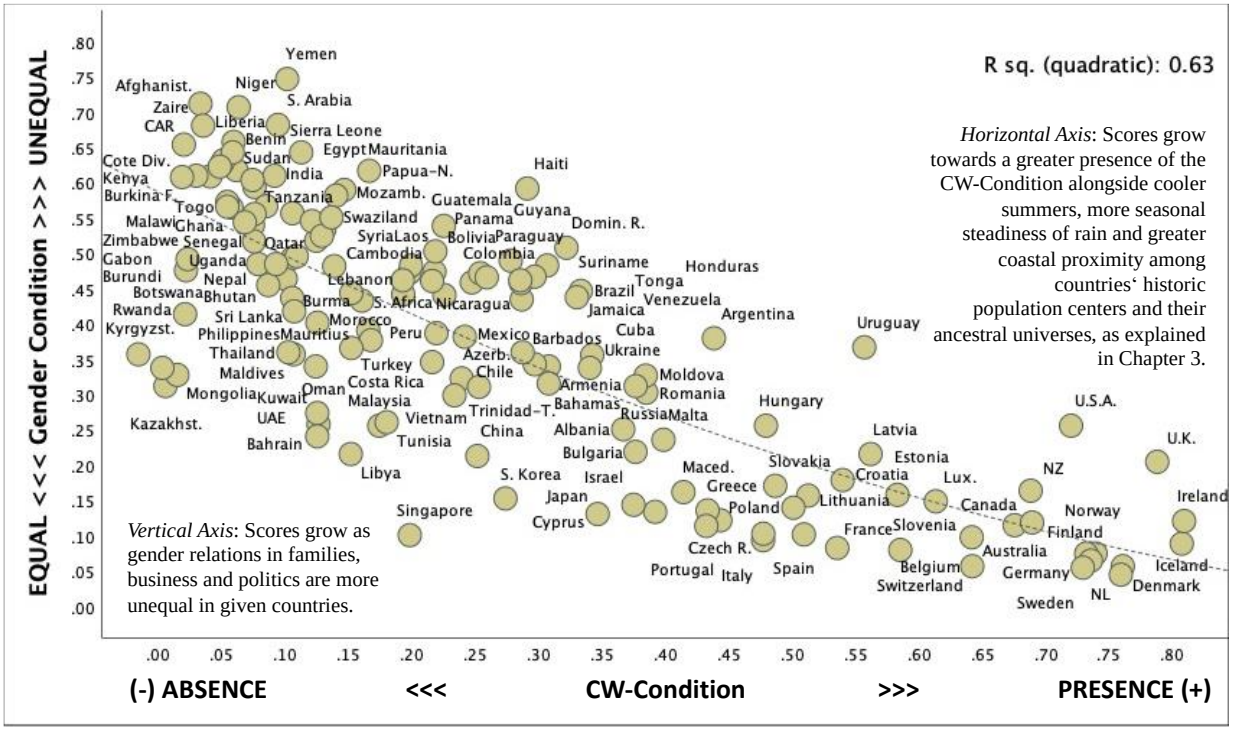
Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

is a power-sharing arrangement.[458] In its historic genesis, the contractual state is a true *singularity* of the world's CW-areas.

At first glance, it seems that the coercive state is so much more powerful than the contractual state because the rulers of coercive states are unrestricted in their command over people's actions and lives, thus seemingly maximizing the state's orchestrating capacity. Indeed, fascist and other totalitarian ideologies idolize coercive powers for their orchestrating capacity, equating the ideal human society with a social organism that operates like a beehive in which individuals act entirely as agents of a unitary mission instead of their own will. For this reason, totalitarian ideologies caricature power-sharing contractual arrangements, most notably those in liberal democracies, as weak precisely because of their checks on coercive power. However, the European contractual state grew way more powerful than the coercive states of the ancient agrarian empires. Moreover, modern democracies outperformed their totalitarian alternatives of modern times, including fascism and communism, on all accounts, including technological progress, economic productivity, organizing capacity and, last but not least, military power.

The reason for the superiority of the contractual state, especially in its mature liberal-democratic version, is that this type of state can harness a resource that is inaccessible to any form of coercive state: the participating citizens' intrinsic belief in the state's legitimacy and the voluntariness of their commitment resulting from this legitimacy belief.[459]

Figure 6-8. The CW-Condition and Gender Equality Today (2015)

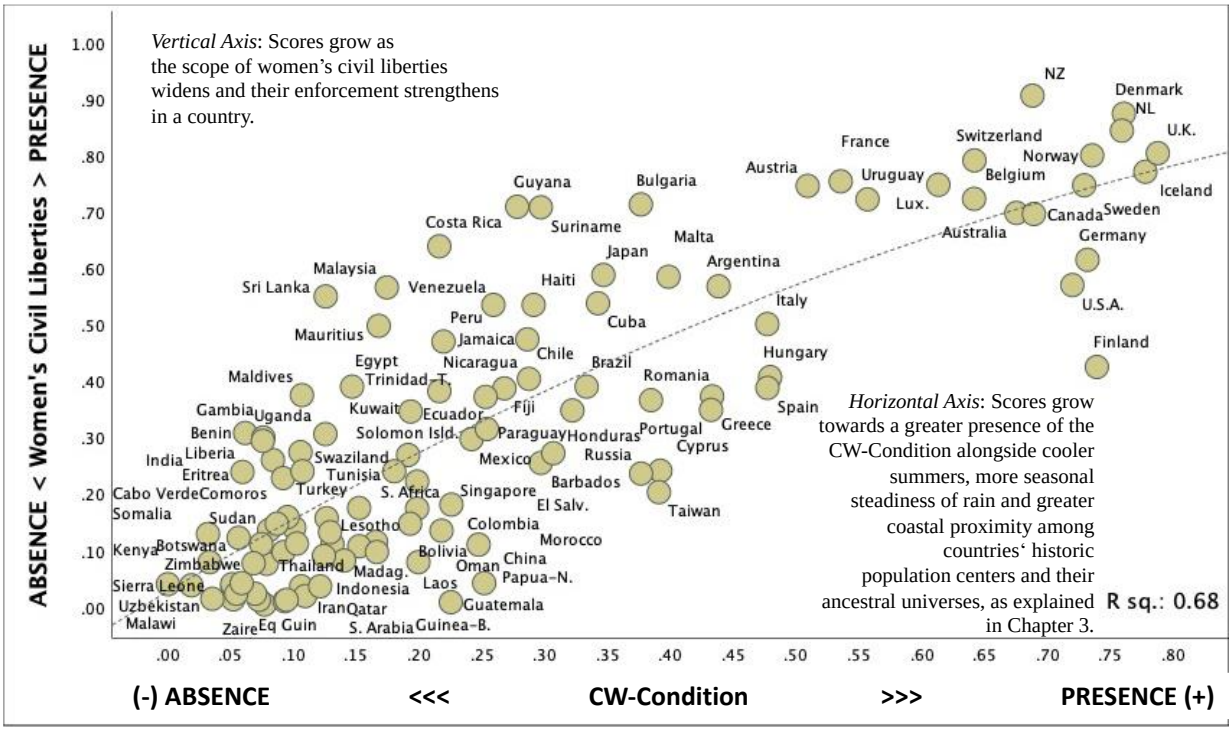


Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

The history of colonialism further underlines the significance of the CW-Condition in favoring contractual over coercive power arrangements. Outside Europe, people from Northwestern Europe's CW-area settled in truly large numbers *only* where an equally strong CW-Condition made similar subsistence activities with similar (or even more) autonomies possible.[460] Hence, settlement colonialism from Northwestern Europe concentrated on the New England states in North America, the Southeast of Australia and New Zealand. After colonization, the CW-areas in the New World quickly followed and even overtook the Old World's CW-areas on their "WEIRD" trajectory.

Indeed, free from the burden of a feudal aristocracy, the CW-areas of the New World outpaced the emancipatory dynamic of the Old World's CW-areas.[461] But the colonists reserved emancipatory achievements, such as representation, for themselves and long denied them to indigenous peoples, including Native Americans, Aborigines and Maoris. In fact, European settlers purposefully marginalized and decimated the native peoples. Because the New World's CW-areas have been populated much later than those of the Old World by humans and because these newer populations remained isolated from major agrarian civilizations, the native peoples in the New World's CW-areas preserved a foraging or horticultural lifestyle. For this reason, the CW-areas outside Eurasia were sparsely populated, allowing European settlers to quickly outnumber the

Figure 6-9. The CW-Condition and Gender Equality in 1900



Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

native peoples.[462] The native peoples' ability to fight European conquest was further reduced by the fact that they died in droves upon contact with European diseases.[463]

Nevertheless, even in the initially limited ways in which emancipatory gains have been achieved, these gains changed the course of human history in a most profound manner. Indeed, under the framework condition of nuclear families and contractual states, areas with the CW-Condition channeled the civilization process onto an entirely novel trajectory, heading towards industrialization and democratization. This civilizational dynamic is emancipatory in the sense that industrial economies free masses of ordinary people from poverty, while democratic polities free them from tyranny. Four fundamental facts underscore the causal role of the CW-Condition in unleashing the industrial-democratic dynamic:

(*1*) The industrial-democratic dynamic started in precisely that part of the Old World with the strongest CW-Condition: Northwestern Europe.

(*2*) Colonial settlement transplanted the industrial-democratic dynamic to only those parts of the New World with a CW-Condition as strong as that of Northwestern Europe: the Atlantic North of the US/Atlantic South of Canada, Australia's Pacific Southeast and New Zealand.

(*3*) Beyond the Western world, the industrial-democratic dynamic has been picked up first by the one civilization with the strongest CW-Condition outside the West: Japan.

(*4*) Until recently, the industrial-democratic dynamic remained a singularity of the world's CW-areas.[464]

Summary

Western societies are "WEIRD" in the sense that their sex norms, household structures and family patterns have been highly unusual already during the pre-industrial agrarian era. Specifically, in the primarily Germanic CW-areas of Northwestern Europe, fertility pressures on women were naturally lower, which resulted in less patriarchal control over female sexuality, evident in women's comparatively high marriage ages and the fact that marriage was consensual, that married couples founded their own neo-local farming household, lived independent from extended family support and worked free from the burden of centrally coordinated water, land and labor management. All of this is known as the "nuclear family pattern," which contrasts sharply with the rigidly patriarchal family, fertility and sex norms in all other parts of the world where intensive agriculture became the prime subsistence mode. The exception is Japan, which had a somewhat similarly autonomous family pattern and a comparably decentral water, land and labor management as Northwestern Europe. This is probably no coincidence, given that Japan is the one agrarian civilization of the pre-industrial era coming closest to Northwestern Europe's CW-Condition.

The Japanese case is critical because it also proves that exposure to the Western church's ban on cousin marriage cannot explain the nuclear family pattern: Japan did not have such exposure and nevertheless exhibited features of the nuclear family pattern. Vice versa, the country with by far the longest exposure to the Western church's marriage policy—Italy—does not exhibit features of the nuclear family pattern remotely as strong as its long Western Church-exposure would make one expect, all the while Italy's family pattern is fully in line with its modestly strong CW-Condition (modestly strong at least in Italy's North).

What is more, the Germanic tribes populating Northwestern Europe's CW-area lived in nuclear families already in pagan times, long before any marriage policy of the Western church could have shaped their family, fertility and sex norms. Finally, peoples in the CW-areas of the New World—such as the Iroquois in North America's Great Lake area—as well lived in nuclear families and under no patriarchal control over female sexuality, despite the absence of any exposure to cousin marriage bans by the church. For proof, we refer to SOM-Section S7, especially the text boxes on the Iroquois, the Maoris and the Mapuche—three indigenous peoples in three different places among the New World's scattered CW-areas.[465] Consequently, the tight association between the nuclear family pattern and the CW-Condition goes back to the CW-Condition itself and the reduced fertility pressures that living under this condition emits on women.

The nuclear family pattern and low patriarchal control over female sexuality are the natural condition of foraging tribes. Yet, adopting agriculture changes the situation—at least in the

absence opf the CW-Condition. Adopting agriculture and developing intensive methods of cultivation usually leads to higher labor demands, which means growing fertility pressures on women to satisfy the economy's labor needs. Living in more densely populated communities with close contact to domesticated animals also causes frequent epidemics and, hence, higher mortality. A diet largely focused on high-carb foods, like bread and rice, is less nutritious than our species' typical paleolithic menu and heavily detrimental to teeth health, which also contributes to higher mortalities. Finally, agrarian populations' dependence on land control makes them very territorial, thus inducing communal competition over valuable land. In such a competitive setting, outnumbering neighboring communities means an advantage that further increases fertility pressures on women.

All these circumstances are pushing sex norms towards an early marriage of women, women's duty to marry, the sacrosanctity of marriage and women's obligation to produce as many children as possible throughout their fertile lifespan. In all agrarian civilizations, except the CW-areas, religious dogmas evolved to enculture these patriarchal sex norms, which—by no coincidence—include a rigid insistence on heteronormativity, for the simple reason that homosexuality is a sex practice that does not boost birth rates. Outside CW-areas, it was easy to enforce patriarchal sex norms from above. The reason is that—in non-CW agrarian areas with their irregular rainfall—intensive cultivation necessitated hierarchically coordinated water, land and labor management. The presence of hierarchical coordination equipped state-sponsored religious indoctrination systems with the apparatus to enforce sex norms on initially nuclear households, now increasingly deprived of their autonomy in work organization as cultivation methods became more intense and sophisticated.

Agriculture under the CW-Condition, by contrast, allows to preserve the originally nuclear family pattern, for two reasons. First, mortalities and labor demands are naturally lower under the CW-typical forms of rainfed agriculture. Second, decentral work organization avoids a centralized command structure with a potent enforcement apparatus that would otherwise allow to dictate patriarchal marriage policies from above.

Essence:

> *The nuclear family pattern and decentral water, land and labor management with no need for extended kinship support and hierarchical coordination embody the seed of an emancipatory societal dynamic because a social order that evolves under these circumstances transplants the consensus principle into higher-ordered institutional entities, thus giving rise to a contractual instead of coercive state with multi-polar, power-sharing arrangements in which elected assemblies check the central authority's executive power and direct government action towards an indiscriminate provision of the common good. In the absence of universal suffrage, the contractual state is not yet a democracy. But it harbors the potential to evolve naturally into a full-fledged democracy by extending the franchise in parallel to the expansion of income taxation, compulsory schooling, military service and other civic obligations. The multiple personal, local, corporate and sectoral autonomies guaranteed and protected by the contractual state order prepared this order much*

better than the coercive states among Eurasia's agrarian empires to unleash the mass-scale outburst of economic initiative and civic activism from below, needed to launch the Double Emancipatory Turn of human history towards industrialization and democratization.

Qualification:

However, the seed for an emancipatory dynamic harbored by the CW-Condition could germinate, only if the people in the respective CW-area adopted agriculture early enough to develop it to the mature pre-industrial stage. In the CW-areas of the much later populated New World where people still persisted as foragers and horticulturalists, the emancipatory seed was also present but it was not yet ready to germinate, until settlers from Northwestern Europe's CW-area imported intensive forms of agriculture. Moreover, for the emancipatory seed to germinate, the respective CW-area had to be safe from foreign conquest and to be exempted from absorption into a despotic empire. Otherwise, a CW-area's emancipatory potential would remain dormant under externally imposed coercive structures. In other words, the materialization of the CW-areas' emancipatory potential depends on the inhabitants' uninterrupted sovereignty over their territory.

Given the nuclear family pattern and its linkage with decentral water, land and labor management and the contractual state order, inhabitants of the CW-areas are more individualistic in their orientation, thus seeing other people first and foremost as independent persons in their own right, rather than primarily as group representatives. Individualism in this understanding embodied the seed of the later maturing idea of human rights. Individualism also implies that human discrimination based on group characteristics, such as gender, ethnicity, age, ancestry and social class, needs to be fought and that government action must be directed towards an indiscriminate provision of the common good.

The opposite of individualism is not collectivism because individualism does not undermine a society's collective cohesion. Since humans are a social species whose achievements depend entirely on teamwork and coordinated action, every population exists in some form of collective cohesion. What differs is the type of collective cohesion that prevails. Under individualism, people coalesce based on mutual consent, which is a matter of choice, instead of joint ancestry, which is a matter of birth. Joining forces with others based on voluntary agreement infuses civic agency into the social fabric and makes ancestral group barriers permeable, multiplying a population's cooperative opportunities, capacities for self-coordination and mobilizing potential against exploitative government and power abuse. Again, in light of these insights, individualism versus collectivism is the wrong contradiction. The true contradiction is indiscriminate collectivism inherent in individualism versus discriminate collectivism inherent in familism. Under familism, people distrust strangers and only cooperate with members of their ingroup. Once in power, elites in familistic societies abuse their position to distribute favors selectively to their supporters, in proliferation of "club" goods instead of the "common" good.

Since the CW-Condition strengthens individualism and weakens familism (with no need for religious marriage policies to this end), we find that people in CW-areas enculture a greater civic sense, that is, a more indiscriminately benevolent view of the other, manifest in trust in strangers, emancipative values and voluntary public engagement. Correspondingly, elites in CW-evolved cultures are less corrupt and the government pursues a more indiscriminate provision of the common good. Therefore, CW-areas generally show less group discrimination, which is most clearly visible in the most perennial form of group discrimination—patriarchal control over female sexuality. Indeed, in operating against female discrimination, the CW-Condition associates tightly with all kinds of measures of gender equality and women's empowerment.

PART C: EVIDENCING THE CW-CONDITION'S IMPACT

7 The CW-Condition and Colonialism

Figure 3-8 on page __ documents a strong link between the CW-Condition and human empowerment today, accounting for an astounding seventy-three percent of the global variation in an encompassing set of emancipatory living conditions. This is an impressively strong link rarely ever found with cross-national data, especially when the causal variable is temporally so distant to its supposed outcome, which allows for a myriad of possible mediators through which the original cause's impact might be filtered away. Together, five facts lend credibility to the causal quality of the CW-Condition's effect on human empowerment (and on emancipatory outcomes more generally): (*1*) the large temporal distance between the CW-Condition and human empowerment today, (*2*) the statistical significance (i.e., non-randomness) of the linkage between the two, (*3*) the linkage's astonishing strength, (*4*) its global scope and (*5*) its temporal persistence since the first cross-national differences in human empowerment surfaced.

Indeed, the more temporally distant a cause is to its outcome, the larger the number of potential mediators that operate in-between the cause and its outcome, which means a greater chance that the cause's effect on the outcome is filtered through a chain of serial mediations and—hence—barely visible as a direct link. In other words, large temporal distance between two variables tilts the odds decisively against a strong direct relationship. If a direct relationship is evident in striking strength nevertheless, it is all the more credible.

Since human empowerment is a comprehensive indicator of all kinds of developmental outcomes with an emancipatory signature (as shown in SOM-Section S3), the country distribution on this measure is well known from many other social indices, be it Richard Estes' "social progress index," Soren Holmberg and Bo Rothstein's "good society index," the United Nations Development Program's "human development index" or Heiner Rindermann's "national well-bing index," among others.[466] In all of these indices, we always find the same triple clustering of countries:

(*1*) The *Floor*: Sub-Saharan Africa, South and Central Asia, most of the Middle East as well as most of the Caribbean and Central America are at the bottom of the distribution.

(*2*) The *Middle Ground*: most countries of South America, the Post-Soviet space and East Asia fill the wide ranges in the middle of the distribution.

(*3*) The *Ceiling*: Western Europe, North America, Australia/New Zealand, Japan, South Korea, Taiwan, Chile and Uruguay are at the top.

As familiar as this global pattern is, how closely it maps on a single geo-climatic constellation—the CW-Condition—has received little attention so far, apart from the connection between latitude

and development.[467] But the "lucky latitude" effect is only part of the story and not the most decisive one. It is the *interplay* of latitude and its thermal implications with continuous rain and its hydrological implications in relative coastal proximity that truly matters.

There can be no doubt about the causal direction in the relationship between the CW-Condition and human empowerment. Human empowerment measured today is a historically recent phenomenon—indeed a *very* recent phenomenon: The magnitude of today's developmental differences in the world did not begin to surface earlier than a hundred-and-fifty years ago. The CW-Condition, by contrast, measures geo-climatic circumstances that have existed in more or less the same fashion for several centuries and millennia, basically going back to the end of the last ice age. Thus, for any given country, the CW-Condition is basically a constant with minor temporal variation over the time scale of agrarian history. This is not to deny climate change, the temporary occurrence of weather extremes and a certain variation in countries' temperature and precipitation patterns from one year or decade to the next. But over longer stretches of time, the countries' relative position with respect to the CW-Condition is unaffected by short-term fluctuations. Indeed, the *temporal* variation in the CW-Condition *within* countries is dwarfed in magnitude by the CW-Condition's *spatial* variation *between* countries. In a nutshell, the country-territories that are colder than most others today have been colder already five hundred or a thousand years ago. Likewise, the country-territories with more continuous rain than most others today already had more continuous rain five hundred or a thousand years ago. It is, hence, beyond reasonable doubt that spatial differences in the CW-Condition—which are much more pronounced *between* than *within* countries—need to be treated as a quasi time-invariant constant over the last several hundred years.

This simple matter of fact forecloses with certainty that country differences in human empowerment produced the strikingly corresponding country differences in the CW-Condition. It can only be the other way around. Of course, as straightforward as this conclusion is, it does not tell us anything about the proximal *mechanism* of how and why the distal CW-Condition turned the civilization process towards human empowerment. But there can be no uncertainty about the *direction* of impact—provided the relationship is not entirely spurious, a point to be addressed further below in detail.

Population Families

The close link between the CW-Condition and emancipatory outcomes (captured comprehensively by the human empowerment index) is by no means a Western phenomenon. It only seems so because Western countries exist under a consistently and unusually strong CW-Condition. To illustrate this point, we device an ethno-linguistically anchored scheme of *ancestral population families* and their *historic settlement universes*—what we call culture zones. This twelve-fold scheme is inspired by previous typologies, including those of Arnold Toynbee, Shmuel Eisenstadt, Samuel Huntington, Ronald Inglehart and Christian Welzel.[468] Table 7-1 lays out our categorization in greater detail. Our scheme groups countries and their populations primarily on the basis of joint

ethno-linguistic ancestries. The reason to consider ethno-linguistic ancestries as the most original source of pooling human populations into larger groupings lies in the logic by which social evolution shapes community formation among humans.

Table 7-1. Humanity's Ancestral Population Families and their Settlement Universes

NAME	Core Ethnicities	Language Families	Geographic Ranges	Largest Nations	Religious Traditions	Imperial Legacies	Law Traditions
EASTERN CIVILIZATIONS:							
ARAB EAST	Arab, Persian	Semitic, Farsi	Middle East and North Africa	Egypt, Saudi Arabia Iran	Islam	Arab, Persian and Ottoman Empires	Sharia
INDIC EAST	South Asian	South Asian	South Asia	India, Pakistan, Indonesia	Hindu, Buddhist, Islam	Indian empires	Hindu-Sharia
SINIC EAST	Han, East Asian	East Asian, Altaic	East Asia	China, Japan	Confucian, Buddhist	Chinese Empires	Confucian
SLAVIC EAST	East Slavic, Central Asian	East Slavic	Eastern Europe, Northern and Central Asia	Russia, Ukraine, Belarus	Orthodox Christianity, Communism	Tsarist Empire, Soviet Union	Byzantine, Communist
TURKIC EAST	Turk	Turkic	Middle East, Central Asian steppe	Turkey, "stan"-countries	Islam, Buddhist	Ottoman and Tsarist Empire, Soviet Union	Byzantine, Sharia, Communist
WESTERN CIVILIZATION:							
ROMANIC WEST	Southern European	Romance	Southern Europe	Italy, France, Spain	Roman-Catholic	Roman Empire	Roman
GERMANIC WEST	Germanic	Germanic	Northwestern Europe	Germany, NL, Switzerland	Protestant Reformation	Medieval Kingdoms	Germanic
SLAVIC WEST	West Slavic	West Slavic	Central/East Europe	Poland, Czechia, Slovakia	Roman Catholic, Protestant	Soviet Union	Roman, Communist
ANGLO-SAXON WEST	Anglo-Saxon	English	North America, Australia, NZ, British Islands	USA, UK	Protestant Reformation	British Empire	Anglo-Saxon
GLOBAL SOUTH:							
SUB-S. AFRICA	Black African	Mixed Indigineous, English, French	Sub-Saharan Africa	Nigeria, Kenya, Tanzania etc.	Originally Animist	European Colonies	Colonial
SOUTH AMERICA	European, Indigenous	Spanish, Portuguese	Caribbean, Central and South America	Brazil, Argentina, Mexico	Roman Catholic	Spanish and Portuguese Empires	Roman, Colonial
SOUTH PACIFIC	Polynesian, Melanesian	Mixed Indigineous, English, French	South East Pacific	Fidji, Vanuatu etc.	Originally Animist	European Colonies	Colonial

As a cooperative species whose achievements depend on teamwork and coordinated collective action, humans have lived in groups from the beginning of their existence to the present, ranging from nuclear families to larger clans to encompassing tribal federations. Because the survival and wellbeing of human individuals depend on the success of the collectives in which they live, the selective pressures of social evolution operate on the group level, thus placing a selective advantage on those groups that coordinate the activities of their individual members more efficiently to the entire collective's benefit. Groups that coordinate their members' actions more successfully outcompete groups in which exceeding selfishness impedes effective coordination. In favoring coordinative capacities at the group level, social evolution has shaped human psychology accordingly, namely in such a fashion that, in interaction with others, humans naturally tend towards ingroup-favoritism and outgroup-hostility—which is why racism is part of human nature. The circle of the ingroup's extension can vary in size from the family to the tribe to the nation. It can even include humanity when our entire species is in danger. Actually, the cognitive mobilization resulting from the ubiquitous fertility-to-schooling shift in humanity's reproductive investments greatly expands the radius of inclusion at which people draw the ingroup/outgroup boundary.Yet, no

matter at what radius of inclusion the borderline between the ingroup and outgroup is drawn, ingroup-favoritism/outgroup-hostility remains the dominant principle of human interaction,

Logically, for ingroup-favoritism/outgroup-hostility to work, humans must be able to recognize others' group membership. This is easier in the smaller circle of families and clans because people know each other. However, when groups get bigger and grow in size beyond the circle of personal familiarity, the recognition of group membership depends on easily perceptible cues. Acoustic comprehension based on language and similarity in visual appearance based on the same ethnicity are the simplest sensible cues that allow humans to recognize whether or not an unknown other is a member of their own group. Therefore, social evolution has operated to make ethno-linguistic similarity the primordial principle of group formation, irrespective of the size of the groupings under consideration. Even groups as large as nations or empires are built on an ethno-linguistic core and even cultural conglomerates larger than nations, like geo-political alliances, share ethno-linguistic similarities. Consequently, ethno-linguistic ancestries constitute the very origin of further cultural distinctions that characterize human collectives larger than nations, most notably religious traditions and imperial legacies.

Placing our scheme of population families on ethno-linguistic ancestries, cultural differences emerging later in time (again religious traditions and imperial legacies) are part of our scheme only insofar as they map on the original ethno-linguistic ancestries. Hence, our culture zone classification is not outcome-centered but origin-centered and captures outcomes only insofar as they follow from ethno-linguistic origins.

Joint ethno-linguistic ancestries take shape among populations of similar geographic origin whose migratory history places them into the same geo-climatic universes. If unsuited to agriculture, these universes shape cultural similarities in a less institutionalized form, visible in informally similar customs and habits that lack any backing by explicit religious doctrines and written law codes. In the case of agricultural suitability, however, populations with similar ethno-linguistic ancestries located in the same geo-climatic environment and migratory universe gave rise to encompassing agrarian empires that used their orchestrating power to institutionalize two types of cultural legacies, which are transmitted across generations through a particular form of perpetuation:

(1) *ideological* traditions, which crystallized into institutions through the norms of different religions or secular cosmologies, such as Christianity, Confucianism, Islam or communism;

(2) *legal* traditions, which crystallized into institutions through the laws of different empires, such as the Roman law, Anglo-Saxon customary law or Sharia law.

Mapping these two traditions onto ethno-linguistic ancestries results in twelve population families in which countries can be placed. These twelve families form three larger civilizational clusters: Eurasia is divided into a Western civilization, which is demarcated by a Romance-Germanic ethno-linguistic core, and the Eastern civilizations, which comprise all non-"Caucasian" ethno-linguistic cores in Eurasia. Next to this East-West division within Eurasia, outside Eurasia we find the

population families of the Global South, all of which were colonized by the West. Below, we list the twelve population families from oldest to youngest in terms of when they matured into sedentary civilizations (labels are chosen to indicate each population family's ethno-linguistic ancestry):

EASTERN Civilizations

- *Arab East*: Muslim majority countries in the Middle East and Northern Africa that were part of the Caliphates or the Ottoman empire[469];
- *Indic East*: Hindu or Muslim majority countries in South Asia with a strong imprint from the empires ruling over the Indian sub-continent[470];
- *Sinic East*: countries in East Asia that were influenced by Confucianism and the empires ruling over China;
- *Slavic East*: countries of the former Soviet Union with a mostly Christian-Orthodox tradition inherited from the Byzantine Empire and Czarist Russia;
- *Turkic East*: Turkey, the mostly Islamic "-stan" countries located along the Silk Road and the steppes of Central Asia, plus Mongolia, which were core areas of the Mongol or Ottoman empires.

WESTERN Civilization

- *Romanic West*: countries of Southern, Western and Central Europe with a Catholic tradition that were part of the Roman empire;
- *Germanic West*: countries of Western, Central and Northern Europe mostly populated by Germanic peoples in which the Protestant Reformation was particularly successful;
- *Slavic West*: countries in Central, Eastern and Northern Europe of a mostly Catholic tradition on which the Soviet Union imposed communism and which accessed the European Union soon after the collapse of communism;
- *Anlgo-Saxon West*: countries in North America (the US and Canada) as well as Australia and New Zealand that were once Western settler colonies and part of the British empire.

GLOBAL South:

- *South America*: countries in Central and South America and the Caribbean, which are predominantly Catholic and were mostly part of the Spanish and Portuguese colonial empires;
- *Sub-Saharan Africa*: countries South of the Sahara with tribal traditions, which became subject mostly to British and French colonialism;
- *South Pacific*: island archipelagoes located in the Southern Pacific (Melanesia, Polynesia, Micronesia) and which remained a separate and isolated cultural cosmos of mostly tribal traditions until European contact.

Eastern and Western population families are spatially connected through the Eurasian landmass on an East-West axis, spanning from the British islands to Japan. Thus, Eastern and Western civilizations constitute the world's largest pool of territorially adjacent cultures—a fact to which we frequently refer as *Eurasia's axial civilization belt*.

Two reasons explain why most of human history and most of humanity's breakthroughs in societal development would play out by cultural-level competition within Eurasia's civilization belt. First, the spatial connection of civilizations by Eurasia's continental East-West axis facilitated the flow of all kinds of mutual influences and stimuli, thus exposing populations in Eurasia's East-West belt to a greater richness of foreign achievements to learn from. Second, Eurasia's axial East-West belt—especially its geographical center in the Middle East—is the first space populated by modern humans on their way out of Africa, long before human hunter-gatherers left Eurasia to populate the Americas and Australasia. Therefore, populations in Eurasia's axial belt, especially those in the Middle East, had a significant head start in the learning time needed to transition from foraging and horticulture to intensive forms of agriculture and its civilizational consequences, in particular cities and states. These simple geographical facts already tilted the odds for the first appearance of agriculture heavily in favor of the Middle East, with decreasing chances towards both the Western and Eastern flanks of Eurasia's axial belt, and further decreasing chances towards the Americas and Australasia. The decreasing slope of these chances reflects the sequence of human migratory history out of Africa. This sequence placed the Middle East, followed by other regions of the Old World, at a decisive advantage and the New World at a corresponding disadvantage in pioneering humanity's breakthrough to agriculture and its developmental consequences further down the road.

Against this logic, one might object that—if the sheer endurance of an area's exposure to human presence explains the earliness of its agrarian transition—then Africa should be the continent where intensive agriculture had been invented first. The simple reason is that modern humans most likely originated in East Africa and migrated from there to other parts of Africa before the first successful exodus from the continent into the rest of the world happened some 80,000 or so years ago. Accurate as this objection is, it does nevertheless not disprove the argument about the human presence timespan. Instead, the objection adds an important conditionality to the human presence timespan as an explanation of the timing of the occurrence of agriculture. Indeed, the human presence timespan does explain the earliness of agriculture's appearance but only within the limits of an area's suitability to agriculture—precisely the factor in which most of Africa is exceptionally disadvantaged. Apart from the fact that soil quality is generally poor throughout the continent, the technical and organizational requirements to turn deserts, savannas and tropical rainforests (i.e., the three predominant landscapes in Africa) into cultivable land were simply too high to allow for an easy transition to agriculture. Thus, unsuited ecological conditions lifted the entry barriers into agriculture too high for the Neolithic Revolution to take off from somewhere in Africa. Consequently, African populations were out of the race for the first agrarian breakthrough and its civilizational consequences, like state bureaucracy and trade capitalism.[471]

Confronted with the West's rise to global dominance in the era of colonialism, all four Eastern population families began to define their own identity in defense against the West by depicting themselves as genuinely non-Western.[472] The core countries of the four Eastern civilizations (i.e., Russia, China, India, Iran, Saudi-Arabia and Turkey) also pursue their own geo-political mission to establish a regional or global dominance that rivals the West.[473] By no coincidence, these West-

challenging geo-political missions are couched in cultural identities explicitly propagated as non-Western, like Confucian values, Islamic values or Orthodox values.[474] Hence, population families are real in shaping the geo-political identities of the populations belonging to them.[475]

EXCURSION: CIVILIZATIONAL CLUSTERS

As an alternative to our conceptual historic framework, we can also group countries into culture zones using a purely statistical approach, for which purpose a cluster analysis is the most obvious technique. Specifically, we use a nine-point distinction of language families[476], an eight-point categorization of religious legacies[477] and a seven-point classification of law traditions.[478] We order each of the three types of ancestries from those with the weakest to those with the strongest emancipatory tendency. To determine the ordering of these traditions with respect to their emancipatory tendency, we use our encompassing human empowerment index (introduced earlier, see SOM-Section S2) as the yardstick. Differences on the human empowerment index today did not fall from heaven overnight but accumulated incrementally over generations on trajectories that are rather inert in their slopes of progression since the eve of the colonial era. Thus, today's differences in human empowerment indicate how early countries entered emancipatory dynamics.[479] Hence, to order the categories of the ethno-linguistic, religious and legal ancestries along their emancipatory impetus, we calculate how the countries that belong to the same category of ethno-linguistic, religious and legal ancestries score on average on the human empowerment index. Then we rearrange the coding scheme of these categories, assigning each country the average human empowerment score of its respective ethno-linguistic, religious and legal group. This procedure yields a nine-point scale for language families, an eight-point scale for religious traditions and a seven-point scale for legal traditions ordered alongside increasing emancipatory tendencies. In other words, we represent the traditions by decimal fractions ranging from 0 at the low emancipatory end to 1 at the high end, with variable interval distances between adjacent categories, depending on their overall emancipatory tendency.[480]

After measuring the linguistic, religious and legal ancestries' emancipatory tendency, we conduct a cluster analysis, requesting the creation of twelve clusters in such a way that countries in the same clusters are most similar and those in different clusters most distinct over these three types of ancestries—in as far as their emancipatory tendency is concerned. For each country, we save information about the cluster to which it belongs in a separate variable. To validate our culture zone scheme, we look at the extent to which it matches the cluster memberships. This match is more than comfortingly large. To be precise, 167 of our 184 countries that are in the same population family also appear in the same cluster, which indicates a match of 91 percent.

Not surprisingly, the linguistic, religious and legal categorizations converge in a single underlying dimension[481]—which we might call "cultural ancestry" because linguistic, religious and legal traditions all are part of a country's inheritance. Cross-national variation over this cultural ancestry dimension is explained at a stunning 98 percent by either the countries' cluster membership or population family. Given such high similarity, both cluster membership and population family correspond with cross-national variation in the CW-Condition at 95 percent and with variation in human empowerment at 76 percent. In other words, a purely statistical cluster solution produces results basically indistinguishable from a proper historical definition of population

families. This result is comforting because it ascertains that the population family typology depicts something real. It is also interesting to note that it hardly matters on which type of cultural legacy the classification focuses: Linguistic, religious and legal legacies all are manifestations of a single underlying ancestry dimension.[482]

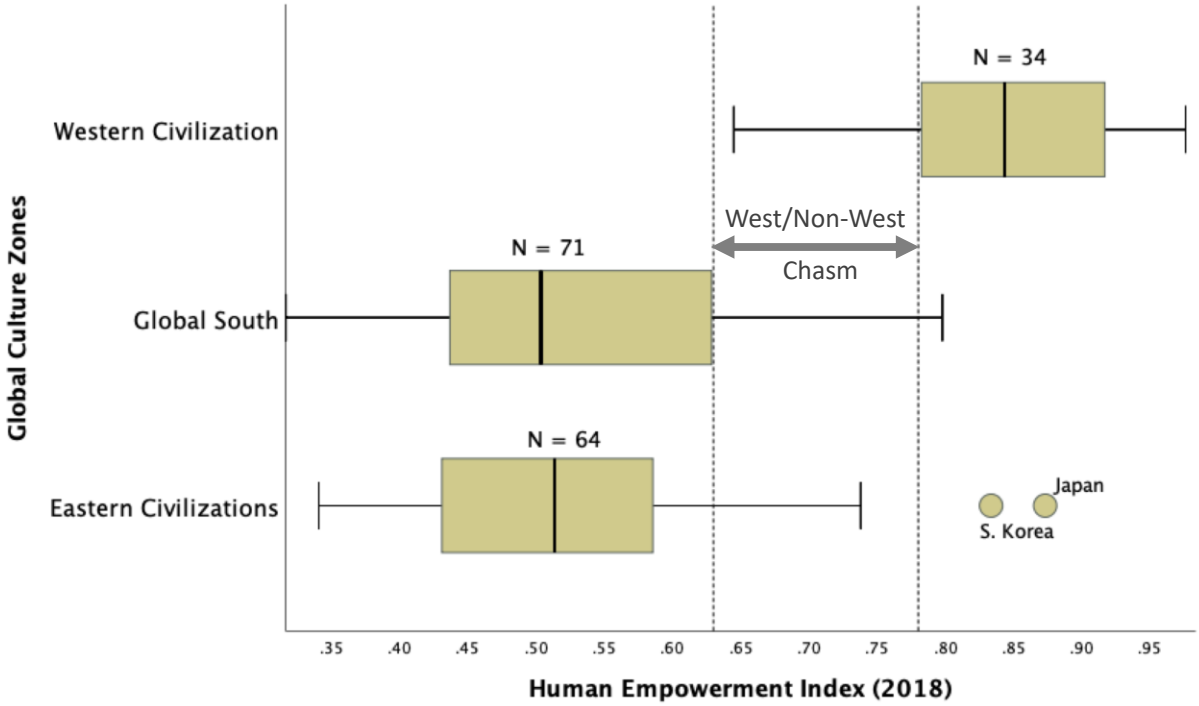
Interestingly, a more fine-grained spatial resolution fails to capture the configurational force of population families in greater strength. To evidence this point, we use our three ancestry variables to create increasing numbers of clusters, from a minimum of two clusters to a maximum of twenty. Then we look at each cluster solution's explanatory power over the countries' human empowerment. As SOM-Figure 7-1 illustrates, the gravitational force of a cluster solution increases sharply as the number of clusters raises from two to seven. But above seven clusters, the increase in the cultural clusters' gravitational force begins to flatten out. After the number of twelve clusters is passed, no more increase in gravitational force is observable.[483]

Equally interesting, already a solution with only three clusters picks up a considerable proportion of the gravitational force of the twelve-cluster solution. Much of this coverage reflects the West/East/South division, which is a striking reflection of colonial history in distinguishing the West as the center of colonialism, the East as its periphery and the South as its victim. Indeed, when we map the countries' cluster membership in the three-cluster solution on the belongingness to the Western/Eastern/Southern categorization, it turns out that 147 of the 184 countries that are in the same cluster are also in the same tripartite cultural group, indicating a 75 percent match, which is highly significant.

On a scale from minimum 0 (hot and/or dry areas) to maximum 1 (cool and rainy areas), the thirty-five Western countries have a mean score in the CW-Condition of 0.60 (with a standard deviation of 0.13 only).[484] This average contrasts sharply with a mean score of 0.12 among both the sixty-four Eastern and the eighty-four Southern countries (both of which with a standard deviation of 0.12). Taking the West's exceptional CW-position into account, we can work with an even simpler classification, juxtaposing Western and non-Western countries. Accordingly, the simple Western/non-Western divide alone already captures more than 65 percent of the globe's *entire* cross-national variation in the CW-Condition. Figure 3-2 in Chapter 3 (p. __) illustrates this with striking clarity: Not only do Western countries show on average a more than triple as large CW-score than non-Western countries; there is also no overlap between the interquartile ranges of these two country groups. In fact, a sizable gap of 0.25 scale points on our 0-to-1 index separates the lower boundary of the Western distribution from the upper boundary of the non-Western distribution. Moreover, the distribution zones are relatively dense, indicating a high degree of homogeneity in Western and non-Western geo-climatic conditions. Hence, the CW-Condition is a most distinctive and in fact a *defining* feature of the West as such, with the sole exception of Israel.

The divisive power of the Western/non-Western dichotomy with respect to human empowerment is just as striking, as the boxplot in Figure 7-1 illustrates. Again, on a scale from minimum 0 (least human empowerment) to maximum 1 (most human empowerment), the Western average is 0.84, which contrasts with a non-Western average of 0.52 for both the East and South. Once more, the standard deviations from these averages are small: 0.09 among Western and 0.11 among non-Western countries. Accordingly, the simple Western/non-Western division accounts for 57 percent of the world's entire cross-national variance in human empowerment. As Figures 3-2 and 7-1 illustrate with impressive clarity, Western and non-Western countries show almost *no overlap* in either the CW-Condition or human empowerment.

Figure 7-1. The Western/non-Western Division over Human Empowerment



Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

The Western and non-Western worlds exist in widely disparate niches regarding the CW-Condition and human empowerment, indicating a high degree of homogeneity within these two niches. Nevertheless, if we look into both niches separately, we find an equally significant link between the CW-Condition and human empowerment. In the Western world, Northwestern Europe has a more pronounced CW-Condition (mean score: 0.80) than Southeastern Europe (0.42). Accordingly, Northwestern Europe is more advanced in terms of human empowerment than Southeastern Europe (mean scores of 0.88 compared to 0.67). In the non-Western world, Argentina and Uruguay in Latin America, as well as Taiwan, South Korea and Japan in East Asia have a more pronounced CW-Condition than most other countries in the non-Western world, and so they are more advanced than these in human empowerment. In numbers, Uruguay, Argentina, Taiwan, Japan and South Korea have CW-scores of 0.56, 0.44, 0.39, 0.35, and 0.27 in the order just mentioned. These are high scores compared to the non-Western average of 0.17. Accordingly, these five countries score in human empowerment at 0.87 (Japan), 0.83 (South Korea), 0.80 (Uruguay), 0.74 (Taiwan) and 0.72 (Argentina)—which is equally high relative to the non-Western average of 0.52.

The European Legacy Thesis

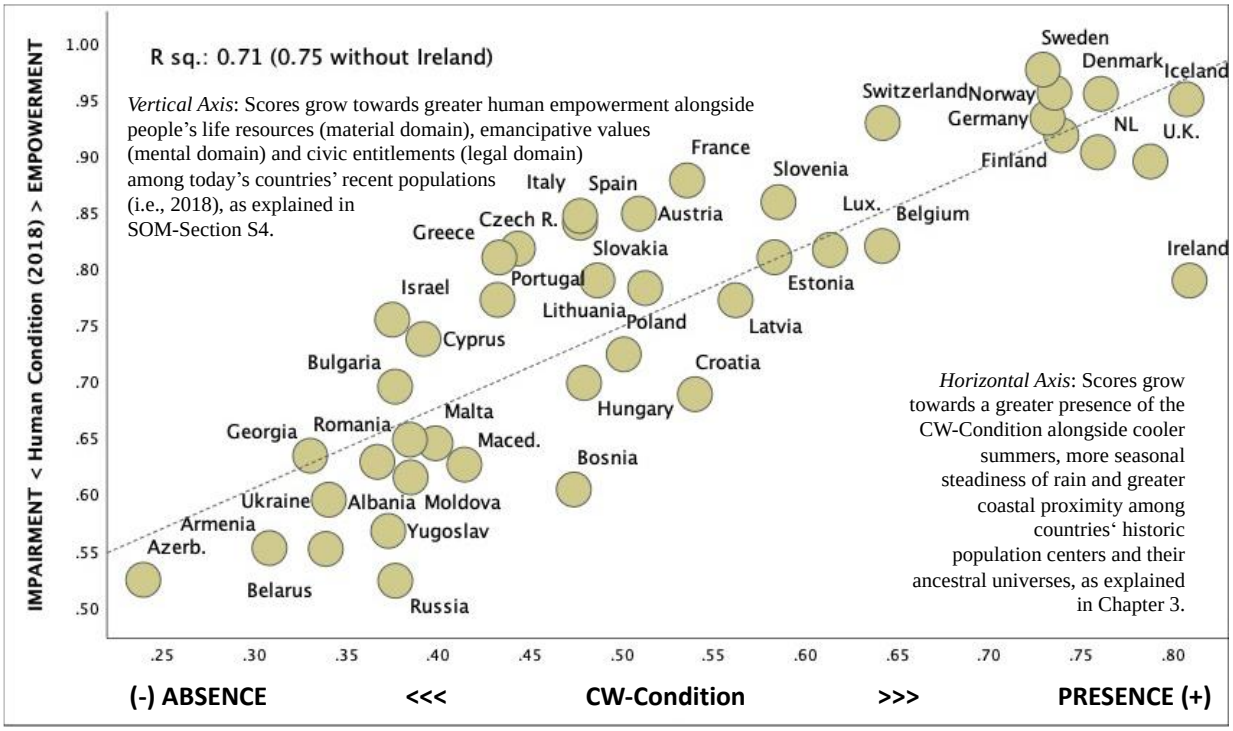
So far, we presume that the strong link between the CW-Condition and human empowerment exists because something inherent in the CW-Condition itself is conducive to emancipatory dynamics. Contradicting this premise, one could postulate that the link between the CW-Condition and human empowerment is spurious because it masks European colonialism as the true reason for its existence. Along these lines, one could argue that Europeans invented the emancipatory doctrines and institutions that drive human empowerment. It was just a coincidence that the British and the other nations of Northwestern Europe inhabited areas with a pronounced CW-Condition, which predisposed them to migrate as settlers to colonies with the same geo-climatic condition. The actual reason why these areas then advanced is that Northwestern *Europeans* settled there, equipped with their emancipatory doctrines and institutions. Scholars familiar with the work of Daren Acemoglu, Simon Johnson and James Robinson[485] are likely to think that way because these authors stress the ideological-institutional European legacy as the decisive factor in developmental differences today, calling explicitly into doubt any significant role of geography or climate.[486]

However, the European legacy thesis suffers from two problems. First, the European legacy thesis does not explain why Europeans, and only them, invented emancipatory doctrines and institutions and why the location of this invention does by no means include all of Europe but focuses so clearly on Europe's Atlantic Northwest with its particular geo-climatic configuration: the CW-Condition. Sweeping away this obvious geo-climatic fact as a meaningless coincidence leaves unanswered the most intriguing question in any study of development—the *first difference* question. In terms of causal thinking, this is a massive epistemological drawback.

Second, couching the European legacy thesis more specifically in terms of a British-European or Protestant-European legacy does not escape these problems. The reason is that both Britain's geographic location and the geography of Protestantism are entirely confounded with Northwestern Europe's strong CW-Condition. In any case, measured against legacy arguments, our evidence suggests that the CW-Condition was a significant factor in sorting out which parts of Europe would advance the most in human empowerment and which would do so the least.

The scatterplot in Figure 7-2 illustrates a crucial point. It shows the relationship between the CW-Condition and human empowerment *only* among European countries (plus Israel). The relationship is no less significant and just as strong as on the global scale: Those European countries with the most pronounced CW-Condition tend to be most advanced in human empowerment. This tendency accounts for seventy-one percent of the inner-European variation and explains why Europe's Northwest is more advanced than both the South and East. The conclusion from this evidence is straightforward: The European legacy cannot explain the link between the CW-Condition and human empowerment when that same link accounts for so much of the variation *inside* Europe itself—that is, under the European legacy held constant. And since human empowerment today is strongly linked with emancipatory outcomes upon their first occurrence early in the modern era, the CW-Condition's emancipatory effect is enduring since the nascence of the Emancipatory Turn in the history of civilization.

Figure 7-2. The Link between the CW-Condition and Human Empowerment inside Europe

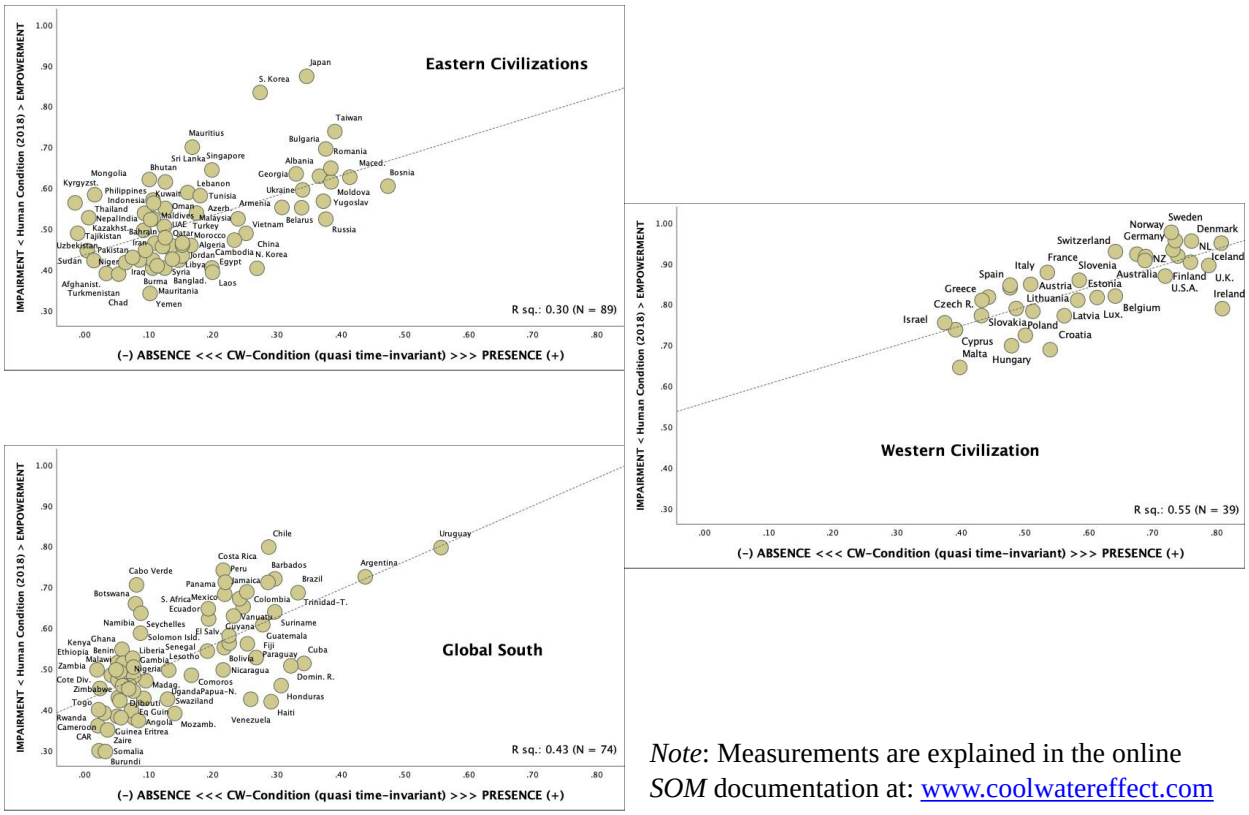


Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

Inside Europe, the link between the CW-Condition and human empowerment can be traced back to the beginning of the Enlightenment era when the first countries started to issue emancipation decrees.[487] By these decrees, serfdom has been abolished and peasants have been declared owners of their land. As SOM-Figure 5-5 documents, where the CW-Condition was more pronounced, serfdom either did not exist in the first place (think of Iceland, the Nordic countries and Frisia in Germany). Or serfdom has been abolished earlier and more sweepingly. Indeed, as is well known, England and the Netherlands were at the forefront of the trend in issuing decrees of emancipation, while Russia, Prussia, Austria-Hungary and the rest of Eastern Europe were trailing behind.[488]

Next to the West-East gradient in the history of emancipation, there is a North-South gradient: As much as Eastern countries lagged behind Western countries, Southern countries lagged behind the North. Strikingly, the CW-Condition captures *both* gradients because—inside Europe—the CW-Condition weakens substantially both eastward and southward of an area covering the British Islands, Southern Scandinavia, Northern Germany and Northern France as well as the Netherlands, Belgium and Luxemburg. Accordingly, variation in the CW-Condition explains the inner-European differences with respect to how early emancipatory tendencies began. Again, European descent cannot explain the link between the CW-Condition and the emancipatory trajectory—much less so as this link accounts just as much for the inner-European variation in emancipatory outcomes as it does for the variation between Europe and other parts of the world in these outcomes.

Figure 7-3. The Link between the CW-Condition and Human Empowerment by Civilization Group



Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

Further corroborating these findings, Figure 7-3 shows the link between the CW-Condition and human empowerment separately for the culture zones of the West, the East and the Global South. The link is significant, positive and shows a similar slope in all three civilizational clusters, in spite of the fact that the scale ranges in the CW-Condition and human empowerment covered by these three civilizational clusters are sincerely truncated when considered in separation. In any case, advancement in human empowerment is associated with the CW-Condition both *within* and *between* culture zones.

There is yet another way to answer the question of whether the advancement of countries in human empowerment reflects the European legacy or the CW-Condition. The clearest manifestation of a European legacy is the proportion of a country's population of European descent. We use the data on European descent provided by Jeannette Bentzen and her co-authors to predict a country's human empowerment.[489]

In a similar vein, Enrico Spoloare and Romain Wacziarg[490] measure the genetic distance of country populations from the population that pioneered the Industrial Revolution, hosts one of the oldest democracies in the world and created the largest naval empire in colonial history, namely the British. The authors use a measure of genetic population distances that existed before colonial times and another one that is contemporary. Spoloare and Wacziarg do not interpret these genetic

distances biologically but consider them as a proxy for cultural distances that explain why a country population adopted Western emancipatory doctrines and institutions. In other words, a closer genetic proximity to the British is a marker of closer cultural proximity, which implies a faster adoption of emancipatory doctrines and institutions originally developed in the British core of the West.

If the European legacy thesis is accurate and the CW-Condition only predicts human empowerment because Europeans populated areas with the CW-Condition, then the CW-Condition can show no more influence of its own on human empowerment, as soon as we factor in European descent or the genetic distance to the British. This should actually strike us as a rather conclusive test.

The scatterplots in Figure 7-4 are the results of multivariate regressions in which the countries' human empowerment is predicted by the CW-Condition, controlling for the proportion of European descendants in the respective population (diagram 7-4*a*, to the left) or the country-populations' genetic distances to the British in about 1500 CE (diagram 7-4*b*, to the right).

If the data that the advocates of the European legacy thesis provide us with are credible, the evidence effectively demolishes the legacy thesis. Taking into account European descent hardly diminishes the explanatory impact of the CW-Condition on human empowerment. Instead, the impact of the CW-Condition operates fully independent of a population's European descent, still accounting for sixty-six percent of the entire global variation in human empowerment. The result repeats itself when we consider genetic Westernness: The countries' CW-Condition still accounts for sixty-eight percent of their progression towards human empowerment. Vice versa, while European descent and genetic Westernness seem to exert a strong positive effect on human empowerment *before* taking variation in the CW-Condition into account, this effect turns out to be negligible or altogether insignificant *after* factoring in the CW-Condition.[491]

A couple of cases are illustrative. Japan and South Korea have a more pronounced CW-Condition than is usual for countries of an equally absent European descent. This relative strength of the CW-Condition in Japan and South Korea is linked with more advanced human empowerment than in other countries with an equally absent European descent. By contrast, Brazil, Argentina, South Africa and Namibia have a less pronounced CW-Condition than is usual for countries with a similarly sizable proportion of European descendants. And this relative weakness of the CW-Condition in Brazil, Argentina, South Africa and Namibia is linked with less advanced human empowerment than in other countries with a similarly sizable proportion of European descendants. Likewise, Japan, South Korea and a couple of Caribbean islands, like Barbados and St. Lucia, have a more pronounced CW-Condition than these populations' large genetic distances to the West suggest. Accordingly, they are also more advanced in human empowerment than other countries with a similarly large genetic distance from Westerners. Vice versa, Algeria, Jordan and other countries in the Middle East have a less pronounced CW-Condition than other countries with a similarly small genetic distance to Westerners. And again, this corresponds with a lower performance in human empowerment terms compared to these countries.

Figure 7-4. The Link between the CW-Condition and Human Empowerment controlling for Western Descent and Genetic Westernness

Diagram *a*: Controlling for Western Descent

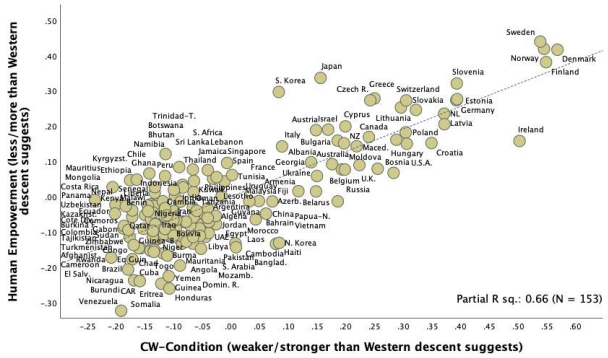
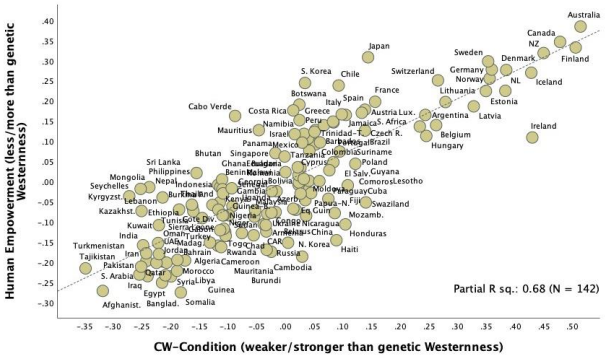


Diagram *b*: Controlling for Genetic Westernness



Reading Assistance:

Left-hand Diagram: Countries whose CW-Condition is stronger relative to the share of their population of Western descent tend to be more advanced in human empowerment than their low share of Western population suggests.

Right-hand Diagram: Countries whose CW-Condition is stronger relative to their populations' genetic proximity to Western peoples tend to be more advanced in human empowerment than their low Western genetic proximity suggests..

Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

In conclusion, the European legacy thesis does not hold. It is not true that the connection between the CW-Condition and emancipatory outcomes exists because Europeans matured under this condition and then imported their emancipatory legacy to areas with a similar CW-Condition overseas. There are countries with a pronounced CW-Condition but no European descent and these countries are as advanced in human empowerment as their strong CW-Condition predicts. Vice versa, there are European countries with a weak CW-Condition and they lack as much behind in human empowerment as the weakness of their CW-Condition suggests.

Insight:

These facts are of fundamental importance. They tell us that it is the CW-Condition itself, and not some mysterious innate quality of Europeans, that accounts for the countries' different propensity to embark on an emancipatory trajectory.

Summary

According to the *seed thesis* of the CW-Theory, the astoundingly close association between the CW-Condition and the countries' performance in developmental outcomes with an emancipatory

signature, most notably the encompassing human empowerment index, is indicative of a straightforward fact: The CW-Condition's geo-climatic features embody the seed of emancipatory dynamics. Consequently, Western civilization owes its leading role in emancipatory achievements, like industrialization and democratization, to its outstandingly pronounced CW-Condition—for which the people inhabiting the West are neither to blame nor to praise.

The most profound alternative to this narrative is the European legacy thesis advocated with vigor by prominent political economists. The storyline goes like this. For reasons unrelated to the CW-Condition, Europeans in Northwestern Europe have been obsessed with freedoms and, accordingly, invented and encultured emancipatory institutions and doctrines, visible in Western populations' historic and contemporary idealization of property, liberty and "the pursuit of happiness." Once the West's emancipatory ideology put corresponding institutions into place, they boosted Northwestern Europe's scientific curiosity, technological inventiveness, economic productivity and military capacity. Because of this power boost, Northwestern Europe's two most preeminent seafaring nations—the Netherlands and Britain—broke the Spanish and Portuguese naval dominance and became the leading colonial powers globally. In the aftermath, they allowed and encouraged mass-scale settlement of colonists only in those parts of the New World where a similar CW-climate as in Northwestern Europe allows for similar cultivation methods, economic activities and lifestyles as those known from Northwestern Europe's CW-climate. As a consequence, Northwestern European settlers took with them their emancipatory legacy and implanted the respective institutions in the CW-areas of the New World. Consequently, the close association between the CW-Condition and emancipatory outcomes has nothing to do with the CW-Condition itself; it only reflects the geo-climatic settlement preferences of colonists already equipped with an emancipatory ideological-institutional legacy. In other words, it is the quality of the populations inhabiting the world's CW-areas and not the geo-climatic features of the CW-Condition that account for emancipatory outcomes.

Our examination radically challenges the European legacy thesis, demonstrating that European legacy fails to explain four straightforward matters of fact:

(**1**) why the emancipatory spirit and its consecutive institutions originated precisely and only in the CW-area of Northwestern Europe, despite the much longer presence of civilization in many more places without the CW-Condition;

(**2**) why within Europe emancipatory outcomes map tightly on differences in the CW-Condition on a clear Northwest-Southeast gradient;

(**3**) why within all three civilizational clusters of the globe—Western civilization, Eastern civilizations, the Global South—the same also holds true: variation in emancipatory outcomes maps significantly on variation in the CW-Condition;

(**4**) why the link of emancipatory outcomes to the CW-Condition easily withstands controls for European legacy variables, including (*a*) the local populations' genetic proximity to Northwestern Europeans, (*b*) the proportion of European descendants in a population and (*c*) populations' historic imprint from the Western church.

Unless we resort to a position that declares systematic observations as non-explicable, these four findings can only be explained if we admit that something inherent in the CW-Condition in and by itself—other than European legacies—accounts for emancipatory societal dynamics.

8 The CW-Condition in Perspective

The idea that climate and geography play a role in societal development has a contested tradition in modern thinking. Already Charles de Montesquieu reasoned in his opus *De l'Esprit des Lois* (1748) about the depressing effect of tropical conditions, such as heat and humidity, on work motivation.[492] In colder climates, he argues, people need to work all the time to provide and maintain housing, shelter, heating, clothing, storage facilities for food and other equipment, all of which requires the development and transmission of knowhow and technologies needed to sustain these productive achievements. Montesquieu concluded from these considerations that climatic conditions enculture weaker or stronger productivity motivations, which then explain differences in economic output between countries. Inspired by Herbert Spencer's evolutionary theory of society, Ellsworth Huntington formulated similar ideas in the early 20th century in his chapter *The Effects of Humidity and Temperature*.[493]

Theorists were quick to dismiss environmental theories of development as simplistic, deterministic and racist. The latter accusation was probably most effective in discrediting environmental theories for a long time, especially after the defeat of Nazi Germany and its racial ideology. The fact that environmental theories of development fell so easily in disfavor also reflects a general discomfort with nature-based explanations among social scientists. Indeed, social scientists like to believe that, at least since the Industrial Revolution, human societies have escaped any dependence on nature. Developmental differences, therefore, are entirely a matter of human ingenuity in crafting institutions and their underlying ideologies rather than the result of different environmental conditions. Society is in the end the product of collectively engineered "social constructions" and not of "essentialist" environmental preconditions. Franz Boas, Margaret Mead and Michel Foucault[494] most prominently phrased this anti-essentialist position, whereas so called "neo-positivists," including Steven Pinker, John Goldthorpe and Napoleon Chagnon, formulated the most potent refutations.[495]

On a more empirical note, scholars frequently criticize environmental theories of development on temporality grounds.[496] The reasoning goes like this: Developmental achievements are time-specific and, thus, embody temporality, whereas environmental differences are constant over time and lack temporality for this reason. Consequently, time-*invariant* differences in natural environments can impossibly explain time-*specific* differences in societal development simply because the contrast between constancy and temporality constitutes a logical disconnect between phenomena located on different sides of this division.

We object these criticisms for five reasons. To begn with, environmental theories are not *entirely* deterministic. Instead, they are *partially* deterministic and *partially* probabilistic. The

deterministic part refers to environmental constraints that foreclose certain developmental trajectories categorically. For instance, reaching the urban stage of pre-industrial development is only possible under an advanced level of agriculture that produces a sufficiently large surplus to feed a sizable urban workforce. This developmental trajectory was foreclosed in all areas of the human habitat where vegetation is too sparse (e.g., deserts, savannahs, steppes) or soil quality too poor (e.g., rain forests) to pursue agriculture. By contrast, environmental theories are probabilistic when they refer to environmental opportunities that open up certain pathways as possibilities, in which case further development depends on how efficiently and quickly given populations discover these opportunities and learn to take advantage of them. This role of evolutionary learning opens space for human agency to unfold. Therefore, environmental theories are not actor-free; they presume collectively learning agents. For instance, the CW-Condition provides the opportunity to pursue a rain-fed type of farming in which nuclear families operate as independent local production units, with no need for extended kin support and hierarchically coordinated water, land and labor management. Areas with the CW-Condition are suitable for rain-fed agriculture, for sure. But they are also suitable for an easier, less labor-intense foraging lifestyle. Therefore, the CW-areas' mere suitability for agriculture embodies no intrinsic pressure to transition from foraging to agriculture until outside pressures from emerging agriculture in neighboring regions push for the transition.

Second, environmental theories are by no means racist. On the contrary, environmental theories emphasize differences in ecologically anchored opportunity endowments as the origin of populations' developmental differentiation. And because differences in populations' ecological opportunity endowments cause differences in developmental outcomes even under the complete absence of any biological differences in populations' innate talent pool, no reference to populations' supposed "ethnic quality" is needed—hence, no inherent racism. In fact, environmental explanations in the lineage of Jared Diamond[497] assume that the human potential to learn, discover and develop is equal throughout all populations, irrespective of their genetic-ethnic composition. Hence, if the human talent pool is equal among all populations above a critical mass, differences in developmental success derive largely from differences in environmental *opportunities* to develop and not from genetic-ethnic differences in the human *potential* to develop.

Third, environmental theories of development are by no means temporally contradictory. It is true that environmental conditions are rather time-invariant, whereas developmental achievements at a given time are, by definition, time-specific. However, a key feature of development is its glacial, path-dependent character, visible in distinct trajectories with *lasting* differences in intercepts and slopes throughout longer periods of time. Precisely because these differences in intercepts and slopes are *enduring*, they lack temporal specificity as much as environmental conditions do. Consequently, there is no contradiction in invoking environmental differences as explanations of developmental differences with respect to the *enduring* features in the trajectories of development.

Fourth, development is always the *combination of a potential and its germination*. And while the potential is time-invariant and originates in more or less permanently present conditions, the germination of the potential is temporally specific because it depends on the time that learning

agents need to recognize the potential and take advantage of it. Consequently, the interaction between given potentials, which lack temporality, and gestation periods, which embody temporality, is inherent to the logic of development. In other words, the contrast between constancy and temporality does *not* constitute a logical disconnect between environmental conditions and developmental achievements.

Fifth, environmental theories of development follow an exogenous logic that is origin-oriented. Indeed, environmental theories expand the causal chain of development back to their original source, thus addressing the first difference question in causal thinking. This way, environmental explanations escape the entrapment in endogenous circularity, which is typical of theories that explain one type of developmental achievement (like prosperity or democracy) with yet another type of developmental achievement (like liberal ideologies or institutions), without explaining where the *first* difference in developmental achievement comes from. This original cause of developmental differentiation can only be something that is exogenous and prior to the subsequent difference in collective achievements. And differences in environmentally induced constraints and opportunities are the most logical candidate for such an origin.

A Brief Review of Environmental Effects

Thanks to Jared Diamond's opus *Guns, Germs and Steel*, the merits of environmental theories find growing recognition.[498] Hence, an increasing number of publications deal with the impact of geoclimatic conditions on developmental outcomes.[499] The most frequently documented phenomenon is the famous "lucky latitude" effect: Countries in higher latitudes (both northward and southward from the equator) tend to be more prosperous, democratic and advanced in other aspects of life quality than those in lower latitudes.[500]

Most authors relate the lucky latitude effect to climatic differences in temperature, arguing that tropical heat is detrimental, while colder climates are favorable to development.[501] There are a host of reasons for that. All else equal, coldness decelerates nutrient depletion, which enhances soil fertility, at least as long as we stay within the plant-growing zone of our planet.[502] Moreover, seasonal change between cold winters and mild summers stimulates productivity, for reasons outlined by Hernando Zuleta[503]: Seasonality forces people to plan for winter. Thus, people need to think about storage, maintenance and preparation, which favors a future orientation that opens people's mindsets to the idea of savings and other time investments with delayed gratification, such as learning, training and education. As soon as the economy becomes monetized and urban markets come into people's reach, the more strongly pronounced seasonality of higher latitudes incentivizes savings. Higher savings per capita, in turn, provide better conditions to develop "general purpose technologies" (e.g., iron plows, water mills, sailing ships, printing presses etc.) because deploying such technologies is costly. Savings further incentivize the development of financial instruments that allow pooling capital in larger funds for the purpose of bigger capital

investments, like those needed to develop technologies. These incentives are a source of trust-generating institutions of a contractual nature, like credit and insurance systems.

Still, how advantageous exactly seasonality turns out to be is a matter of both its extremity and its particular constellation in terms of winter cold and summer heat. According to Evert van de Vliert, both winter cold and summer heat are thermal challenges.[504] Yet, these two challenges embody opposite productivity incentives. As mentioned, Montesquieu already pointed out that winter cold is a productive incentive because coping with coldness requires hard work and ingenuity to provide food storage, warm clothing, housing and heating. By contrast, summer heat is an altogether counterproductive challenge that one cannot escape through hard work.[505] Quite the contrary, summer heat discourages any kind of demanding activity.[506] For this reason, it is no coincidence that Europeans came as settlers to work their own land only in colder climates. In tropical climates, by contrast, Europeans came as rent-seekers who introduced slavery and other systems of labor enforcement.[507]

From a productivity point of view, the most optimal thermal constellation is temporary winter frost combined with cool summers. This is exactly the CW-Condition's defining combination, which—accordingly—embodies optimal rather than maximal seasonality in productivity terms.

This needs to be seen in connection with the fact that the CW-Condition also incentivizes lower fertilities, which we have already demonstrated. Higher savings and lower fertilities together re-shape the ratio between the three production factors: land, capital and labor. Lower fertilities keep cheap mass labor in relative short supply. When, under this condition, the labor demands of producers increase because of the population's rising purchasing power makes mass production profitable, these producers need to invest in technologies that multiply the available workers' output. At this point, private savings come in conveniently as they provide sources for pooling capital to fund experimentation with new technologies. As Michael Mitterauer's[508] work on water and windmill technology in Northwestern Europe shows, the dynamic of technological innovation was already in full swing in the 15th and 16th centuries, especially since the Black Death further tilted the ratio of production factors towards the relative scarcity of labor.

In addition to these considerations, we suggest another effect of coldness. Being forced by cold weather to spend most of the time indoors shapes people's settlement patterns, household structures and social alliances in such manner that (*a*) kinship bonding concentrates on the nuclear family and (*b*) remains limited to the private sphere. The reason behind this suggestion is that—very obviously—coldness enforces a stricter separation between indoor and outdoor spaces. This separation in turn establishes a sharper division between the private sphere (indoors) and the public sphere (outdoors). Not only is this division sharper, it also incentivizes smaller indoor spaces, as smaller homes are easier to heat and shield. More sharply separated and smaller indoor spaces insulate kinship bonding from the public sphere and delimit it to smaller group sizes, thus giving a premium on nuclear family settings over extended ones. Moreover, the rain-fed type of agriculture suitable to the CW-Condition avoids hierarchically coordinated water, land and labor management with its well documented repressive consequences, thus allowing nuclear families to farm

relatively large stretches of land autonomously, with no need for extended kin support. The consecutive decentral water, land and labor management further supports nuclear family settings.[509]

Recent studies show that the economy is more productive in "bad weather" conditions, that is, when it is too cold to hang out idly in outdoor spaces. When the weather is bad, people stay inside and focus on their work to escape boredom, which increases economic productivity.[510] The water component of the CW-Condition adds to the "bad weather" factor because people also spend more time indoors when it rains, especially when it is cold rain because humidity enhances the chill factor of colder temperatures. Forced to spend more time indoors, in turn, incentivizes creativity to escape boredom, which entails an element of cognitive training.

In general, the water component of the environment inspired a considerably smaller literature than temperature, although the consensus seems to be that abundance of water supply is a favorable factor.[511] John Gallup and Jeffrey Sachs[512], for instance, show that access to permanently navigable waterways is conducive to economic growth, while Manus Midlarsky[513] demonstrates a positive effect of continuous rainfall on democracy. The same is valid for sea borders[514]: Countries with a larger proportion of sea borders tend to be more democratic. A simple reason for this finding is that, if sea-bordered countries develop a state with military capacities, they sustain navies rather than armies. Navies are less useful than armies to suppress opposition and impose autocracy.[515] In the same vein, John Gerring and his co-authors show that harbor cities are conducive to democracy.[516] In another aspect—settlement patterns and space separation—water abundance operates in a similar manner as cold temperatures: Precipitation enforces the shielding of indoor spaces and thus favors a clearer separation of the public from the private sphere.

Surprisingly, the very combination of the three most clearly advantageous conditions—cool temperatures, water abundance and coastal proximity—has been largely ignored. For this reason, our suggestion about the importance of the combination of these advantages in the CW-Condition is unique and novel, filling a real gap in the literature.[517]

Nevertheless, recent scholarship has developed a renewed interest in the original causes of persisting differences in societal development. As the following review reveals, many suggestions in this new literature can be incorporated in the CW-argument. Thus, the CW-argument provides a unifying frame for a number of separate and seemingly disconnected explanations.

The Deep Roots Literature

The growing deep roots literature addresses the question of how far the original sources of the world's developmental differentiation today reach back in time and what these original sources are.[518] The most inspirational point of departure of the deep roots literature is Jared Diamond's epic *Guns, Germs and Steel*. [519] This work shows that naturally given differences in the number teritories' cultivable plants and tamable animals, together with a geographic East-West extension, explains where the transition from foraging and horticulture to intensive forms of agriculture happened earlier and where it happened later, or not at all. A head start in the adoption of agriculture

resulted in a leading position in other civilizational achievements: an earlier acquisition of food surpluses and, thus, a pioneering position in the development of markets, cities, bureaucracies and states. Indeed, Louis Putterman and his team[520] as well as Ola Olsson and John Paik[521] demonstrate that an early transition to agriculture is still visible in higher per capita incomes today. Likewise, Valerie Bockstette and her co-authors[522] and, again, Louis Putterman show that an earlier adoption of agriculture contributed to an earlier emergence of statehood, which—as Roberto Foa confirms—still accounts to some extent for developmental leadership today.[523]

However, scholars stressing the distinction between contractual and coercive types of statehood reach opposite conclusions concerning the lasting developmental advantages of early statehood. Jacob-Gerner Hariri[524], for example, shows that territories with earlier statehood are more likely to be autocratic today. One reason is that the early states, from which agrarian empires emerged, have all been of the coercive type, which apparently implants a lasting seed for autocratic institutions. This observation resonates with the findings of Jeanette Bentzen and her co-authors.[525] They review Karl Wittfogel's[526] famous thesis that irrigation-managed agriculture breeds coercive states. To test this claim, the authors measure a country's "irrigation dependence": the agrarian surplus that a territory was able to achieve by large-scale irrigation, which usually involved hierarchically coordinated water, land and labor management. Then they demonstrate that irrigation dependence significantly predicts degrees of autocratic government in the past and today. Because irrigation dependence correlates positively with early coercive statehood, this finding aligns with Jacob Hariri's evidence for a link between autocracy and early statehood.

Johannes C. Buggle testifies to a similarly ambiguous role of irrigation dependence for a different but equally important outcome: technological progress. Buggle shows that irrigation dependence accelerates progression towards the technologies typical of agrarian empires but then effectively blocks further innovation towards the technologies driving industrialization.[527] A reason for the innovation blockage inherent in irrigation dependence is the resulting agrarian empires' coercive nature. Coercive orders and their legitimizing dogmas discourage the mass-scale outburst of bottom up economic initiative and civic activism needed to launch an industrial-democratic double take-off.[528]

Ola Olsson and John Paik's[529] study casts further doubts on the advantages of an early adoption of agriculture and statehood. The authors show that the positive relationship between an early transition to agriculture and per capita income today is weak and entirely driven by the fact that most countries in sub-Saharan Africa adopted agriculture and statehood late, while they are still poor today. In stark contrast, if one breaks down the relationship between early agrarian advance and contemporary development by regions and focuses on Western Eurasia (i.e., Europe, North Africa and the Middle East), the relationship reverts itself. It does so quite pronouncedly: In Western Eurasia[530], a later instead of an earlier transition to agriculture is linked with higher per capita incomes today.[531] This finding echoes our evidence for a significantly late adoption of agriculture in the CW-areas, which are nevertheless the most prosperous areas on the globe today.

Olsson and Paik explain their finding institutionally. Early agrarian societies erected state capacities rather quickly but froze them in a coercive frame. Once they reached the mature stage of

pre-industrial civilization[532], they were immediately entrapped in the creativity-suffocating tendencies of coercive institutions. Later agrarian societies, by contrast, were more likely to wrap their emerging statehood in contractual institutions, which unleash human creativity. Hence, later agrarian societies and state builders are ahead today. This finding, too, echoes some of our own evidence. Indeed, the early agrarian societies in the CW-lacking areas of the globe all erected the coercive type of state, whereas the late agrarian societies in the CW-areas developed the contractual type of state.

Olsson and Paik do not explain why there was an affinity of early agrarian societies toward coercive institutions and of late agrarian societies toward contractual institutions. But if we combine their arguments with the findings of Jeannette Bentzen and colleagues, an answer is at hand: Looking at their geographic location, it is obvious that the early agrarian civilizations in the Middle East, the Mediterranean, India and China were all located in hotter and drier climates. By definition, hotter and drier climates embody higher irrigation dependencies. And we know for sure that irrigation dependence favors coercive institutions to enforce a centralized coordination of water, land and labor. By contrast, the late agrarian societies in Northwestern Europe and Japan were located in colder and wetter climates, which means lower irrigation dependence and, thus, a higher probability that contractual states with their liberal institutions evolve.[533]

The way in which these findings combine speaks powerfully to the role of the CW-Condition as an original cause and connecting source of advantageous developmental factors. It is clear that the CW-Condition determined the degree of irrigation dependence: This dependence declines linearly with the presence of the CW-Condition. Indeed, our data show that—not surprisingly—irrigation yields correlate negatively with the continuity of precipitation.[534]

Damien Murray, Marc Schaller and Peter Suedfeld also explain institutional variation with natural conditions.[535] Building on Randy Thornhill and Corey Fincher's "disease stress theory of sociality," the authors argue that protective orientations increase a group's fitness in areas where climatic conditions cause high levels of communicable disease.[536] Group-protective orientations are submissive in character because they emphasize discipline and hierarchy as a means to enforce protective rules. In other words, disease prevalence releases selective pressures in favor of submissive orientations. Indeed, Murray, Schaller and Suedfeld demonstrate that authoritarian personalities are more widespread in countries with a higher natural disease load. Where this is the case, coercive institutions are also more prevalent—a quite logical connection.[537]

The influence of disease threat, too, speaks to the role of the CW-Condition as an original cause: Like irrigation dependence, disease threat declines linearly with the presence of the CW-Condition.[538] SOM-Figure 5-4 visualizes the evidence.

Disease threat is closely linked to colonial patterns. Daren Acemoglu, Simon Johnson and James Robinson argue that only those colonial areas that came under the rule of "inclusive institutions" prospered.[539] Without exception, those areas were also the ones to which Europeans came as settlers, intending to acquire their own land and farm it by themselves instead of enslaving other people to do the work. But this pattern was only observed where a similar CW-climate as in

Northwestern Europe would make physical work tolerable for "white" settlers accustomed to cold and rainy weather.

Other overseas areas, notably those with tropical and sub-tropical climates, were subject to a quite different type of colonialism. These areas only attracted small numbers of Europeans. They would not come as diligent farmers but as idle rent-seekers to oversee the extraction of produce from plantations and mines. In order to satisfy their greed, these colonizers enslaved the indigenous populations and imported masses of slaves from sub-Saharan Africa after the indigenous populations had been decimated. As Stanley Engerman and Kenneth L. Sokoloff show, such a "labor-repressive legacy" is a manifest hindrance to compulsory schooling until this day for logical reasons: An economy relying on the exploitation of low-end natural products, like tropical fruits and ores, needs a workforce consisting of cheap manual laborers, rather than a skilled workforce (as in an economy focusing on knowledge-intense high-end products).[540] These conditions eliminate the incentives to promote compulsory schooling[541], whereas high fertility is encouraged to keep cheap mass labor in high supply. Consequently, repressive labor stifles a society's cognitive mobilization and the accumulation of human capital—key elements of human empowerment.

Confirming the importance of human capital, Eric Uslaner shows that the rate of schooling in 1870 provides a powerful explanation of low levels of state corruption today, which is a major component of the contractual state and its indiscriminate common good commitment.[542] Knowing that low corruption is an indicator of societal florescence in all kinds of respects, including human empowerment, these findings provide a strong case for the long-term importance of universal schooling. And as we have already seen in Figure 3-1b, the CW-Condition made early mass schooling more likely.

Like irrigation dependence and disease threat, the colonial exploitation risk as well speaks to the role of the CW-Condition as an original cause: The colonial exploitation risk diminished with the presence of the CW-Condition because this condition attracted the less exploitative form of settlement colonialism instead of the purely exploitative form of rent-seeking colonialism. This is not to deny that either form of colonialism has been catastrophic for the indigenous peoples, yet the settlement version of colonialism at least created for the descendants more prosperous, democratic and open societies, which are now slowly recognizing the horror they inflicted on the indigenous peoples.

Since recently, an increasing number of scholars have suggested genetic factors play a role in development. If one follows the arguments of some authors, one might be tempted to conclude that genetic factors account for a population's human capital. Richard Lynn and Tatu Vanhanen, for instance, claim that the challenges of colder climates require more sophisticated clothing, heating and housing technologies.[543] Accordingly, selective pressures operate more strongly in favor of human intelligence when the climate in which a population evolves is colder. The authors believe that the negative correlation between the countries' average annual temperature and the respective populations' aggregate IQ supports their argument.[544]

Another strand of research suggests that population IQs increase with a population's migratory distance from the origin of our species in East Africa.[545] The supposed reason is that people at the

migration frontier must rely more on their cognitive capacities: They must be more novelty-seeking as they encounter uncharted territories that require new coping strategies.[546] Hence, selective pressures might have operated more strongly in favor of intelligence at a greater migratory distance from the human origin. Accordingly, scholars report a positive correlation between a country's migratory distance from East Africa and its population's average IQ.[547] Insofar as the IQ differences between populations are innate, there would be a genetic basis for cross-country differences in cognitive mobilization. Supposedly confirming this assumption, there are some direct gene-IQ correlations at the country level. For instance, Misho Minkov and Michael Harris Bond[548] identify a gene combination[549] whose prevalence associates with future-oriented life strategies and average population IQs.[550] Likewise, the data collected by Enrico Spolaore and Romain Wacziarg[551] show a negative correlation between the populations' genetic distance to the British at the eve of the colonial era and population IQs today.[552]

In this context, it is worthwhile to note that we interpret a population's genetic distance from the British (which means basically to Northwest Europeans) as an indication of colonial exploitation risk: The genetically more distant populations were more likely to fall victim to exploitative colonialism. And the reason is obvious—racism: People genetically more distant from the Northwestern European colonizers are more likely to look different (by color) and to sound different (by language). Such recognizable "otherness" eases the categorization of outgroups as sub-human, which then legitimizes discrimination, decimation and marginalization on the grounds of ethnic group boundaries. Since some of the data suggest that populations genetically distant from Northwestern European "whites" are less smart on average, few scholars jump to the conclusion that genetically based differences in populations' aggregate IQ explain colonialism: The smarter populations colonized the not so smart ones.[553]

We reject this conclusion—not because it is racist (which it is) but because there are manifest doubts about its validity. Specifically, we doubt that any documented differences between human populations' aggregate IQs are genetically innate. Apart from the fact that humanity is a single species and not a collection of "races," the reason for our objection is a simple but crisp piece of evidence: Differences between populations' aggregate IQs turn insignificant once we control for variables indicating the populations' cognitive *training*, especially parental educational care evident in families' reproductive investment. Consequently, differences between populations' aggregate IQs capture population differences in cognitive *training*, rather than population differences in innate cognitive *ability*. Chapter 11 documents this point in all detail.

Although Enrico Spolaore and Romain Wacziarg collected data on *genetic* population distances, they interpret them as a proxy for *cultural* distances in historic trajectories, not differences in such biological qualities as intelligence.[554] More precisely, the authors argue that genetic distances translate into linguistic and other cultural distances that diminish diffusion between the distant populations. By the same token, genetic proximity generates linguistic and cultural proximity, which accelerates the diffusion of developmental achievements among genetically close populations. For these reasons, genetically distant countries tend to be dissimilar in all kinds of subsequent civilizational achievements. As a result, the emancipatory impulse typical of the

West's trajectory meets stronger cultural resistance among country populations that are genetically more distant from Northwestern Europeans.

Another genetic phenomenon calling scholars' attention relates to lactose tolerance. Justin Cook shows that lactose tolerance is more prevalent among populations in colder climates.[555] One suggested reason for this finding is the vitamin D_3 deficiency from which populations in cold climates suffer, given their lower sun exposure. Usually, lower vitamin D_3 production weakens bone structures but a dairy diet helps to compensate this deficiency because dairy products are rich in calcium. Lactose tolerance also increases nutritional options by adding a whole new set of dairy products to the menu, including milk, butter, yoghurt, curd and cheese. Because of its link with animal husbandry, lactose tolerance means a higher protein intake through meat consumption. Thus, populations with more widespread lactose tolerance seem to have been taller and healthier already in pre-industrial times.[556] Wider nutritional options and better health increase the existential autonomy of individuals. Hence, lactose tolerance might be a biological source of individualism. If so, individualism would have a genetic anchor that might make it a chronic predisposition in certain populations.[557] At first glance, some correlation patterns seem to support this suggestion.[558] Henceforth, we interpret the presence of lactose tolerance as an indication of greater dietary choice or nutritional autonomy.[559]

If lactose tolerance is indeed a biological anchor of individualism, one would assume that populations with higher lactose tolerance developed their language in ways that reflect their predisposition towards individualism. How a language structures people's thinking is visible in its grammar—which encodes particular cognition patterns. Matthias Meyer-Schwarzenberger classifies languages according to how strongly they feature individual agency. An exemplary characteristic of individual agency in languages is the strictness of the obligation to retain the personal pronoun in a sentence: The prominence of the personal pronoun symbolizes the importance of the actor, which is an inherently agentic feature.[560] Accordingly, we interpret Meyer-Schwarzenberger's language scheme as a measure of "linguistic agency." Given that grammar rules such as this took shape centuries ago, linguistic agency can be interpreted as an early crystallization of a culture's affinity to individualism. In a sense, it freezes this predisposition and makes it a chronic trait of a given culture.

If this is correct, the long-term presence of linguistic agency should have considerable explanatory power over the adoption of institutional and ideological features that enculture a society's individualistic orientation in a more explicit form. This proposal suggests a sequence running from nutritional to linguistic to institutional and ideological manifestations of individualism. In terms of the variable labels used in the subsequent analyses, this represents a causal path from "dairy options" to "linguistic agency" to "encultured individualism." The latter became manifest, for instance, in certain religious legacies, most notably Protestantism[561], and specific legal traditions, like Anglo-Saxon customary law.[562]

Another aspect of individualism is the nuclear family pattern—a household configuration that involves a number of significant features: lower child mortalities, lower female fertilities and a household constellation focusing on consensual and exogamous marriage, two-generation

households in "neo"-local settings without cohabitants of extended kin. "Neo"-locality means that married couples establish their own household, rather than moving into the household of the husband's parents—which is known as "patri"-locality. Interestingly, patri-locality is until today pretty much the norm, especially in areas lacking the CW-Condition. More generally, patri-locality is part of what Amy Alexander, Ronald Inglehart and Christian Welzel describe as "evolutionary normality" in the typical family, fertility and sex norms of agrarian empires: strict heterosexuality, sacrosanct marriage, pre-marital female virginity and high female fertility after marriage, which is enforced on females without their consent at an early age by their parents (the euphemism "pre-arranged" marriage characterizes this practice).[563] All these elements complement each other in maximizing male control over female sexuality—the very definition of patriarchy.[564]

Lower female fertility and the other elements of female reproductive autonomy represent a deviation from this evolutionary normality in family, fertility and sex norms. As Figure 3-3a shows, pre-industrial female autonomy in this sense maps closely on the absence-vs-presence of the CW-Condition.[565] Pre-industrial female autonomy is a key element of the CW-areas' "WEIRD-ness" as Joseph Henrich and his co-authors have coined it.[566]

Considered under today's standard, female fertility was high in all societies before the invention of modern contraception. High child mortality, disease vulnerability, famines and other threats dictated relatively high fertility rates in agrarian societies to sustain the workforce. Pressures to increase a population's "man"power in competition with their neighbors over arable land have further incentivized high fertility.[567] Nevertheless, SOM-Figures 5-4, 5-6 and 5-9 document that climatic differences created significant variation in disease vulnerability (5-4), child mortality (5-6) and life histories (5-9) across regions already at pre-industrial times: Areas with a pronounced CW-Condition had lower disease vulnerability, lower child mortality and longer life histories and these differences were naturally induced. This allowed for lower fertility to sustain the workforce, as SOM-Figure 5-7 illustrates. Thus, both men and women had the option to marry later already in pre-industrial times, namely in their early-to-mid twenties instead of their mid-teenage years. John Hajnal was the first to phrase this proposition, which accordingly became known as the "Hajnal-thesis."[568] Recent re-examinations of the evidence by Jan Luiten van Zanden and his co-authors strongly confirm the Hajnal-thesis for Northwestern Europe—the agrarian area of Eurasia's axial civilization belt with the strongest CW-Condition by far.[569]

Against this backdrop, Selin Dilli coded family systems all over the world as they looked like at the time around 1800-50 CE.[570] With the exception of England and Belgium, this is a time before the Industrial Revolution in all areas of the globe. Thus, we deal with pre-industrial family patterns that can be assumed to reach back much farther into the agrarian era. Inspired by Emmanuel Todd's[571] pioneering work, Dilli classifies family systems in terms of marriage rules, household size, inheritance practices and settlement patterns. Along these criteria, Dilli orders family systems in a hierarchy from the most patriarchal to the most emancipatory type (without using this terminology, however). The patriarchal type includes endogamous and pre-arranged marriage, extended families, the absence of female inheritance, and patri-local settlement. The most emancipatory type features exogamous and consensual marriage, nuclear families, the possibility of female

inheritance as well as neo-locality in household formation. When looking at the geo-climatic distribution of family types in SOM-Figure 6-1, it is clear that family structures tend to be more emancipatory alongside a stronger CW-Condition.[572]

Interestingly, Dilli finds that the type of family system prevailing in a country at about 1800-1850 CE still influences its political regime today. Specifically, family systems at the patriarchal end of her scheme show a significant tendency toward authoritarian rule. By contrast, family systems at the emancipatory end exhibit a similarly significant tendency towards democracy. Looking at this evidence, it is not far-fetched to assume that other aspects of human empowerment writ large are influenced in corresponding fashion by family systems, such that systems at the emancipatory end tend to favor human empowerment in its various manifestations.[573]

Consent and Command as Co-Axial Principles

Putting together the pieces collected so far, a bigger picture of civilizational configurations emerges. And at the origin of these we find the CW-Condition. Provided agriculture emerges, a pronounced CW-Condition favors the rain-fed type of cultivation, which is conducive to the nuclear type of family at the grassroots of society and the contractual type of state at its top. Vice versa, agriculture under a weak or absent CW-Condition is possible only under irrigation management, which favors the patriarchal type of family at the grassroots of society and the coercive type of state at its top. Consequently, co-axial principles of organization keep family structures at the floor of society and state structures at the ceiling congruent with each other. And the CW-Condition is the origin of these co-axial principles of organization, which can be described as the principle of "consent" under a strong CW-Condition and the principle of "command" under a weak CW-Condition.

Lower fertility and the other features of household autonomy are of crucial importance in this context. For one, household autonomy is emblematic for the absence of a marriage practice that Michael Woodley and Edward Bell label "consanguinity," which means the endogamous preference of distant relatives over non-relatives as marriage partners, or to put it quite simple: cousin marriage.[574] Cousin marriage is indicative of (*a*) patriarchy and (*b*) familism as the organizing principle of group formation—which contrasts with mutual consent as the formative principle when nuclear families prevail. Woodley and Bell show that consanguinity dominates in areas with high disease vulnerability. This is plausible because cousin marriage cements ingroup closure—a protective measure in disease-vulnerable environments. Woodley and Bell also show that consanguinity correlates negatively with democracy. Since consanguine marriage is linked with disease vulnerability, this finding supports Randy Thornhill and Corey Fincher's evidence that disease vulnerability hinders democracy.[575] The familistic ingroup closure that is evident in cousin marriage is detrimental to democracy for a couple of reasons. Democracy involves universal suffrage, which requires citizens to entrust their fellows the right to vote, irrespective of group membership, and to accept that a party in opposition of their own liking might gain the majority and will govern

until the next election. Toleration of disliked majority votes and toleration of the transfer of government to disliked parties for a limited term are democratic orientations that are difficult to enculture when familism turns group divisions into mutual hostility.

By contrast, nuclear families imply consensual, exogamous marriage: Partners from across kinship-lines *agree* to marry out of an intrinsic choice. At the cellular unit of society—the family household—consensual marriage fundamentally reshapes social relations. It allows for more gender equality, detaches social relations from kinship ties and places these relations on a voluntary basis.[576] It is plausible to assume that these principles of group formation shape trust patterns, such that outgroup trust is significantly higher than in contexts in which cousin marriage prevails.[577]

Schulz et al. label these features "impersonal pro-sociality" and depict them as one of the unusual ("weird") characteristics of Western societies. The authors claim that the features of the nuclear type of family have been imposed by intervention of the Catholic church, which supposedly enforced marriage rules to precisely that end.[578] This claim suggests a positive effect of the endurance of a country's exposure to the Catholic church on the prevalence of the nuclear type of family and its embedded female reproductive autonomy. However, we have seen already in Figure 6-2 that this effect of the church vanishes once we take variation in the CW-Condition into consideration. Instead, the CW-Condition explains where female reproductive autonomy prevailed already in pre-industrial times. The church's marriage policy might have transformed family patterns in Europe's CW-weak Mediterranean South but certainly not in the CW-areas in the European Northwest, which actually shook off the Catholic church's reign during the Protestant Reformation. In any case, because marriage practices are functional responses to environmental conditions, they are usually so deeply encultured that changes in official doctrines are unlikely to change them easily and sweepingly.[579]

By favoring consensual marriage, household autonomy anchors the *agreement principle* at the grassroots of society. On this basis, power-sharing institutions can grow bottom-up, all the way to the level of national governance. With household autonomy in place, derivative autonomies—such as autonomy in property disposal, market access and skill acquisition—are more easily in reach. Exercising these autonomies, people are determined to defend them. This delays state formation because autonomy-oriented groups organize resistance against the centralization of regulatory and fiscal capacities when these capacities curtail their autonomies. In the face of such resistance, rulers can build state capacities only in return for a concession: representation of the taxed population segments in elected assemblies. When this logic kicks in, the driving principle of democracy, "no taxation without representation," is set in motion. In the beginning, representation has been limited to the propertied segments of society. But with the extension of income taxation, military service, school attendance and other civic obligations into all layers of the population, representation continuously expanded[580], until universal suffrage established modern democracy.[581]

Another feature of nuclear families is that they leave people more time to improve their skills, education and human capital. This opportunity endowment needs to be seen in the context of humans' biological programming: Our species has an exceptionally long adolescence because a long adolescence maximizes the potential for learning. Given this potential, education is a rewarding

investment into the future that capitalizes on our species' most highly evolved quality: agency. With nuclear families, state-sponsored attempts to expand mass schooling meet a mental receptivity at the grassroots of society. This receptivity facilitates a life strategy that aims at maximizing the quality of one's offspring instead of its quantity. As is known from the works of Gary Becker, Steven Barro and Oded Galor[582], the emergence of a "quality-building" strategy (as opposed to the "quantity-breeding" strategy) is vital to the knowledge explosion at the beginning of an industrial take-off. As we will see, the conditions for this transition were better where nuclear families and greater female autonomy prevailed already at pre-industrial times.

The CW-Condition as the Connecting Source

It is a striking finding that all of the deep-root factors supposed to hinder industrialization and democratization correlate *negatively* with the CW-Condition: irrigation dependence, disease vulnerability, "white" settler mortality, the prevalence of cousin marriage, patriarchal family patterns and authoritarian personalities as well as coercive state traditions and the colonial exploitation risk (i.e., genetic distance to the British) all correlate negatively, and highly significantly so, with the CW-Condition.[583] By the same token, all of the deep-root factors supposed to favor industrial and democratic development correlate *positively*, and again very strongly so, with the CW-Condition. This is true for a country's migratory distance from the human origin, the lactose tolerance of the people on this territory, their linguistic agency, encultured individualism, pre-industrial nuclear families, contractual state traditions, early levels of mass schooling and pre-industrial living standards.[584] Populations featuring strong in the latter characteristics are also the ones in which the human empowerment index reaches the highest scores today.

Essence:

> *SOM-Section S5 as well as Figures 9-3 and 9-4 at the end of the subsequent chapter provide the evidence, showing that the CW-Condition correlates negatively with every remote factor supposed to be a long-term hindrance of development and positively with every such factor assumed to be a long-term catalyst of development. The same evidence demonstrates furthermore that the direction and strength at which a suggested deep-root factor affects human empowerment today is a linear function of the direction and strength at which the respective factor is itself affected by the even more deep-rooted CW-Condition.*
>
> *Since all deep-root influences on societal development and human empowerment merge in the temporally even more deep-rooted CW-Condition, the idea that the CW-Condition is indeed the original source of the West's emancipatory trajectory gains profoundly in credibility. Indeed, the undeniable temporal primacy of the CW-Condition suggests that this condition exerted selective pressures in favor of the more proximate deep-root influences on the emancipatory trajectory towards human empowerment.*

Summary

Looking at developmental outcomes with an emancipatory signature, we reviewed the deep roots literature with a focus on manifestations of encultured individualism and its industrializing and democratizing consequences—the two elements of what we call the Double Emancipatory Turn in the history of human civilization. The huge and still growing deep roots literature emphasizes historic legacy aspects deriving from the pre-industrial institutional setup of countries' agrarian economies, their family and household formation patterns, their state and religious organization as well as their colonial histories.

For instance, the agricultures' historic dependence on irrigation hampers democratic development until today, even though (in most countries) agriculture is no longer the dominant economic sector, neither in terms of the proportion of the workforce occupied in agriculture, nor in terms of agriculture's contribution to the Gross Domestic Product. A tradition of rice agriculture in river basins and flood plains with their centrally coordinated cultivation methods hinders the development of an individualistic culture, while the more decentral cultivation of wheat contributes to the development of a more individualistic culture.[585] The dominance of nuclear families in the countries' pre-industrial history strengthens individualism and fosters industrial and democratic development today. A tradition of coercive statehood and lack of contractual institutions weaken individualism and contemporary industrial and democratic development. Vice versa, a longer exposure to the Western church's exogamous marriage regime does the exact opposite: strengthening individualism and contemporary industrial and democratic development. Finally, involvement in rent-seeking colonialism depresses individualism and contemporary industrial and democratic development, while settler colonialism with its contractual institutions and early compulsory schooling do the opposite.

Apart from these institutional legacy aspects, countries whose major language involves since long an individualistic grammar structure, exhibiting what we call linguistic agency, foster individualism as well as industrial and democratic development. The opposite holds true for the countries' cultural distance to Europe's Protestant Northwest, measured via the populations' genetic distance to the British.

When it comes to the features of countries' natural environments, the literature is sparse, reflecting a widespread discomfort among the social sciences with environmental explanations of developmental differences. This discomfort reflects the prejudice that environmental explanations are deterministic because they emphasize constant ecological features in the countries' environment that escape human engineering and, hence, offer no potential for policy intervention. However, environmental explanations are not deterministic but probabilistic. They stress environmental features that embody the naturally given challenges and opportunities to which populations are exposed. Populations must cope with their naturally given challenges (like cold and heat or drought and rain) to survive; and they must learn to take advantage of their naturally given opportunities (like freshwater sources or coastal proximity) to thrive. To what extent populations succeed in doing so depends on many other factors, like their chosen institutions and ideologies. Hence, the

environmental features do not determine human success in mastering them but they determine which kinds of success and achievements are possible and which not. And since humans are a learning species, it is likely that—over the generations—populations figure out how to succeed in taking advantage of their environment. In that sense, again, the influence of environmental features on societies' development is probabilistic, not deterministic.

Another source of discomfort with environmental explanations is the suspicion that they are inherently racist. It is not exactly clear what nurtures this suspicion, yet it is dead wrong. In fact, no type of explanation is as racism-free as environmental explanations because such explanations do not hold accountable the supposed qualities of populations for their developmental achievements but the qualities of their natural habitats, for which the inhabitants living in the respective environment are neither to blame nor to praise—hence, no inherent racism at all in environment explanations.

When it comes to geo-climatic features, the literature pays most attention to the "lucky latitude" effect: Populations in higher latitudes with more pronounced and longer winter cold (both northward and southward of the equator) are more individualistic and exhibit higher degrees of industrial and democratic development. And this is the case ever since the Double Emancipatory Turn started in around 1800 CE. At least, the lucky latitude effect holds as long as we remain inside the arable latitude ranges in which it is not too cold to pursue agriculture. Another theory argues that thermal stress (i.e., heat deviations above 22 degrees Celsius in summer and cold deviations below 22 degrees in winter) favors an individualistic culture in interaction with industrial development. But this theory summarizes under the concept of thermal stress two opposite thermal stressors—heat stress and cold stress—with completely contradictory developmental consequences that cancel each other out when lumping together cold stress and heat stress in a single thermal stress measure. Indeed, cold stress is a mobilizing stressor that stimulates productivity to escape it, whereas heat stress is a paralyzing stressor that motivates inactivity as a refuge. Finally, to speak about an environment's hydrological features, steady rainfall on a decently high base level and coastal proximity strengthen individualism and drive industrial and democratic development.

Valuable as the latter findings are, they look separately at these geo-climatic features and ignore how they cohere and act in combination to drive emancipatory developmental dynamics. Filling this void, our CW-index summarizes the combination of mildly cold winters with cool summers in the presence of steady rain, amplified by coastal proximity, thus measuring the convergent occurrence of these features and their joint developmental impact.

Among the remote drivers of development emphasized in the deep roots literature, the CW-Condition is temporally most distant to today's developmental outcomes. For this reason, the CW-Condition is the most logical candidate for the original source of developmental outcomes with an emancipatory signature. And it speaks powerfully in favor of this causal candidacy that the CW-Condition correlates strongly negatively with all of the remote decelerators of development, such as pre-industrial agrarian irrigation dependence, patriarchal family patterns, coercive state traditions, a legacy of rent-seeking colonialism, heavy disease burden and cultural distance to Europe's Protestant Northwest. By the same token, the CW-Condition correlates strongly positively with all

of the remote accelerators of development, including agrarian nuclear families, contractual state traditions, settler colonialism, exposure to the Western church's exogamous marriage regime and an individualistic language structure with linguistic agency in its grammar. In conclusion, the CW-Condition is the connecting source of most of the other remote decelerators and accelerators of developmental outcomes with an emancipatory signature.

9 How the CW-Condition Shaped the West

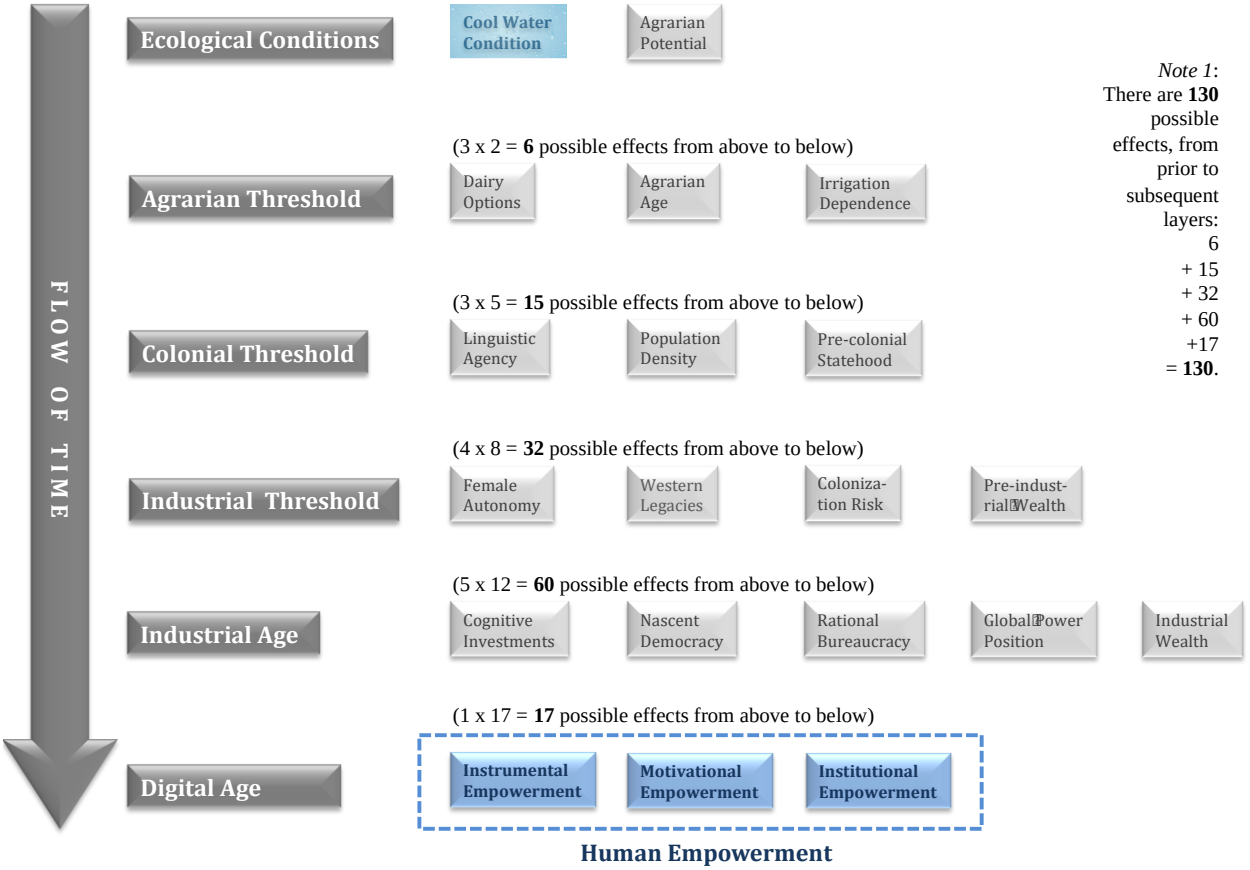
This chapter presents a path model that places the supposed drivers of development relative to each other in a causal sequence, following the supposed drivers' inherent temporality. This is done in such a way that influences with a farther reach backward in time are placed prior to influences representing more recent characteristics. We always and only place a layer of variables prior to another one when it is beyond reasonable doubt which was there first and which thereafter. Thus, subsequent layers are chosen in such a way that a great temporal distance separates them from previous ones. Such a clear temporal sequencing assures that we avoid confusing causes and effects. Therefore, our findings stay clear of any endogeneity problems. If there is (*a*) systematic covariation, (*b*) if this covariation is strong enough to be considered non-random, (*c*) if no plausible confounders of this covariation can be identified and if (*d*) the covariates are clearly separated into an earlier-later sequence by their inherent temporality, then we can speak with reasonable confidence about causality—even in the absence of experimental control.

A Tableau of Historic Layers

Following the trial-and-error logic of evolutionary selection, we apply an exploratory approach: A later situated variable is always regressed on all previously situated variables among our theoretically preselected set of potential influences. We use this explorative approach on purpose. The reason is that it is impossible to know beforehand exactly which of the theoretically relevant influences in a set of potentially confounding influences will show the strongest effect on which subsequent outcome. In order to reduce the random noise that would obscure the clarity of an existing pattern when many insignificant influences are kept in a model[586], we use a "stepwise" elimination procedure. Among all possible influences, this procedure selects only those retaining significance in competition with others. Sometimes, this procedure is criticized as being a-theoretical. But all potential influences in our model are selected based on prominent theories. We just do not know—and do not want to pretend to know—which of these theories finds more empirical support throughout our sequence of historical layers. Hence, we try it out and apply an evolutionary selection that sorts out those supposed influences with the most competitive significance.

Before we show the results of this sorting out procedure, Figure 9-1 first shows a purely conceptual diagram without any observed arrows of impact. The diagram identifies a total of seventeen

Figure 9-1a. A Roadmap of Consecutive Historical Layers of Development



remote drivers of societal development, and our dependent variable (i.e., the societies' advancement in human empowerment today), and situates them in their respective historic layer, ordered from temporally more distant toward more proximate layers, from the top to the bottom. The subsequent figures highlight in blue the sequence of consecutive influences that originate in the CW-Condition.

EXCURSION: OLD AND NEW WORLD CW-AREAS (ANGLO-SAXONS AND IROQUOIS)

The Old-vs-New World difference between the globe's CW-areas in Northwestern Europe (Old World) and those in the Americas/Australasia (New World) is a deep division over migration time, indicating how early the first modern humans arrived in a CW-area, namely 30,000 to 40,000 years earlier (Old World) or later (New World). Consequently, the Old-vs-New World distinction among the CW-areas is also a division about whether the CW-area in question did or did not achieve intensive agriculture and organized statehood at the eve of the colonial era in about 1500 CE. Significantly, the absence (New World) or presence (Old World) of intensive agriculture and organized statehood on the eve of the colonial age determined which of the two worlds' CW-areas would first discover and then colonize which other. This principle placed the Old World's CW-areas in Northwestern Europe into the colonizer position and those in the New World into the position of the colonized victims. Consequently, the CW-areas' inherent potential to launch the

double emancipatory dynamic towards early industrialization and democratization and, then, towards human empowerment today has been brought to fruition by the areas' own inhabitants in the Old World but by foreign settlers in the New World.

It would be mistaken, however, to explain this difference in initiation by different innate qualities of the local populations originally inhabiting the Old and New World's CW-areas. For example, there is nothing that made the Anglo-Saxons inhabiting the Old World's British Islands naturally superior to the Iroquois inhabiting the New World's Great Lakes area. The difference is that, upon first contact, the Anglo-Saxons were equipped with the full technological and organizational capacities of pre-industrial statehood, while the Iroquois were not. This difference, again, had nothing to do with innate differences in the natural qualities of these two populations. Instead, it is merely a reflection of migration history in terms of the timing at which the Old and the New World's CW-areas have been populated by modern humans. In these terms, the Anglo-Saxons had a 30,000-years head start over the Iroquois, making it much more likely that—upon first contact in about 1600 CE—the Anglo-Saxons, rather than the Iroquois, command the capacities to take away the other population's land.

It is nevertheless remarkable that the potential of the CW-areas to embark on an emancipatory civilizational dynamic materialized alongside both the Old and the New World's two different pathways. The gestation of this potential over both pathways establishes a solid global link between all of the world's CW-areas and developmental outcomes with an emancipatory signature today. The presence of the CW-emancipation link among two historically connected but migratorily distinct pathways renders the suspicion that its existence is a random fluke inherently implausible.

Still, we control the robustness of the CW-emancipation link for its inherent Old-vs-New World distinction—for one by including the country-territories' colonization risk as a variable in our holistic model, and then by reducing the model to the Old World's country-territories only. Zooming into the Old World, we examine the CW-emancipation link free from any influence of colonial migration.

On a mass-scale, colonial migration did not happen among Old World territories. The reason is that, in the Old World, potential target areas for European mass settlement with a similar CW-climate (think of Japan and Korea) were state-organized civilizations with dense agrarian populations that Europeans could not simply conquer and replace—as they did in the thinly inhabited pre-agrarian and pre-state CW-areas of the New World. In any case, focusing on the Old World is to look at historic dynamics free from the influence of colonial mass settlement.

If our presumption is correct that the CW-Condition was a necessary condition to trigger the Double Emancipatory turn towards industrialization and democratization in human history, an intriguing thought experiment has a clear outcome. The thought experiment is to imagine how the Emancipatory Turn would have played out in human history, if the CW-areas in North America had been populated by modern humans 30,000 years earlier than Europe's CW-areas. Most likely, North America's Iroquois would have developed intensive agriculture and an advanced form of contractual statehood long before Europe's Anglo-Saxons, with the consequence that—upon first contact—the Iroquois would have been in the position to colonize the British Islands and the rest of Northwestern Europe. Civilization's Double Emancipatory Turn towards industrialization and democratization would, accordingly, have been initiated by the native peoples inhabiting North America's CW-areas, and not by those inhabiting Europe's CW-areas which—instead—would have been decimated and marginalized by settlers from North America. These (most likely)

Iroquois settlers would then have exported their industrial-democratic dynamic to their European colonies.

Of course, since we cannot repeat history under experimental control, there is no way to prove these speculations true. Yet, submitting our premises and findings to counterfactual thought experiments provides an excellent basis for further speculations that can at least be reflected upon for their inherent plausibility.

Our analytical units are today's countries, which means that we cover between 150 and 185 observations, depending on data availability. We solve the problem of temporal variation in the sets of sovereign countries in several ways. To begin with, our country-level CW-scores are *not* territorial averages across countries' spatial extensions at particular points in time; instead, these scores refer to countries' historic population centers, which are entirely independent from temporal variability in countries' territorial extension as well as from temporal variability in their existence as sovereign political units. What is more, we re-analyse the CW-Condition's emancipatory effects within the setting of independent nations and their colonies as it existed in 1900 CE and 1800 CE. Finally, Chapter 10 ("The CW-Effects beyond Countries") examines the CW-effects among spatial units other than countries, using seven different territorial angles. To anticipate the result, we find strongly confirmatory evidence for the emancipatory CW-effect under all of these variable perspectives. This effect is, hence, a multi-perspective reality.

Layers and Stations

ECOLOGICAL CONDITIONS (PRESENT FROM THE BEGINNING)

We now explain the logic of the temporal layering in Figure 9-1. The most original conditions that predate any civilizational achievement are geography-based ecological features, which accordingly form our first layer. Economic historians from David Landes to Eric Jones, anthropologists from Carol and Melvin Ember to Jared Diamond as well as sociologists from Gerhard Lenski to Michael Mann recognize that ecological conditions constitute the starting configuration for any societal development.[587] Ecological conditions embody the opportunity endowments that the members of a population can learn to use to benefit the population's livability. Ecological conditions determine what kind of food is available, what crops can be grown and which animals can be domesticated, what raw materials are available for production, what pathways exist for travel and migration and what people need to do to survive under given weather conditions. We focus on two types of ecological conditions that received attention recently: the country-territories' agrarian (pioneer) potential as well as their CW-Condition. SOM-Section S4 explains all technical measurement details of the following variables.

The history of civilization, so far, is characterized by three evolutionary leaps: The first leap occurred with the transition from foraging toward agriculture, the so-called Neolithic Revolution. The second leap happened with the transition from agrarian toward industrial societies, the so-called Industrial Revolution. The third leap happened with the transition from the industrial era

toward the computing age, the Digital Revolution. Among our two ecological conditions, we assume that the agrarian pioneer potential was decisive for the first evolutionary leap into the agrarian era. By contrast, the CW-Condition was decisive for the second evolutionary leap into the industrial era. Due to our argument, the CW-Condition slowed the adoption of agriculture but catalyzed the leap into industrialization once agriculture was in place. Finally, as we will see in Chapter 12, globalization diminishes the determining power of ecological conditions in the digital age, including that of the CW-Condition.

Starting Conditions

The CW-Condition. The CW-Condition belongs to this layer because it touches upon climatic features that are a direct outcome of geography: Equatorial distance and coastal proximity largely determine where moderately cool seasons and steady rain on decently high base levels are more abundant and where freshwater sources are more ubiquitous—the defining characteristics of the CW-Condition. To capture the CW-Condition, we use the measure portrayed in Chapter 3.

Agrarian Potential. Inspired by the ideas of Jared Diamond[588], Ola Olsson and John Paik[589] provide an index combining the number of cultivable plants and animals that were originally present on a country-territory. They also measure the territory's East-West extension. Why the number of cultivable plants and animals defines a country-territory's agrarian potential is self-evident. The East-West extension is important as a diffusion facilitator: Agrarian innovations diffuse more easily over an East-West than over a North-South axis because climate zones differ mostly over geographical latitude and much less over longitude, all else held constant. Another element of this measure is the size of the continental landmass on which an agriculturally suitable territory is located. The reason is that the likelihood to adopt agriculture early by imitating its invention at other places increases naturally by the size of the continental landmass on which an agriculturally suitable place is located—simply because agriculture is more likely to be invented early when continental landmass size increases the number of places where agriculture is possible. Factoring in this point, elevates the agrarian pioneer potential of agriculturally suitable places in Eurasia greatly above similar such places on all other continents, especially those in the New World.

THE AGRARIAN THRESHOLD (ONWARD FROM 10,000 YEARS BACK)

Agrarian Age. The next layer in the causal sequence addresses early adaptations to the environments by human populations. These adaptations are driven by selective pressures emanating from the different environments and occur in ways that enculture these adaptations endurably, so the benefits of these adaptations are inherited over the generations. These adaptations represent the first stages at shaping a lasting cultural legacy. An early major step in this direction is the adoption of agriculture. Thus, we use Louis Putterman et al.'s data, labeled "agrarian age," which measures

the number of years in hundreds and thousands since the adoption of agriculture in a country-territory.[590]

Dairy Options. The Neolithic Revolution (i.e., the adoption of agriculture) demarcates the biggest leap in societal development before the Industrial Revolution and the Digital Revolution. Agriculture fundamentally transforms nutritional options and this requires genetic adaptations. Specifically, lactose tolerance becomes an advantageous trait once animal husbandry is adopted. When animal husbandry is practiced, lactose tolerance offers additional nutritional options in the form of dairy products. This advantage is even bigger under the CW-Condition because, where this condition is prevalent, dairy products provide a welcome compensation for vitamin D_3 deficiencies caused by low exposure to the sun's ultraviolet light radiation—a deficiency typical under the CW-Condition's cloudy skies and high latitude range. Also, under the CW-Condition one finds the most fertile pastures to feed the animal with the highest milk production: the cow. Hence, we measure "dairy options" using the lactose tolerance data from Catherine Ingram and Justin Cook, as collected and amended by Andrey Sherback.[591] Since dairy options that emanate from lactose tolerance are an adjustment to agricultural practices, we place this variable at the same layer as "agrarian age."[592]

As much as the CW-Condition bestows hydration autonomy on its inhabitants, lactose tolerance bestows dietary autonomy on the individuals in its possession. Together, the CW-Condition and lactose tolerance provide an eco-biological basis for ordinary people's existential autonomy writ large. In this capacity, these conditions proliferate the material basis of an individualistic culture. This is a lasting basis because the CW-Condition is embedded in persistent environmental conditions and because lactose tolerance becomes a hereditary genetic trait, once selected by biological evolution. Accordingly, the CW-Condition and lactose tolerance are plausible original sources of individualistic tendencies.

Irrigation Dependence. The third variable in the early agrarian layer addresses the dependence of a country-territory's crop yield on irrigation management. To capture this feature, we use the data collected by Jeannette Bentzen and her co-authors.[593] The assumption is that irrigation dependence favors elite control over water supplies and, hence, over land, labor and capital, which contributes to the emergence of coercive states. If anything, the coercive tendency inherent in irrigation dependence should be detrimental to human empowerment.

The Colonial Threshold (onward from around 1500 CE)

The next layer leads us to early civilizational achievements after the transition to agriculture. An early manifestation of culture that enhances its heredity is the formation of written language[594]—something that only occurs after the adoption of agriculture, given that foragers, pastoralists and horticulturalists did not bother to invent scripture to produce heritable text documents.[595] Once the basic grammar structure of a language has taken shape, its features preserve certain cognition

patterns and inherit them from one generation to the next.[596] Inspired by Emiko and Yoshihisa Kashima's research[597], we assume that the CW-Condition and dairy options indeed provide an eco-biological basis of subsequent individualistic tendencies. Accordingly, one of the first cultural crystallizations of these tendencies should be visible in "linguistic agency."

Linguistic Agency. We define linguistic agency as grammar features emphasizing the actor as the central agent in a happening. We consider linguistic agency in this sense as an inherently individualistic feature because an emphasis on agency is part of what defines individualism, that is, the faculty to pursue actions of one's deliberate choice or to act with intention.[598]

In some languages, especially those of the Germanic family—including English, Dutch, the three Scandinavian languages and German—the grammatical emphasis on agency goes so far that even in happenings that actually do not have an agent, the sentence uses a personal pronoun in neutral form to pretend that the addressed happening does have an agent who performs the action.[599] An example is the expression "*it rains*": Raining has no actor but the pronoun "it" fulfills the function of an agent executing the act of raining. In most other languages outside the Germanic family, passive voice without a personal pronoun is used to express happenings without a real actor.

Another manifestation of linguistic agency is an emphasis on active instead of passive voice. In Swedish, for instance, to tell someone your name you say "jag heter Frida" (*I call myself Frida*). In German, you say "ich heiße Frida." Either way, the voice is active by placing the subject into the driver seat in saying who she is. The English version of this active voice (*I call myself Frida*) is even more agentic because of its reflexive character, which makes the act of naming a person something perfectly under control of the actor who tells a listener her or his name. In sharp contrast, in Russian you say "меня́ зову́т Фрида" (*others call me Frida*), which is passive voice depicting the subject as a victim with no control over the act of naming. Clearly, in the active version the person telling the name is controlling the action, whereas in the passive version the person is the object to which the action happens, thus lacking agency.[600]

Another manifestation of linguistic agency is a language's insistence on retaining the personal pronoun in expressing an activity. There are many languages that allow to drop the personal pronoun completely in a sentence.[601] In Romanic languages, like Spanish, the pronoun can be dropped but the actor remains recognizable at the conjugated ending of the verb. In Germanic languages, by contrast, the personal pronoun cannot be dropped under any circumstances.

To capture linguistic agency, we start with a language index created by Matthias Meyer-Schwarzenberger.[602] The index orders the grammar structures of a given country's main language on matters of subject centrality, emphasis on active voice, the insistence on personal pronoun usage and four additional criteria (each coded in a tripartite manner: absent, partially present, fully present). The index yields a (7 x 3 =) 21-point scale from the least to the most individualistic language. We standardize the scores into a range from minimum 0 to maximum 1.0, with increasing fractions indicating a stronger presence of individualistic features. We label the resulting index "grammatical individualism."[603]

The index of grammatical individualism is available for only 119 of the roughly 200 countries in the world. For this reason, we use a complementary source of insight: a nine-fold categorization of language families, for which we consulted the World Atlas of Languages.[604] We code this categorization in ascending order of the given language family's emancipatory tendency. To measure this tendency, we use as a yardstick John Gerring and his co-authors' "democracy stock" index[605], which adds up a country's annual democracy ratings[606] over a time span of a hundred years, from 1900 to 2000.[607]

Democracy is a rock-solid indicator of emancipatory tendencies because the essence of democracy consists in the fact that it grants each individual citizen an extensive set of civil rights, including an equal vote and voice in public affairs. This is precisely the combination of individualistic and egalitarian features that we define as human emancipation.[608] Also, a long-term measure of democracy is more valid to depict a linguistically encoded tendency towards emancipatory outcomes because, if such a tendency indeed exists, it is a continuous force that should leave its imprint most visibly over a long timespan. To measure democratic traditions before 1900 is problematic because democracy did not exist before this time; at least it did not if we define democracy by universal female and male suffrage, which surfaced only in 1893—the year when New Zealand introduced universal suffrage for both sexes as the first country in the world.

Support for the assumption that democratic traditions indeed represent an emancipatory tendency is provided by the fact that democratic traditions correlate strongly with both Michael Minkov's index of individualism[609] and with Christian Welzel's emancipative values index,[610] which measures an emphasis on freedom of choice and equality of opportunities in people's orientations.

Given these premises, we create nine linguistically defined country-groups based on the language family of the countries' main tongues. In ascending order, these linguistic country-groups show the following scores on the continuum of democratic traditions, which reaches from a minimum of 0 to a maximum of 1 (standard deviations in parentheses): East Slavic languages 0.18 (0.06), Semitic languages 0.25 (0.14), West Slavic languages 0.29 (0.16), East Asian languages 0.33 (0.20), African languages 0.39 (0.09), South Asian languages 0.46 (0.19), Melanesian/Polynesian languages 0.55 (0.09), Romanic languages 0.56 (0.20), and Germanic languages 0.91 (0.12).[611]

It is noteworthy that the standard deviations within the country-groups are by a sizeable factor smaller than the group means. This already indicates that countries in the same language group are relatively homogenous as concerns their democratic traditions and, hence, the weakness or strength of their inherent emancipatory tendency. Accordingly, the countries' language families capture fully 62 percent of the entire cross-national variation in democratic traditions.[612] The boxplot in SOM-Figure 9-2 shows how distinctly the language families cluster on autocratic-vs-democratic traditions.

When countries show different autocratic-vs-democratic traditions in close correspondence with their linguistic ancestry, this can be an indication that this ancestry in and by itself encultures emancipatory tendencies—like a grammatical mind programming that orients people towards

long-term emancipatory outcomes, such as democracy. Of course, such correspondence is not yet definitive proof that different emancipatory tendencies are inherent in languages *themselves*. The simple reason is that languages might only be confounders of all kinds of other factors that truly enculture emancipatory tendencies. Nevertheless, because a decently strong correspondence between the countries' linguistic ancestries and autocratic-vs-democratic traditions indeed exists, the assumption that emancipatory tendencies are inherent to languages addresses at least a plausible possibility. How inherent to languages themselves the emancipatory tendencies truly are will become apparent when we examine the linguistic ancestries' democratic traditions under control of possible confounders.

Until we have identified such confounders, we preliminary consider all cross-country variation in democratic traditions that correspond with language families as inherent to these language families. Again, this is a probational assumption, pending on whether the correspondence holds under proper controls. With this probational assumption, we order and code language families in a manner that captures their power over emancipatory cultural tendencies at its possible maximum. Technically, we assign each country the mean score in democratic traditions of the linguistic country-group to which it belongs.[613] This way, we measure the countries' incorporations of democratic traditions to the maximum extent to which these incorporations could possibly be attributed to language families. The resulting index measures "language-encoded emancipation."

EXCURSION: UNDERSTANDING POTENTIALS

Some scholars might criticize our placement of this index in the pre-colonial layer of time because democracy appeared *after* this time. In fact, this is indeed a noteworthy point. Nevertheless, it does not invalidate our measurement approach, at least not upon closer scrutiny. What we intend to measure is language differences from the viewpoint of their inherent emancipatory potential, to the maximum extent to which such a potential is attributable to languages. And we think we have provided convincing reasons why democratic traditions are a first-rate manifestation of emancipatory potentials. Now, the manifestation of a potential inevitably materializes later than the timepoint since which the potential itself exists: This lies in the logic of what a potential is—namely a possibility for the future. An egg embodies the potential to turn into a chick, for which reason observing the hatch of a chick is proof of the egg's potential, even though the proof of the potential is temporally posterior to the potential's presence.

Consequently, when no direct measure of a potential itself is available, it is perfectly logical to infer its previous existence backward from its subsequent materialization. In the same vein, it is perfectly sensible to measure the languages' emancipatory potentials by their later manifestations in democratic traditions and nevertheless place the potentials at an earlier layer of time. For they were already there; only their actualization occurred later.[614] This should not be too difficult to understand: Present evidence often provides a window into the past, just as watching the stars tells you about the universe's configuration millions of years back in time.

More generally speaking, this interpretive principle applies whenever societies develop on lasting trajectories. Such trajectories and their lasting differences show that distances in current achievements are indicative of relative distances in previous achievements. Put differently, a

> country's position on its developmental trajectory at a given point in time is—by definition—time-specific, but when country trajectories differ *enduringly* in intercepts and slopes, the trajectories as a *whole* embody a higher degree of temporal *in*variance than all the timepoint-specific single positions along their course.

"Language-encoded emancipation" as defined above shows an astounding 75 percent overlap with Matthias Meyer-Schwarzenberger's index of grammatical individualism across the 119 countries for which both measures are available. Given that Meyer-Schwarzenberger himself dates his measurements back to about 1500 CE or earlier, our temporal placement of language-encoded emancipation in the pre-industrial layer of time does not seem to be off the mark. Hence, it is justified to combine the emancipatory ordering of language families and grammatical individualism into a joint index of *linguistic agency*.[615] In doing so, we obtain measures of linguistic agency for 169 countries.[616]

As the scatterplot in SOM-Figure 9-3 shows, countries that score high in linguistic agency show a significant and pronounced tendency to also score high in human empowerment today. The evidence looks very similar for the 119 countries with Meyer-Schwarzenberger's measure of grammatical individualism (shown in SOM-Figure 9-1).

Population Density. Another feature resulting from agriculture is population density. Agrarian societies are able to feed many more people per unit of land than foraging, horticultural or pastoral communities can feed.[617] This advantage in numbers allowed agrarian societies to push back pre-agrarian populations wherever agriculture was feasible. On truly advanced levels of pre-industrial agriculture, societies could yield so much food surplus that a considerable proportion of the population did not need to work in food production. This allowed for occupational specialization and the concentration of non-agrarian professions in urban agglomerations, which generated higher population densities. Hence, population density is a valid measure of progress in organizational complexity since the invention of agriculture until the Industrial Revolution.[618]

As Oded Galor argues, population density might be the only measure of societal progress in pre-industrial times because no civilization was able to generate high per capita incomes and long life expectancies for the broad mass of the population before industrialization.[619] Before this incision, gains in food production were channeled into population growth and the expansion of the cultivated land area, but not into mass income growth and other aspects of individual life quality. Moreover, some scholars consider pre-colonial population densities as an important factor in the history of colonialism because densely populated territories escaped—for obvious reasons—mass settlement by Europeans.[620] To test the influence of pre-colonial population densities in the historic sequence leading towards human empowerment today, we look at population densities at the eve of the colonial era, that is, about 1500 CE. We take the data from Kees Klein Goldewijk and his co-authors.[621]

The default assumption is that more densely populated countries in 1500 CE have been more progressed in organizational complexity at the eve of the colonial age, which would have equipped the respective populations with larger stocks of encultured knowledge. A larger accumulated stock

of encultured knowledge, in turn, appears to be a better precondition to make the evolutionary jump into industrialization and democratization, followed by human empowerment today.

Pre-colonial Statehood. An important consequence of pre-industrial agrarian maturation is state formation. When food surpluses become large enough to feed a non-agrarian population of urban dwellers—such as manufacturers, artisans and merchants—specialization on policing order, administering justice, military defense and tax collection becomes possible. Especially in agrarian settings that originate in large-scale riverine and floodplain irrigation management—as it was the case in Mesopotamia, Egypt, India and China—these public functions emerged rather quickly and formed the backbones of early statehood.[622]

To this day, many scholars regard the emergence of state order as the quintessential achievement of civilization, if not its core definition.[623] As Valerie Bockstette and her co-authors argue[624], countries with a legacy of statehood reaching far back into pre-industrial times have accumulated and inherited stocks of organizational knowhow that allow them to outperform countries with a shorter legacy of statehood until this day.

Roberto Foa's analysis of statehood traditions among sub-national regions in India provides also convincing support for this argument.[625] Some scholars also believe that long-lasting pre-colonial state traditions reduced the likelihood for a country to fall victim to European colonialism. To test the influence of pre-colonial statehood in the historic sequence leading towards human empowerment today, we use data on "state antiquity" collected by Valerie Bockstette and her team.[626] As with population density, we look at pre-colonial statehood at about the time of 1500 CE, measuring a country's cumulative years of statehood from 0 to 1500.

From Implicit to Explicit Legacies

Linguistic agency creates an anchor that makes an individualistic predisposition hereditary in a given population. There is also evidence that linguistic agency contributes to cognitive autonomy, that is, the ability to think independently. Suggestive evidence to this end can be seen in the fact that universal schooling has been introduced earlier among populations speaking languages with linguistic agency. In addition, these populations perform better in intelligence tests and other indications of cognitive performance today, although East Asians represent a noteworthy exception from this pattern (since they perform well in IQ-tests despite the low linguistic agency in Mandarin, Korean and Japanese).[627] Furthermore, bi-lingual people who fluently speak two languages with largely different linguistic agency come up with more creative solutions to cognitive tasks when the task is phrased in the language with the more strongly encoded agency.[628] Of course, this evidence does not prove a causal connection between linguistic agency and cognitive autonomy but it makes at least the possibility plausible. Be that as it is, there is reasonable evidence suggesting that linguistic agency represents a grammatical encoding of an individualistic cognition. The strong correlation between linguistic agency and emancipative values across the worlds' countries is part of this evidence.[629]

Equipped with this heritage, a population's subsequently evolving ideologies are likely to give explicit expression to an individualistic worldview and to preserve these expressions in the form of lasting ideologies and norms. Thus, linguistic anchors represent population characteristics that are still implicit. With the formulation of doctrines and laws, the *implicit* predispositions crystallize into *explicit* ideologies and institutions. Crossing this threshold leads us into a new field of legacies that are characterized by intentional social engineering.

Lasting institutions evolve when a population's environmentally, biologically and linguistically anchored predispositions crystallize into a heritable organizational form. This means to encode predispositions in explicit beliefs and rules, transmitted over the generations through the process of acculturation.

Among the societal configurations that emerged at different points in history, those present at the dawn of colonialism, that is around 1500 CE, are of outstanding importance. The reason is that this era marks a true singularity in world history. Indeed, never before in the course of history had a single civilization challenged all others at once. And never had a single civilization aspired for dominance over the entire globe. Yet, this is exactly what happened with the rise of the West in the early colonial era. Therefore, the institutional and ideological repertoires with which the territories of different civilizations had been equipped by then are of critical importance. These repertories determined how well the respective populations were prepared to cope with the Western challenge. Consequently, we measure linguistic agency, population density and pre-colonial statehood at a time close to the dawn of the colonial age.

THE PRE-INDUSTRIAL THRESHOLD (CA. 1500-1800 CE)

The next temporal layer addresses legacy factors that began surfacing with the onset of the colonial age. These legacy factors were taking effect in the forefront of the Industrial Revolution, supposedly preparing this incision. The key legacy of this type in our eyes relates to differences in fertility behavior and their role in shaping marriage, family, household and settlement patterns—the stuff shaping the grassroots structures of every society. From this point of view, our most favored influence relates to the prevalence of nuclear families and their embodied female autonomy.

Female Autonomy. At the original stage of human societies—foraging—fertility rates are modest because the mobility of hunter-gatherers sets a limit to the number of children that can be fed and carried around at once. Fertility certainly varied to some extent in response to seasonally fluctuating food supplies. But fertilities way above replacement level could not be sustained for long. Consequently, population growth in foraging societies is slow, population density thin and cohabitating groups are rather small in the number of people.[630]

The situation changes dramatically with the transition to agriculture. Food surpluses and the ability to store them for times of shortage allow for much higher fertility. In addition, high fertility becomes a decisive advantage because, in the competition between neighboring agrarian populations, those reproducing faster outnumber slower growing populations, which also means to

outcompete them in terms of military power. Thus, competition between agrarian populations for arable land favored high fertilities. These pressures were so strong that they offset humans' natural disposition for a fertility rate at or slightly above the replacement level.[631]

Consequently, all agrarian empires in history encultured patriarchal family norms, usually wrapped in religious doctrines, that fervently propagate high fertility. Together with high fertility, most religious doctrines advocate derivative reproductive norms, which include strict heterosexuality, earliness, necessity and sanctity of marriage for the female half of the population and female virginity before an early marriage. These patriarchal family, fertility and sex norms had dramatic consequences for gender relations. If the gendered division of labor in foraging societies already was somehow uneven, high fertilities in agrarian societies now greatly reinforced the initial inequality, by forcing women into maximized reproduction over their *entire* fertile lifespan.[632] Hence, the patriarchal reproduction norms that become the "evolutionary norm" in agrarian societies are all about maximizing male control over female sexuality.[633] Supported by religion and other doctrinal systems, such as Confucianism, patriarchy became the most strongly encultured, most common and most enduring form of inter-human discrimination, condemning half of our species to perpetuated inferiority.[634]

Against this evolutionary norm in agrarian societies, Northwestern Europe's grassroots social fabric appears distinctly "weird" already in pre-industrial times. Although fertility rates were high in all agrarian societies by nowadays' standards, Northwestern Europe's CW-areas nevertheless showed suspiciously lower fertilities, as we have seen in SOM-Figures 5-6 and 5-8.[635] As it seems, Northwestern Europe's lower fertility was the result of a deliberately chosen fertility restraint in the face of a natural opportunity endowment that made lower fertility first a feasible and then also a preferred choice in this agrarian setting.

EXCURSION: THE CW-CONDITION'S DEMOGRAPHIC SINGULARITIES

A key issue is a habitat's pathogen load and the resulting natural child mortality. In areas with a pronounced CW-Condition, most notably Northwestern Europe, the pathogen load is *naturally* lower (for proof, see SOM-Figure 5-4 again).[636] Indeed, none of the communicable diseases known from tropical and sub-tropical areas—such as yellow fever, dengue fever, malaria, leprosy, bilharzia and so on—is prevalent in CW-regions. And there are no communicable diseases prevalent *exclusively* in CW-regions. Furthermore, water itself is less infectious in colder than in warmer regions. Anyways, the CW-areas' lower pathogen load *naturally* induces lower child mortalities (for proof, see SOM-Figure 5-6 again). Of course, child mortalities were high under nowadays' standards everywhere in the pre-industrial world. But significant differences existed nevertheless. Estimates conducted on the basis of multiple sources by "Gapminder" for the time around 1800 CE suggest that—in the CW-areas of Northwestern Europe, Japan, North America, Australia and New Zealand—about one third of all infants would not survive until the age of five.[637] For most of Africa, the Middle East, India, South and East Asia as well as Latin America, the respective proportions are close to or above half of all infants. These estimates imply that population replacement dictated fertility rates of six births per women outside CW-areas, compared to three births in CW-areas. For all country-territories, except England and Belgium, the time around 1800 CE is

located before the Industrial Revolution. For this reason, regional differences in child mortality around 1800 CE cannot be explained by differences in industrialization. Instead, these differences derive at least partly from differences that natural environments, such as the CW-Condition, impose on human livelihoods.[638]

A naturally lower child mortality is an opportunity endowment. This becomes obvious when one recognizes that, compared to other primates, humans go through an exceptionally long period of adolescence. The temporal length of the adolescent period is a direct reflection of our species' capacity to learn, from which follows the capacity to accumulate shared stocks of knowledge that are then encoded in institutions and expressed in ideologies, inherited over the generations through socialization—which is the essence of cultural evolution. The temporal length of humans' adolescence is required to teach growing-up individuals all the skills they need in order to function in society and for the society to continue operating as a coordinated collective.

Against the backdrop of humans' long adolescence and the learning potential inherent in it, maximizing the number of childbirths incurs a high opportunity cost, first and foremost for women but then for men and children as well. For a species consisting of intelligent agents, living in a condition of maximized fertility is a waste of developmental potential. Forced to maximize childbirths, women sacrifice time that they otherwise would invest into further developing their own talents and skills. Maximizing the number of children also incurs an opportunity cost on children themselves: The attention every child receives to develop its talents shrinks with the number of siblings. Even men, without noticing it (of course), suffer from maximized female fertility because these men are exposed to inferior-treated spouses who do not dare to challenge them. For this reason, men too do not rise to their potential—not in spite of but because of their patriarchal privilege. Thus, when fertility pressures force families to focus their reproductive energy on maximizing just the number of children, they waste learning potential in multiple ways by narrowing the room of self-development for both parents and children. As a result, the entire society's human potential and cultural capacity remains under-developed.[639]

No doubt, evolution has endowed humans with a desire to reproduce. But naturally this desire does not focus on the number of children but on how much we can teach them to continue and further enrich our ancestors' legacies. This is a question of using humans' exceptionally long adolescence for what it has evolved for: learning. If given the opportunity, humans' natural preference is a fertility rate at or slightly above replacement level.[640]

In light of these propositions, it is not surprising that country-territories with a pronounced CW-Condition had lower fertilities already in pre-industrial times, as we have seen in SOM-Figure 5-7. These are the earliest fertility estimates with a broad country coverage, which "Gapminder"[641] has collected on the basis of a multitude of sources. The data refer to about 1800 CE, which again is for all countries—except England and Belgium—a time before the Industrial Revolution. It is, thus, reasonable to assume that the fertility differences present at this time reach farther back into the agrarian era.

As outlined earlier, another reason why living under the CW-Condition emits lower fertility pressures on women lies in the labor demands and the prevalent type of labor organization under this condition. Before the occurrence of intensive forms of agriculture, the foraging lifestyle—which has been preserved for much longer in CW-areas—embodies a low demand for human labor. Intensive forms of agriculture, especially those involving hierarchically coordinated water and land management, then multiply the demand for human labor per area unit. But the CW-areas deviate from this regularity because the type of agriculture to which they are suited (cereal growing and cow herding) allow nuclear family households to farm sizeable stretches of land on their own,

with no need for extended family support and no need for hierarchically coordinated water, land and labor management. Lower labor demands imply lower fertility pressures, while the inexistence of a hierarchical system of water, land and labor management means the absence of a centralized infrastructure to enforce patriarchal sex norms.[642]

At any rate, agrarian societies with the most pronounced CW-Condition had on average three to four births per woman. By contrast, agrarian societies with the least pronounced CW-Condition had on average eight to ten births per woman.[643] Already at times before modern contraception has been available, fertilities are kept under control by sexual abstinence rules, toleration of celibacy, higher marriage ages and longer breastfeeding periods after childbirths.[644]

As concerns female marriage ages, data from 1800 are available for only seventeen countries. It is nevertheless noteworthy that the differences in female marriage ages across these seventeen country-territories are substantial, reaching from a low of thirteen years in India and other parts of South Asia to a high of twenty-seven years in The Netherlands and Denmark. As SOM-Figure 5-13 illustrates, these differences correlate at an outstanding strength[645] with the country-territories' CW-Condition. Despite the small number of country-territories covered by this correlation, these country-territories represent most of the world's major civilizations, including Middle Eastern, Indian, Chinese, Russian, Japanese and Western civilizations. This coverage of the world's major civilizations underlines the historical significance of this correlation. In addition, the distribution in SOM-Figure 5-13 documents Northwestern Europe's demographic singularity before the Industrial Revolution.[646]

Lower fertilities correlate very closely with lower pathogen loads, lower child mortalities and closeness to the nuclear family in Selin Dilli's[647] classification of household systems. In fact, all these variables correlate significantly with each other and actually represent a single dimension of cross-country variation.[648] Along this single dimension, we find high pre-industrial pathogen loads, high child mortalities, high female fertilities and the extended family with early, pre-arranged and endogamous marriages as well as patrilocal households at one end, juxtaposed to low pre-industrial pathogen loads, low child mortalities, low female fertilities and the nuclear family with late, consensual and exogamous marriages as well as neolocal households at the opposite end.[649]

Thinking about what this single dimension covers in substantive terms, we suggest that when these four components come together at the low mortality-fertility end (also known as "long" life histories), what we get is female autonomy in family planning, or reproductive choice to put it short. Indeed, lower child mortalities and lower pathogen loads provide an opportunity for female reproductive autonomy, while lower fertilities and the nuclear household indicate the actualization of this opportunity. Together, then, our summary measure of reproductive choice represents the combination of *potential* and *actualized* female reproductive autonomy.[650] At the same time, this is a measure of gender equality in the household, for very obvious reasons: If anything, reproductive norms affect the status of women. Female reproductive autonomy in this sense indicates a major deviation from "evolutionary normality" in the otherwise heavily patriarchal sex norms of agrarian societies. We have previously (see upper-left diagram in Figure 3-3a) addressed societal differences on this demographic dimension as "smaller-vs-greater female (reproductive)

autonomy." For reasons of brevity, Figures 9-1a to 9-1c and 9-2 label the same dimension "female autonomy."

So far, we suggest a series of derivative autonomies, starting from hydration autonomy inherent in the CW-Condition to nutritional autonomy provided by dairy options (based on lactose tolerance) to imaginative autonomy rooted in linguistic agency. To this sequence, we now add reproductive autonomy. As a whole, this set of partial autonomies establishes existential autonomy writ large, as depicted in Figure 9-2.

Next to female reproductive autonomy, our reading of the literature suggests to also place into the early colonial layer (*1*) the extent to which countries have encoded emancipatory tendencies in pre-industrial religious doctrines and legal systems, (*2*) the country-territories' different risks of falling victim to colonial exploitation by European powers and (*3*) the country-territories' different levels of pre-industrial material wealth per capita.

Western Legacies. Scholars from Douglas North to Jack Goldsmith to Niall Ferguson argue that the West's pioneering role in the Industrial Revolution results from institutionally encoded ideological legacies that embody an emancipatory seed.[651] The germination of this emancipatory seed was programed towards individualistic-egalitarian outcomes through which human initiative became unlocked on a mass scale. Many scholars also agree that the institutionalization of the Western emancipatory legacy is most clearly visible in Protestant religious doctrines[652] and Anglo-Saxon customary law[653] traditions.[654]

These ideas resonate well with our own reasoning. We argue that country-territories with a pronounced CW-Condition evolved under environmental incentives favoring an implicit orientation towards emancipatory outcomes. Consequently, these country-territories and their populations supposedly developed dietary and linguistic anchors that inherit an emancipatory predisposition. It would be logical, then, that these implicit predispositions operate as a selective force that at one point crystallizes in an explicit institutional expression, finding concrete formulation in doctrines and laws.

In shaping doctrines, religion acted as the chief force in history.[655] This seems to be true especially with respect to emancipatory tendencies or their very opposite: patriarchy. Indeed, as we just mentioned, scholars have argued since the times of Max Weber[656] that Protestantism sticks out as the religion with the most pronounced emancipatory impulse.[657] Protestantism emerged through the Reformation, which fell together with the early colonial period and the florescence of pre-industrial capitalism. Not coincidentally, pre-industrial capitalism and the Reformation succeeded most sweepingly in those regions of Europe where the CW-Condition already provided hydration, dietary, imaginative and reproductive autonomy. This link suggests that the emancipatory tendency of Protestantism resonated with an already existing predisposition to this end and was selected for this reason, once Martin Luther, John Calvin and Ulrich Zwingli placed this option on the table. In other words, Protestantism encoded in religious doctrine an emancipatory predisposition that has already been there.

Insight:

> *Against the claims of Max Weber and many of his followers, Protestantism was not the deep cause of the West's emancipatory drive but rather a subsequent manifestation of it—a sort of ideological re-enforcement. The same reservations apply to Jonathan Schulz, Joseph Henrich and their co-authors'[658] claims about the role of the "Western Church" and Jeannette Bentzen and her co-authors'[659] arguments about the role of the Cistercian monastic order. The doctrines advocated by these religious forces were subsequent manifestations of an already existing predisposition, which operated as the selective force that privileged these doctrines over other alternatives. To locate the origin of doctrinal religious choices in environmentally induced predispositions offers a logical explanation of why the supposedly promotive religious forces—whether Protestantism, the Western Church or the Cistercians—map so clearly on the geography of the CW-Condition.*

Relative to Protestantism, Samuel Huntington and Timur Kuran place Orthodox Christianity and Islam at the opposite end of emancipation, attributing to these religions a particularly patriarchal outlook.[660] As Huntington points out, this outlook became typical of the "Eastern" religions because they were allied in their history with despotic agrarian empires: the Byzantine and Russian empires in the case of Orthodox Christianity, and the Arab/Persian Caliphates and Ottoman Sultanates in the case of Islam. Catholicism has also been embedded in an inherently patriarchal institution—the Roman Church with the Pope as its infallible leader at the top. But the secular movement's emancipatory struggles aimed to separate the Catholic church from the state and succeeded in pushing back its patriarchal influence. From this point of view, one would place Catholicism in between Protestantism, on the one hand, and Orthodox Christianity and Islam, on the other, when it comes to the ideological encoding of patriarchal-vs-emancipatory orientations.

Most likely, the patriarchal-vs-emancipatory tendencies of different religions are inherent to both their ideological doctrines and their organizational structures, which usually complement each other in mutually re-enforcing ways. For instance, the Protestant doctrine that each person can herself engage directly with God had a strongly individualizing and egalitarian impetus. In terms of organization, this impetus was reflected in the layperson assemblies ("congregations"), especially in Presbyterian Church communities, which are fundamentally democratic: "*Ruling elders are men or women who are elected by the congregation*."[661]

It is indeed true that the major world religions vary by the degree of their position on a continuum from patriarchal to emancipatory tendencies. At least, this is obvious when we again accept autocratic-vs-democratic traditions as a proxy for such tendencies, using the same measure introduced above.

We work with nine religiously defined countries. Of course, many countries have been influenced by different religions in their history, but in most cases, it is possible to identify the religion with the strongest influence in a country's history. For instance, The Netherlands are divided into a Catholic and a Protestant part, but the Protestant Reformation has shaped the history of this country. Hence, our classification counts The Netherlands as a historically Protestant country. The same story holds for Switzerland: Despite being a mixed Catholic/Protestant country, we categorize it as historically Protestant because Switzerland acted as a central playing field of the

Reformation. Likewise, during the Mughal era most of India has been ruled by a Muslim dynasty but the social fabric of India's caste system is intimately linked with Hinduism. In cases such as these, we attribute a country to the religion that shaped its history most significantly.

Comparing our country-groups' mean scores on autocratic-vs-democratic traditions, it turns out that the religion-anchored variation in these traditions is highly significant and accounts for almost fifty percent of the entire cross-national variance in autocratic-vs-democratic traditions.[662] In ascending order, the boxplot in SOM-Figure 9-4 reveals the religious country-groups' mean scores on autocratic-vs-democratic traditions, with higher scores indicating stronger democratic traditions (standard deviations in parentheses): Buddhism[663] 0.25 (0.10), Islam[664] 0.27 (0.15), Orthodox Christianity 0.29 (0.20), Confucianism[665] 0.39 (0.27), Animism[666] 0.42 (0.12), Catholicism 0.52 (0.22), Hinduism[667] 0.72 (0.04), Protestantism 0.81 (0.27), Judaism[668] 0.82.[669] It is, once more, noteworthy that, for most religious country groups, the standard deviations are considerably smaller than the mean scores.[670] This shows that the countries with the same religious heritage are relatively similar as concerns their autocratic-vs-democratic traditions, which further underlines the significance of religion as a force shaping patriarchal-vs-emancipatory tendencies.

The world's major religions concentrate in specific geographic areas: Buddhism dominates in South and Southeast Asia; Islam is most prevalent in North Africa, the Middle East and South Asia; Orthodox Christianity centers on Eastern and Southeastern Europe; Confucianism has its stronghold in East Asia; Animism prevails in sub-Saharan Africa and the South Pacific; Catholicism originates in Southern and Central Europe and spreads over Ireland, Latin America and the Philippines; Protestantism has been important in Northern, Central and Western Europe as well as North America, Australia and New Zealand.

Since geographic space is a confounding factor of ethnic compositions, language families and land empires, the religions' ties to geographic space also link them to certain ethnicities, languages and empires. Among these linkages, the one to empires has been of particular importance because empires had the power to shape a religion's institutional frame and doctrinal orientation, which led to firmer enculturation. In terms of imperial anchors, Islam is related to the Arab and Persian Caliphates and the Ottoman Sultanate, Orthodox Christianity to the Byzantine and Tsarist empires, Confucianism to the Han empires, Catholicism to the Western hemisphere of the Roman empire and the Spanish and Portuguese colonial empires, and Protestantism to Reformist Europe and the British settler colonies overseas. Only Hinduism, Buddhism and Animism are not linked to particular empires that deliberately propagated these religions.

As for Animism, which is clearly the least institutionalized religious legacy, the respective territories were mostly at the tribal, pastoral or horticultural stage when they came into contact with Europeans. This made them easy victims of colonizers from areas with more advanced levels of organization, technology and armory. In this sense, the Animist tradition is also linked to the history of empires: The fact that this tradition is indicative of the absence of antique agrarian empires made it particularly vulnerable to colonial imperialism.

Now, when countries show different autocratic-vs-democratic traditions in close correspondence with their religious legacies, this can be an indication that these legacies in and by themselves

engender patriarchal-vs-emancipatory tendencies. Again, such a correspondence is not yet a definitive proof that different emancipatory tendencies are inherent to religions because religions might only be confounders of all kinds of other factors that truly enculture emancipatory tendencies. Nevertheless, because a decently strong correspondence between the countries' religious legacies and democratic traditions indeed exists, the assumption that patriarchal-vs-emancipatory tendencies are inherent to religions themselves is at least a plausible possibility. How credible this assumption truly is will become evident when we control the religious legacies' emancipatory tendencies for possible confounders.

To examine this issue, we create a variable called "religion-encoded emancipation." This variable assigns each country the mean score in autocratic-vs-democratic traditions of the religious country group to which it belongs.[671] Religion-encoded emancipation, in this sense, measures the countries' placements on the continuum of autocratic-vs-democratic traditions *in as much* as these placements are attributable to the countries' religious legacies.

Compared to religion, legal systems constitute an even more formal tool to institutionalize a patriarchal-vs-emancipatory tendency. Scholars have long argued that law systems are a first-rate crystallizer of culture and differ significantly between countries.[672] Rafael La Porta, Florencio Lopez-de-Silanes and Andrei Shleifer, for instance, claim that the Anglo-Saxon customary law provides stronger protection of private property and individual freedoms than the Roman law, which in turn is more emancipatory in these terms than most of the non-Western law traditions.[673] For our purposes, we modify the typology of legal traditions developed by Rafael La Porta and his co-authors. The reason is that we are interested in measuring "law-encoded emancipation," for which we use—once more—democratic traditions as the yardstick. In pretty much the same way as we did with religiously defined country-groups, we create seven country groups based on their type of law tradition and then measure their position on our continuum of autocratic-vs-democratic traditions. Finally, we assign each country the mean score in autocratic-vs-democratic traditions of its legal country group, which measures democratic traditions in as much as they have an anchor in different legal traditions. Even more than religious legacies, legal heritages have been shaped by empires. Thus, we distinguish seven legal heritages.

As SOM-Figure 9-5 shows, the seven legal heritages are positioned as follows on the continuum of autocratic-vs-democratic traditions (standard deviation in parentheses): Byzantine law 0.18 (0.06), Islamic law 0.32 (0.19), Confucian law 0.40 (0.28), Colonial law 0.44 (0.13), Roman law 0.53 (0.26), Germanic law 0.93 (0.07), Anglo-Saxon law 0.98 (0.04).[674] As before, it is noteworthy that the standard deviations per legal country group are by a considerable margin smaller than the group means. This indicates that the legal country groups are relatively homogenous as concerns democratic traditions. Accordingly, the means of the legal country groups cover fifty-four percent of the entire cross-national variation in autocratic-vs-democratic traditions.[675]

With historic empires as their joint link, it is not surprising that religiously and legally encoded emancipation overlap largely.[676] Accordingly, it makes sense to combine the two encodings into a single variable that measures the different countries' inherited patriarchal-vs-emancipatory legacies—to the maximum extent that these legacies are encoded in both religious heritage and legal

tradition.[677] Arguably, the institutionalization of an emancipatory cultural tendency is a most distinctive feature of the West, which is also obvious from the fact that Anglo-Saxon law in terms of legal heritages and Protestantism in terms of religious legacies rank highest on our encoding measure. It is, hence, justified to label this measure "Western legacy." Scholars thinking along the lines of sociologist Max Weber (ideologies) and economist Douglas North (institutions) will certainly attribute great weight to this continuous measure of combined ideological-institutional legacies typical of the West.

In a widely cited article, Jonathan F. Schulz and his co-authors champion an indicator that they label "Western Church exposure" as an explanation of the West's emancipatory dynamic. This indicator measures the number of years since a country is under the influence of the Catholic church, from 0 years for Japan to 1500 years for Italy. The argument is that the church pursued a very particular marriage policy, namely a strict ban on endogamy. Accordingly, the longer a population lived under the influence of this exogamous marriage regime, the more its family, fertility and sex norms detached from patriarchal kinship ties, which then gave rise to the nuclear family pattern. Allegedly, the church pursued this marriage policy out of its material interest in land property: The prohibition of inheritance within the wider kinship circle enhanced the church's chances of seizing property due to the absence of legitimate heirs.

Not surprisingly, Schulz et al.'s measure of Western church exposure correlates positively and strongly with our indicator of the Western (religious and legal) legacy.[678] However, Schulz et al.'s Western church exposure is available for thirty countries less than our Western legacy.[679] Western church exposure is also a weaker indicator of the West's emancipatory drive from the viewpoint of autocratic-vs-democratic traditions than our measure of the Western legacy.[680] For these reasons, we prefer our measure of the Western legacy.[681] Besides, we have already seen in Figure 6-2 that Western church exposure turns insignificant as a predictor of the pre-industrial Western family pattern, once we control for the CW-Condition.

Colonization Risk. A country's colonization risk indicates its likelihood back in time to fall victim to predatory forms of European plantation and mining colonialism. Daren Acemoglu, Simon Johnson and James Robinson argue that the "white settler mortality" determined this risk: Where this mortality was high, large-scale settlement of European farmers who work the land by themselves would not happen.[682] Instead, a thin layer of plantation and mine managers would take control and establish slavery and other forms of forced labor. Usually, this was the case in tropical and sub-tropical areas where Europeans would find physical work insufferable. To measure the colonial exploitation risk, we initially experimented with the data on "white settler mortality" collected by Daron Acemoglu and his co-authors. However, Enrico Spolaore and Romain Wacziarg's[683] measure of residential populations' genetic distance to Northwestern Europeans[684] in 1500 CE covers more territories and shows better (negative) results in predicting emancipatory outcomes than does the "white" settler mortality. Hence, we use the country-populations' genetic distance to Northwestern Europeans in 1500 CE as a proxy for their historic risk of falling victim to colonial exploitation. We label this variable "colonization risk."

Given that evolution has anchored racism in the human mind, it is expectable that Northwest Europeans were less scrupulous in exploiting indigenous populations whose members were genetically more distant because then they looked more different, which made it easier to de-humanize these people and categorize them as naturally inferior to Europeans. Humans have indeed an evolved innate tendency to group-categorize others. Such categorization turns more easily into de-humanization, the stronger the categorization involves perceptions of ethnic-racial distance.[685] Hence, our measure pays tribute to the racism inherent in colonial history.

Pre-industrial Wealth. The "reversal of fortunes" thesis propagated by Daren Acemoglu and his co-authors[686] claims that the Industrial Revolution inverted the global income distribution of pre-industrial times: Areas, like the Middle East and China, that supposedly were richer in pre-industrial times than Northwestern Europe fell behind Northwestern Europe and its overseas settler colonies after the Industrial Revolution. If this is true, the countries' per capita income at pre-industrial times should be a negative predictor of industrial-era prosperity and its subsequent emancipatory outcomes, such as mass-level democracy. To consider this possibility, we use estimates of per capita incomes in 1800 CE from "Gapminder," which in turn go back to Angus Maddison's calculations.[687] Let us emphasize again that 1800 CE is the first year providing income data for most countries worldwide. And for all countries, except England and Belgium, this is indeed a time before industrialization.

THE INDUSTRIAL AGE (CA. 1900)

The next temporal layer after the colonial era is the industrial age. Because of data limitations, we are restricted to data from around 1900, when the Industrial Revolution was in full swing in Europe and its settler colonies and its incipient phase in Japan.

Cognitive Investments. A recent study by Eric Uslaner[688] shows convincingly that today's impartial government can be traced back to the late 19th century, when states whose rulers were committed to modernizing their countries promoted universal schooling. Possibly, this path dependency also applies to other developmental outcomes, including human empowerment. Indeed, we believe that this is a very plausible expectation because the mass-scale cognitive mobilization emitted by expanding education is, until this day, one of the key drivers of emancipative values—in Western and non-Western countries. We measure a country-territory's advancement in universal schooling in the late 19th century based on data collected by Fabrice Murtin[689], taking advantage of Uslaner's scheme of attributing these data to contemporary countries. The data are from around 1900, and we combine them with fertility and mortality data from the same period and with information on when the industrial-era fertility drop started in different countries. The reason to combine these data into a single index of countries' "lower-vs-higher cognitive investments" in around 1900 is the powerful inverse correlation between mortality/fertility, on the one hand, and schooling/education, on the other, reflecting the polarity in reproductive behavior, family planning and

lifetime investment between a "quantity breeding" strategy linked with "short" life histories and a "quality building" strategy linked with "long" life histories. Cognitive investments into societies' individuals are low at the "quantity breeding" end of reproductive behavior, while these investments are high at the "quality building" end, reflecting the "births"-vs-"brains" trade-off in individuals' lifetime investments. The vertical axis in the upper-right diagram of Figure 3-3b in Chapter 3 already displayed this measure. For reasons of brevity, we refer henceforth to this variable simply as "cognitive investments."

Nascent Democracy. As concerns democracy, the period around 1900 is the time at which the first fully fledged democracies with universal male and female suffrage occur (in 1893 New Zealand is the first country in the world to establish universal male and female suffrage). Thus, here we see the vanguards of modern mass democracy. To measure a pioneering role in democratization around 1900, we use data from the "varieties of democracy" (V-Dem) project in Gothenburg, Sweden.[690] For the year 1900, we use the V-Dem index with the strongest predictive power on human empowerment today, which the data providers call "liberal democracy." In our path diagram, we label the respective index "nascent democracy."

Rational Bureaucracy. From Max Weber to Talcott Parsons to Francis Fukuyama[691], influential thinkers argue that features labeled inter-changeably as "rule of law," "state capacity," "benevolent government," "enlightened absolutism," "effective order," "output impartiality" or "rational bureaucracy" (to stick with Weber) reflect institutional qualities that promote "good governance," sound policies, economic development and other beneficial developmental outcomes. If this is true, it should also apply to emancipatory outcomes, in which case "rational bureaucracy" in 1900 would predict more advanced levels of human empowerment today. To measure this aspect of society, we use the "public corruption" indicator in 1900 from the V-Dem project and invert it to obtain a measure of rational bureaucracy.[692] Clearly, in as much as the prevalence of corruption indicates discriminatory governance practices that selectively distribute privileges, non-corrupt governance equates with an indiscriminate pursuance of the common good.

Global Power Position. In light of the path dependencies of the colonial era, many scholars argue that the countries' developmental achievements today largely reflect their position in the world system at the apex of imperial colonialism before WWI.[693] Thus, the time around 1900 is again our focus. To take into account the countries' position in the world system around 1900, we use a seven-point ordinal scale, indicating the countries' global power status in ascending order.

The weakest position is present when a contemporary country has been a colony of a European power, other than Britain, in 1900. Examples include the French colonies in sub-Saharan Africa and Indochina. The next weakest position is represented by former colonies of Britain in 1900, like the British colonies in sub-Saharan Africa, India and the Caribbean. We distinguish non-British and British colonies because a large literature argues that Britain was a less predatory colonial power than other European nations and imprinted on many of its colonies a liberal institutional legacy.[694] Therefore, although colonial legacies always incur a burden, a British colonial legacy should at least be less impairing with respect to emancipatory societal dynamics leading to human

empowerment. The next weakest position is present when a contemporary country was an occupied territory of an autocratic land empire in 1900, such as the Ottoman, Russian or Austro-Hungarian empires. Examples include most countries of Eastern and Southeastern Europe, like the Balkan countries as well as Greece, Romania and Bulgaria. Next are countries that were formally independent in 1900, but were effectively controlled by a colonial power. Examples cover much of Latin America, where most of today's countries have been independent since the early 19th century but nevertheless under the heavy influence control of the US, in one way or the other. Other examples include Thailand, Iran or China, none of which has ever been a colony in the formal sense but nevertheless under the control of one or more of the colonial powers. The next rank up on the ladder of power is given when a contemporary country already existed as a truly independent nation in 1900 but was not the center of a colonial empire or land empire. Examples include the Scandinavian countries, Switzerland, Canada, Australia and New Zealand. On top of this, we place contemporary countries that were the center of autocratic land empires in 1900. Examples are Austria, Turkey or Russia. Finally, at the peak of the ladder, we find contemporary countries that were the centers of naval empires, in other words colonial powers, like Britain, France, the Netherlands and Portugal.[695]

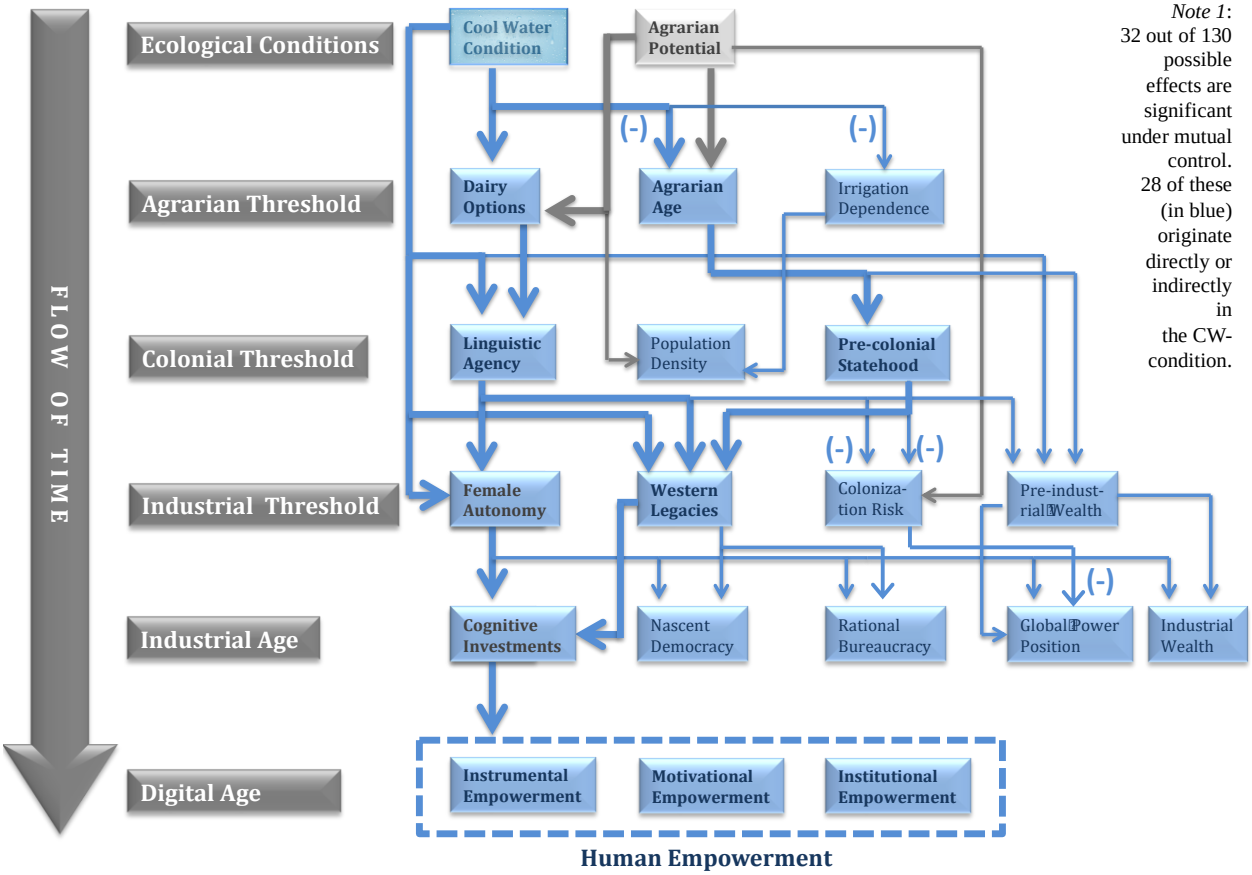
This seven-category ranking in the world order of the time around 1900, ascending from "non-British colonies" (1) via "British colonies" (2), "occupied territories" (3), "formally sovereign countries" (4), "truly sovereign countries" (5) and "land empires" (6) to "colonial powers" (7), explains indeed forty-nine percent of the entire cross-national variation in human empowerment today.[696] In other words, countries higher in the world's power ranking in 1900 CE tend to be more advanced in their populations' human empowerment today.

Industrial Wealth. The time around 1900 is significant in other aspects related to development. After an initial phase of mass pauperism, we see that differential progress in industrialization starts to become visible in really big gaps in per capita incomes between countries. Economic historians such as Angus Maddison, Eric Jones and David Landes claim that industrial development is strongly path-dependent. Consequently, pioneers of industrialization around 1900 should still be more developed than other countries today. If this is an accurate view, then the leaders of industrialization in 1900 should also be advanced in human empowerment today. To test this possibility, we measure industrial development by the countries' per capita Gross Domestic Product (logged) in 1900. We take these data from the "Gapminder" project, which has collected them from multiple sources.[697]

THE DIGITAL POST-INDUSTRIAL (DIGITIAL) AGE

The final temporal layer after the industrial era is the digital age in which we locate our ultimate dependent variable, the human empowerment index, which indicates impairing-vs-empowering human conditions.

Figure 9-1b. Sorting Out ***Significant Pathways*** to Human Empowerment



Human Empowerment. At the last temporal layer in our scheme, the digital age of today, we measure human empowerment based on the three-component human empowerment index for 2018, as introduced in Chapter 3. To repeat, the index summarizes (*1*) "poor-vs-rich life resources" as an indicator of people's *instrumental* empowerment, (*2*) "dormant-vs-viral emancipative values" as an indicator of their *motivational* empowerment, and (*3*) "narrow-vs-wide civic entitlements" as an indicator of their *institutional* empowerment—thus bundling together the human condition across the material, mental and legal domains of societal existence. Again, our final outcome variable summarizes these three partial empowerments into a *single* index of overall human empowerment. As we have already seen with plenty of evidence, the human empowerment index is an encompassing catchall measure of everything that can be used to measure a country's general functioning, wellbeing and its overall life quality (for proof, see SOM-Table 4-4 again). Because we use as our final outcome variable an indicator that is so broadly representative of all kinds of other indicators linked to emancipatory developmental outcomes, we can be certain that our model is valid for various alternative specifications of the final outcome variable.

The Main Road towards Human Empowerment

Figure 9-1c. Narrowing Down ***Major Pathways*** to Human Empowerment

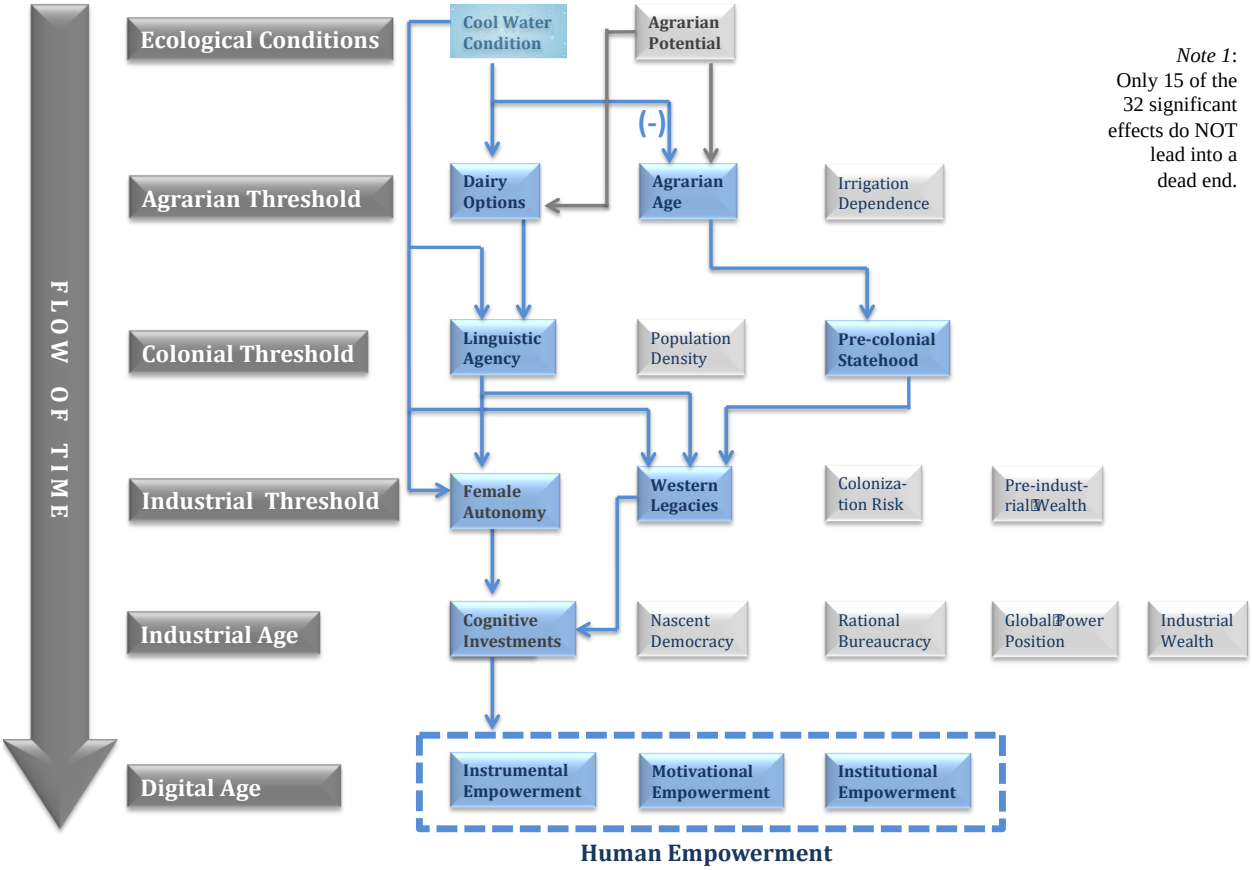
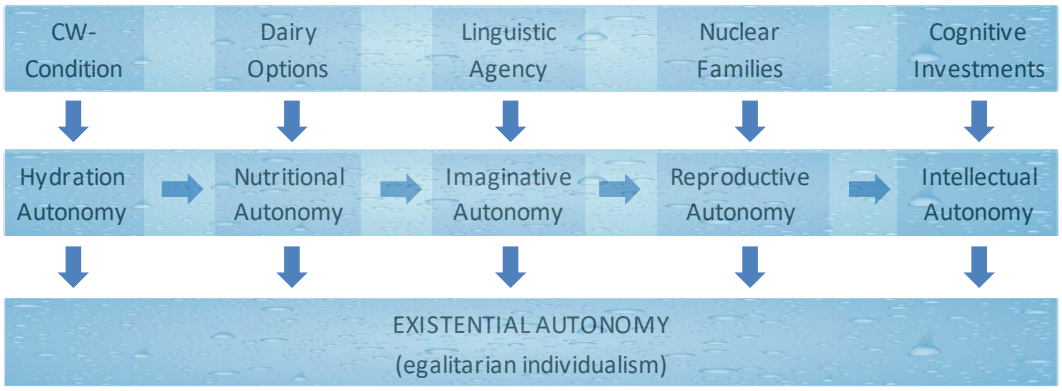


Figure 9-1b shows the same diagram as Figure 9-1a, but now with all the significant influences we have been able to identify empirically. Thus, Figure 9-1b results from a sequence of temporally ordered multiple regressions, each conducted with stepwise elimination, such that a variable located at a later layer of time is always regressed simultaneously on all previously layered variables. This makes it possible to find a maximum of 130 significant influences from previous to subsequent layers of time.

Of the 130 possible influences, only thirty-two influences prove significant throughout our multiple series of temporally ordered regressions. This sounds like a great reduction, and it is. But as Figure 9-1b shows, even this reduced number of significant influences provides a complex picture. Representing this complexity is, for once, a helpful exercise because it reminds us to avoid oversimplified interpretations of history.

To demonstrate the CW-Condition's outstanding importance as the deep source of human empowerment, Figure 9-1b highlights in blue twenty-eight of the thirty-two pathways with a direct or indirect origin in the CW-Condition. The only four pathways that do neither directly nor indirectly relate back to the CW-Condition are shown in grey. Strikingly, none of the four grey pathways leads directly to the final outcome variable (i.e., contemporary human empowerment), nor its immediate precursor (i.e., cognitive investments in 1900) or the precursor's own two precursors

Figure 9-2. A Sequence of Existential Autonomies



(i.e., female autonomy and Western legacies in around 1500-1800). Noticing the overwhelming majority of blue arrows in Figure 9-1b already reveals something truly remarkable: All of our eighteen variables—except the agrarian potential—are in one way or the other related to the CW-Condition. Hence, the CW-Condition is the quintessential connecting source of most of the later situated "deep root" drivers of development.

Insight:

> *The correlations in Table 9-1 re-enforce this conclusion, showing that all of the suggested remote drivers of societal development associate with human empowerment today in exactly the same manner as they associate with the CW-Condition: negatively (and equally in negative strength) when the connection with the CW-Condition is negative, positively (and equally in positive strength) when the connection with the CW-Condition is positive and insignificantly (and equally weak) when the connection with the CW-Condition is insignificant. Figures 9-4 and 9-5 further below visualize this insight.*

Among the five remote drivers in the second-last layer of historic thresholds—cognitive investments, nascent democracy, rational bureaucracy, global power position and industrial wealth—only cognitive investments exert a significant influence on the societies' contemporary human

empowerment under mutual control, although the other suggested influences are potent institutional and material contenders.[698]

Table 9-1. Correlations of Human Empowerment and the CW-Condition with the Remote Drivers of Societal Development

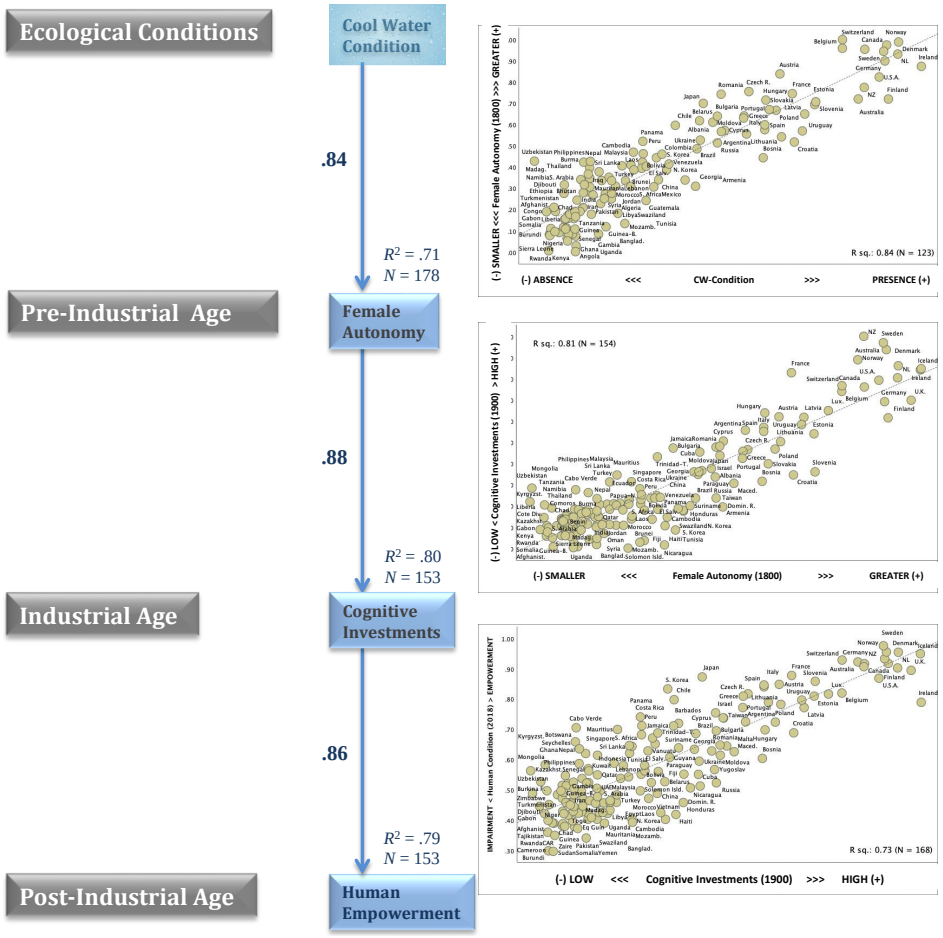
	Bivariate Correlations with Human Empowerment, 2018:	Bivariate Correlations with CW-Condition, time-invariant:
	Pearson's *r* with *N* (countries) in parentheses	
Ecological Conditions (time-invariant):		
CW-Condition, time-invariant	.85*** (168)	1.00*** (183)
Migratory Distance, time-invariant	.49*** (155)	.48*** (158)
Agrarian Potential, time-invariant	.53*** (109)	.62*** (110)
Agrarian Threshold:		
Dairy Options, pre-colonial	.58*** (130)	.67*** (131)
Agrarian Age, pre-colonial	.04$^{n.s.}$ (155)	.13$^{n.s.}$ (159)
Irrigation Dependence, pre-colonial	-.29*** (151)	-.32*** (153)
Colonial Threshold:		
Linguistic Agency, by 1500	.66*** (169)	.68*** (183)
Population Density, by 1500	.17* (163)	.14$^{n.s.}$ (170)
Pre-colonial Statehood, by 1500	.07 (146)$^{n.s.}$	.12$^{n.s.}$ (146)
Industrial Threshold:		
Female Autonomy, by 1500-1800	.81*** (167)	.84*** (178)
Western Legacy, by 1500-1800	.68*** (169)	.71*** (183)
Colonization Risk, by 1500	-.39*** (142)	-.47*** (151)
Pre-industrial Wealth, by 1800	.68*** (163)	.69*** (176)
Industrial Age:		
Cognitive Investments, by 1900	.86*** (153)	.90*** (154)
Nascent Democracy, by 1900	.79*** (95)	.86*** (94)
Rational Bureaucracy, by 1900	.75*** (102)	.77*** (101)
Global Power Position, by 1900	.64*** (169)	.67*** (183)
Industrial Wealth, by 1900	.71*** (70)	.74*** (70)

Note: For precise variable descriptions, see SOM-Section S_. Significance levels: $^{n.s.}$ (not significant) p > .05, * p < .05, ** p < .01, *** p < .005 (2-tailed).

Hence, any of the more remote drivers in our historic tableau that should influence today's human empowerment must operate through an influence on cognitive investments in the industrial age. This finding underlines once more the quintessential developmental importance of the demographic "births"-to-"brains" shift in reproductive investment from fertility to education or, more broadly speaking, from the quantity breeding strategy to the quality building strategy and the related erosion of patriarchal family, fertility and sex norms.

Figure 9-3.

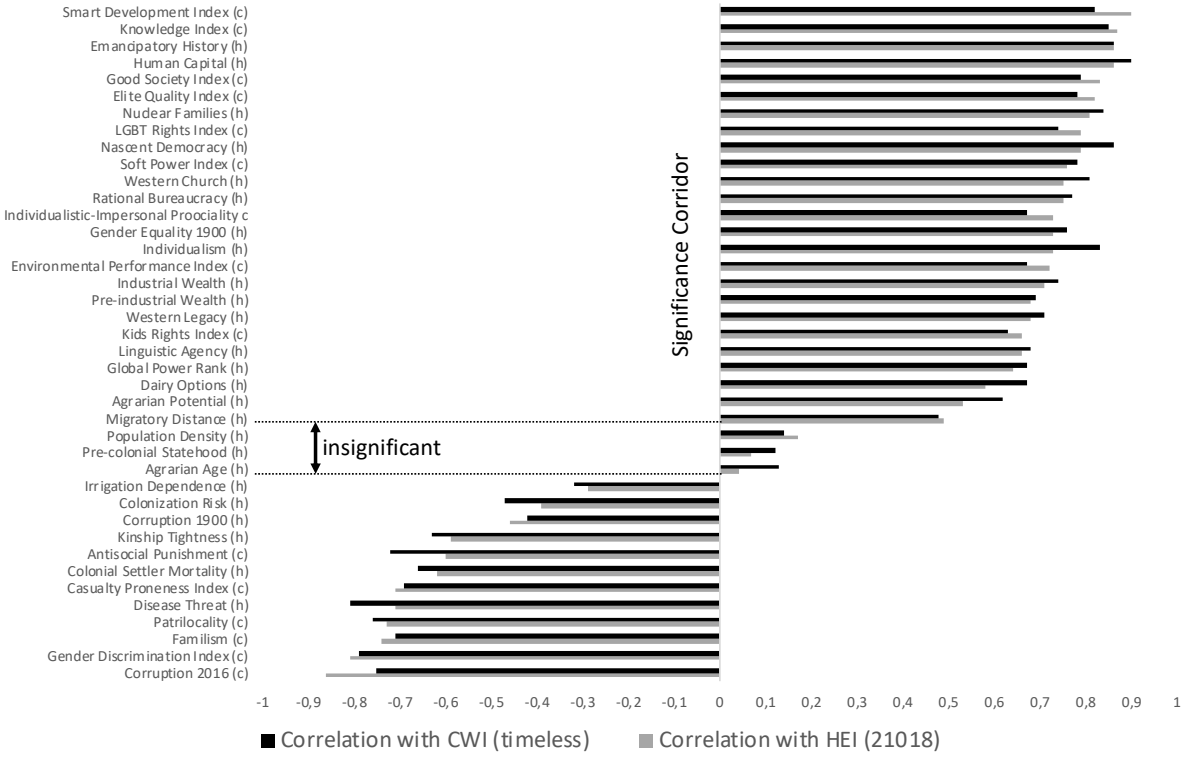
The Four Stations on the ***Main Path*** to Human Empowerment



As indicated by the fat arrows in Figure 9-1b, there are only two pathways from the CW-Condition leading towards cognitive investments in the industrial era. To clear up the picture, Figure 9-1c isolates these two pathways towards human capital in the industrial era, thus blinding out all effects in Figure 9-1b that lead to a dead end on the way to cognitive investments in 1900. This clearing up procedure further reduces complexity, eliminating seventeen of the initially thirty-two significant effects. One of the pathways in Figure 9-1c runs over Western legacies in the pre-industrial era, and the other over female autonomy. The path via Western legacies underlines the importance of the CW-Condition's (direct and indirect) influence on institutionalized religious and legal traditions typical of the West, above all the Protestant doctrine and Anglo-Saxon law with their joint individualistic-egalitarian imprint. By contrast, the pathway via female autonomy stresses the importance of the CW-Condition's impact on patriarchal-vs-emancipative family, fertility and sex norms at the grassroots of society and the CW-Condition's tendency to shift this balance to the emancipatory side. Of course, the simultaneity of these two distinct pathways towards today's human empowerment raises the question of whether one of the two is more important.

In answering this question, SOM-Figure 9-6 only shows the strongest influence on each station on the pathways towards human empowerment today. Doing so, our stepwise sorting-out procedure eventually isolates the flow of influence from the CW-Condition over female autonomy at pre-

Figure 9-4. Joint Linkages to Human Empowerment and the CW-Condition



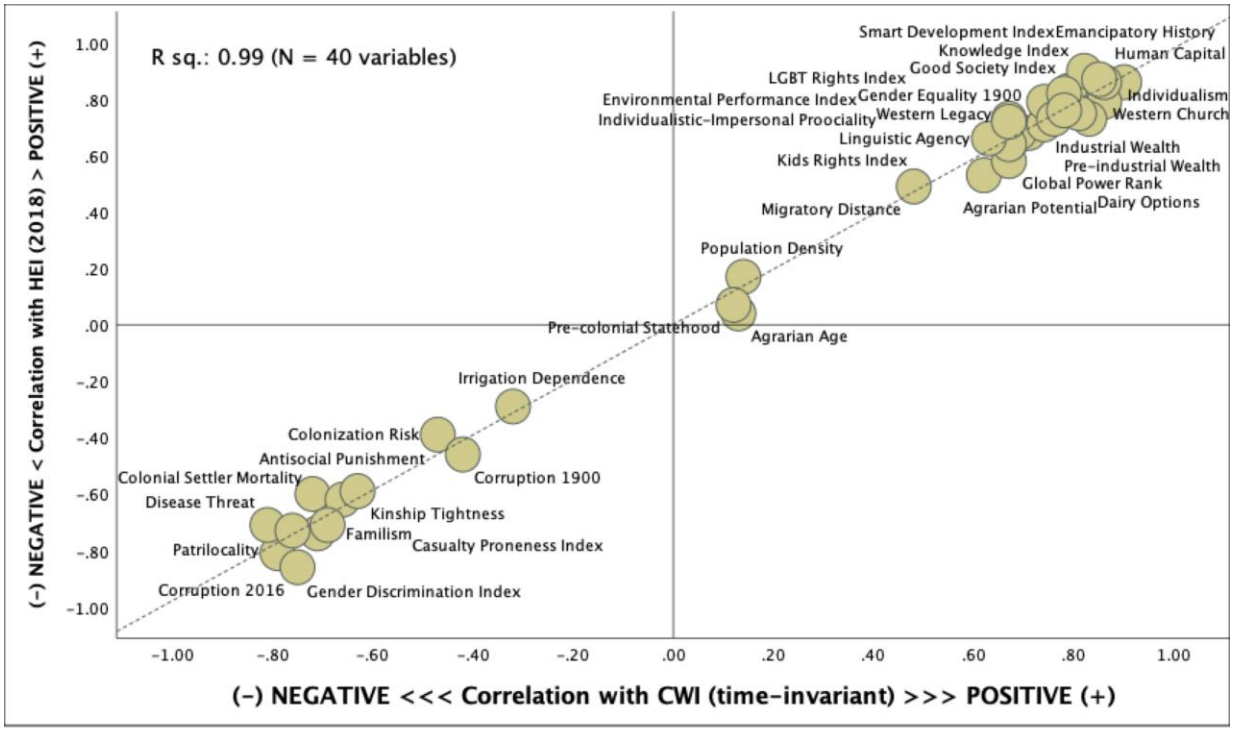
Note: Letter "c" is to be interpreted as temporally *current*, hinting rather at a symptom ofemancipatory dynamics, while the letter "h" is to be understood as temporally *historic*, hinting at a potential driver of emancipatory dynamics.

industrial times, and then from there on cognitive investments in the industrial era as the main pathway towards human empowerment today, clearing up the picture to just four variables and three relevant connections between them. Figure 9-3 zooms into just this main path towards human empowerment.

A shortcoming of our analyses is that many separate regressions do not test all the significant influences in a single model. Accordingly, we do not obtain an overall fit of all these influences. To resolve this shortcoming, we test in a single path model (*1*) how well the eight salient influences in SOM-Figure 9-6 fit the data among the ten involved variables, and (*2*) how well the three salient influences in Figure 9-3's most reduced model fit the data among the four involved variables. The goodness of fit statistics testify to exceptional model quality in both scenarios. Accordingly, our path models neither overlooks significant paths nor does it specify insignificant ones. We conclude from this finding that our path models are valid, at least as concerns the data at hand. Besides, we also used a machine learning tool, called "random forest," which as well strongly confirms our results.[699]

Figures 9-1b and 9-1c, along with SOM-Figure 9-6, offer alternating levels of detail alongside a zooming-in/zooming-out logic in examining the major pathways to contemporary societies' impairing-vs-empowering human condition. Improvements in data collection and measurement specification pending, we admit that our historic model of the West's comparative performance in

Figure 9-5. Indicators' Links to Human Empowerment as a Function of their Links to the CW-Condition



Note: CWI: Cool Water Index; HEI: Human Empowerment Index.

human empowerment terms is certainly not the last word in interpreting civilizational dynamics. Yet, in light of the strength of the patterns discovered here, and even more so under recognition that some of the data at hand are guesstimates at best, we are confident of having identified at least a significant stream of the overall storyline. The scatterplots in Figure 9-3 visualize how strikingly strong these links really are. Whatever control variable we add to disrupt these links, we are not able to succeed.

Insight:

> *For a causal interpretation of the strong linkage between the quasi time-invariant CW-Condition and human empowerment today, the CW-Condition's undeniable temporal priority is of critical relevance. This becomes even more obvious when we consider that the linkage of any other potential driver of societal development with human empowerment today is a linear function of this potential driver's linkage with the CW-Condition. We have seen this already in Table 9-1, but Figures 9-4 and 9-5 visualize this statement in striking clarity for fully forty potential drivers of societal development, which cover everything from a society's agrarian, state and colonial legacy to its religious tradition as well as wealth, corruption, democracy, human rights, elite quality, gender equality, environmental performance, familism-vs-individualism, pro-sociality etc.—whether historic*

or contemporary. Indeed, the direction and strength at which potential drivers of societal development correlate with the CW-Condition explain an overwhelming ninety-nine percent of the direction and strength at which the same potential drivers correlate with human empowerment today. Consequently, the tight connection between the quasi time-invariant CW-Condition and contemporary human empowerment is a genuinely universal catch-all linkage of developmental path dependencies.

Summary

We situated the CW-Condition among more than twenty other temporally remote drivers of emancipatory societal dynamics, leading to the societies' human empowerment today. We ordered the remote drivers alongside their inherent temporality, from the most distal to the most proximal drivers, following a sequence of historic layers, starting from ecological conditions via the agrarian threshold to the colonial threshold to the industrial threshold to the industrial age itself and finally to the digital age of our current era. We located the CW-Condition in the temporally most distal layer of historic thresholds, namely ecological conditions that stand at the beginning of an emerging developmental differentiation between societies. As the final outcome of emancipatory dynamics, the human empowerment index is located in the most current contemporary layer of history (Figure 9-1a).

We modeled all possible influences in this tableau of historic drivers in such a manner that each driver is specified as a simultaneous outcome of *all* temporally *prior* drivers, yet not as an outcome of drivers in the same historic layer. This way, our path analysis is temporally ordered in a strict manner.

Ordering the path analyses along this temporal principle allows for a total of 130 significant influences from more distal to more proximal drivers. Of these 130 potentially significant influences, thirty-two influences actually prove to be significant under mutual control, with the sign of the respective effect always pointing in the expected direction (Figure 9-1b). Hereon, we subjected the thirty-two significant influences to a stepwise filtering process in order to isolate the main pathway to human empowerment today. In the first filtering stage, we blinded out all influences that end-up in a historic impasse from which no further influences follow all the way down the road to human empowerment today. Thus, of the thirty-two significant influences only fifteen are on a pathway following through all the way to human empowerment today, and thirteen of them have their origin in the CW-Condition (Figure 9-1c). Next, isolating the strongest influence on each station on these pathways towards human empowerment, sorts out dairy options, linguistic agency, Western legacies, pre-colonial statehood, agrarian age and agrarian potential as dead-ending pathway stations. Hence, the main pathway towards human empowerment is identified. It originates in the CW-Condition and leads from there via female autonomy at the industrial threshold to cognitive investments in the industrial era (Figure 9-3).

Essence:

> *Against this backdrop, the CW-Condition's emancipatory impulse is primarily rooted in this condition's depressing effect on patriarchal family, fertility and sex norms that are otherwise typical of mature agrarian settings. At the start, the lower labor demands of CW-typical subsistence methods naturally emit lower fertility pressures on women, which reduces rigid male control over female sexuality, thus securing a certain degree of "female reproductive autonomy" already in pre-industrial times. In the early industrial era then, when CW-areas introduced compulsory schooling and new contraception methods, the presence of female reproductive autonomy facilitated a decisive "births"-to-"brains" turn in people's reproductive investments from the quantity-breeding mode into the quality-building mode, hence boosting "cognitive investments," which are inherently beneficial to an industrial-democratic dynamic, placing societies on a persistently emancipatory trajectory towards human empowerment today.*

PART **D**: THE CW-CONDITION'S FURTHER **IMPLICATIONS**

10 The CW-Effect beyond Countries

The units of observation throughout all layers of our path analysis are countries in today's world. This is important to note because these countries did not exist as independent units throughout most of the time studied here: The world's political map and what could be considered a country at a given time has been in constant flux. In fact, between 1800 CE and now, the number of sovereign territorial units with some form of state organization has been continuously increasing, from little more than forty sovereign territories around 1800 CE to more than two-hundred sovereign states today. Nevertheless, even if they were not politically independent units, the territories defining today's countries existed physically throughout history and we can reliably attribute to them scores on the variables of our interest, including earlier times at which these territories were still stateless or occupied by imperial powers.

Besides, global geo-political evolution has been working towards selecting today's country-territories as political units. Because these country-territories' geo-climatic and other characteristics already existed physically before their political sovereignty, these physical characteristics drove the evolution of political spaces. And the CW-Condition is a significant element of these physical characteristics. In other words, country-territories' physically anchored CW-Conditions drove their emergence as political units. Hence, CW-Conditions operate as a largely overlooked selective force in the sorting out of political spaces. This becomes obvious when one recognizes that global geo-political evolution has operated towards selecting country units in such a manner that within-country variation in the CW-Condition shrank relative to the between-country variation in this condition. Specifically, in today's system of more than two hundred states, only fifteen percent of the total global variation in the CW-Condition is within countries and eighty-five percent between countries. By contrast, making this calculation for the territorial boundaries of the international system around 1900, forty percent of the total global variation in the CW-Condition was within and sixty percent between countries. Again, we consider it inherently plausible to look into the past from the viewpoint of the territorial boundaries towards which geo-political evolution has been operating.

As has become clear beyond reasonable doubt, the features that we flag out as favorable for a country's given territory and its population way back in the past, are highly predictive of this country's stage in human empowerment today, even if the respective territory did not constitute a politically sovereign entity back then.

Nevertheless, we control in our analyses for the fact that most of today's sovereign countries had been dependent or occupied territories in the past. One way to take this fact into account is the inclusion of the "global power position" index in our path analyses. Doing so resolves the issue of

country-territories' shift from dependency to sovereignty because the "global power position" index actually measures countries' historic dependencies, thus showing two important things:

(*1*) Under proper controls, a country's dependency status at the peak of colonial imperialism has no impact on its performance in human empowerment today.

(*2*) Recognizing the countries' dependency status in colonial times does not eliminate the link between the CW-Condition and human empowerment.

Another possibility to take into account that today's countries had a different dependency status at different times in the past is to include the temporal reach of their statehood back into the past. As our path analysis of the previous chapter shows, the endurance of the contemporary countries' pre-colonial statehood has no effect on their progression in human empowerment today, nor does it eliminate the strong link between the CW-Condition and human empowerment.

Furthermore, the suspicion that the strong link between the CW-Condition and emancipatory outcomes is inexistent among the fewer political units of the world around 1900 is false. SOM-Figure 10-1 plots two emancipatory outcomes—contractual statehood and cognitive investments—against the CW-Condition in a setting representing the world order around 1900 CE. Hence, the plots show only those countries that already existed as sovereign states around 1900. Moreover, in cases where these countries have been the centers of empires, their dependent territories are shown separately for each empire, labeled "French suzerainty," "British suzerainty" and so on. Thus, the number of territorial units is now reduced from almost two-hundred today to fifty-eight back in 1900 CE. Since our measure of human empowerment is not available for around 1900, we use two alternative indicators of emancipatory outcomes: (*1*) coercive-vs-contractual statehood in 1900 in the left-hand diagram of SOM-Figure 10-1 and (*2*) "birth"-vs-"brain" oriented lifetime investments in 1900 in the right-hand diagram of the same figure, which is the identical indicator labelled "cognitive investments" in the previous chapter. As the two diagrams demonstrate beyond reasonable doubt, the strong relationship between the CW-Condition and emancipatory outcomes already existed among political units of the world in 1900 CE.

We could go back further in time, say to the period around 1800 CE, and look at the even smaller number of independent territorial units by then. To achieve this, we summarize for instance most of Latin America into the category "Spanish suzerainty" because much of the area, with the obvious exception of Brazil, was still under Spanish colonial rule at this time (although for not much longer). If we then look at the link between the CW-Condition and a relevant emancipatory outcome for this time, namely smaller-vs-greater female autonomy in family planning, we again observe a highly significant and very close correspondence.[700] In conclusion, the close connection between the CW-Condition and emancipatory outcomes today is not an artifact of looking at today's countries of the world. Instead, recognizing the world's territorial political units of colonial times replicates this link in full strength.

We face yet another methodological problem. When assigning a single CW-score to an entire country-territory, we seemingly gloss over considerable CW-variation within countries. This obscuring effect arguably increases with the size of a country's territory. In other words, territorial

country size supposedly correlates directly with measurement error in the sense of ignored variance within units: The CW-scores of Luxemburg, The Netherlands or Iceland are less afflicted by this problem than the scores for Russia, Canada, China or Australia. To figure out whether country area size is indeed a hidden influence that changes our findings upon its inclusion, we replicate all regressions of our path analysis by including country area size as an additional control. As a result, we discover no significant deviation from our reported findings. This outcome confirms from another angle our insights from Chapter 3 where we report that territorial country size is (*a*) unrelated to within-country variation in CW-Conditions and (*b*) that within-country variation in CW-Conditions leaves these conditions' emancipatory impact unaffected.

In the following sections of this chapter, we offer additional solutions to the problem that contemporary country territories are non-constant over time as political units. To do so, we move beyond countries as the spatial unit of analysis to see how well we can reproduce selected aspects of the CW-Condition's emancipatory impulse among other spatial units, including sub-national units (i.e., provinces, districts, grid cells), cross-national units (i.e., historic tribal populations) and supra-national units (i.e., global regions, culture zones). Finally, we look at whether migrants from different national backgrounds who live in the same country differ in their emancipatory orientations according to the different CW-Conditions of their country of origin. For this examination, we focus on migrants to Sweden because Sweden has welcome most migrants on a per capita basis during the refugee crisis in 2015. Moreover, Swedish academics have recently conducted one of the largest and best-executed migrant surveys ever.

In each of these settings, we find major emancipatory effects of the CW-Condition. Taken together, these findings invalidate the suspicion that our findings are an artifact of using contemporary country territories as the unit of analysis.

Further supporting this conclusion, SOM-Section S6 examines the CW-Theory within Jonathan F. Schulz's "Western" church setting, showing that the CW-Condition exhibits its expected emancipatory effects, even controlling Western church exposure among (*a*) countries, (*b*) sub-national provinces and (*c*) pre-industrial ethnicities. SOM-Section S7 introduces a measure that captures the CW-Condition's geo-climatic features in less perfection but in maximum consistency across countries, sub-national provinces and pre-industrial ethnicities, establishing that even this sub-optimal measure of the CW-Condition clearly reveals the CW-Condition's emancipatory effects as well as their operation via nuclear family structures and contractual institutional arrangements, on all three domains of evidence. Finally, SOM-Section S8 presents a simpler measurement version of the CW-Condition to demonstrate that the CW-Condition's emancipatory impulse is more than a simple reconfirmation of either the equatorial distance ("lucky latitude") effect or the coastal proximity effect. Instead, the CW-Condition's emancipatory impact results from the very interaction between the two. And this interaction effect is robust against the exclusion of the CW-measure's culture zone component as well as against the inclusion of a dummy variable representing all of Northwestern Europe's singularities. The latter finding is important because it clarifies that the CW-effect is not artificially designed by purposefully infusing every imaginable singularity of Northwestern Europe (and its overseas settler colonies) into it.

Hopefully, the plethora of these examinations and their versatility in measurement specification, spatial units and time scope eventually bring the point home that the CW-Condition is inherently conducive to emancipatory civilizational constellations and dynamics.

10-1 Historic Local Populations

In 1969, George P. Murdock and Douglas R. White started an ethnographic data collection, known as the Standard Cross-cultural Sample (SCCS).[701] Since then, dozens of anthropologists expanded the dataset by adding ethnographic descriptions of historic local populations.[702] As a result, the dataset includes as the units of observation a total of 186 local populations across the world.[703] Local populations are drawn from all inhabited continents and all levels of subsistence, from foraging to advanced agriculture. Only two population descriptions—namely those of the Irish in 1930 and the Japanese in 1950—relate to industrialized societies. The time range is from 1750 BCE for the Babylonians, 110 CE for the Romans, 1530 CE for the Incas to 1930 for the Irish and 1950 for the Japanese, with the average observation year being 1853 CE (albeit with a standard deviation of 350 years). Most of the studied populations are historic and therefore, as said, at the pre-industrial level of subsistence. Many of these populations no longer exist and a large proportion of them practiced a foraging lifestyle, including the !Kung Bushmen, the Tuareg, Lapps, Mongols, Inuit, Hurons, Maoris and Yanomamo. In total, twenty percent of the 186 studied populations relied entirely on hunting and gathering and an additional fifteen percent practiced only the most rudimentary forms of agriculture, neither using the plow nor sophisticated irrigation.

Consequently, the SCCS covers conditions typical of most of human history rather than our very recent and "weird" industrial and post-industrial past. The data are, thus, suited to test some of the supposed emancipatory impulses of the CW-Condition for their *temporal* and *spatial* universality.

The SCCS includes basic lifestyle variables, from marriage patterns to child rearing habits to subsistence technology, settlement arrangements, inheritance practices and political organization. Most of these variables are ordinal four- or five-point scales, measured in a coding scheme on which 1 indicates the absence and 4 or 5 the complete presence of the property of interest.[704] The codes are based on expert judgments of ethnographic records or archeological evidence. The SCCS provides a detailed documentation of coding standards and is widely acknowledged in anthropology as the most important source of systematic data on societal differences across space and time.

An extension of the SCCS, known as the Ethnographic Atlas (EA)[705], also goes back to George P. Murdock's work and includes a larger set of historic tribal populations, namely some 1,200 tribes. The demographic characteristics included in the EA are, however, more crudely coded, less precise and cover a more idiosyncratic set of populations from one variable to the next. Still, at the end of this sub-chapter we report some findings from the EA in accordance with the SCCS-evidence.

The SCCS includes geographic information that allows us to measure the CW-Condition by combining a population's central latitudinal location with the continuity of rain in a similar, albeit less nuanced, manner as we did for capital cities before. To cover an essential hydrological component of the CW-Condition, the ubiquity of water reservoirs (including the sea, lakes, ponds,

rivers, brooks and springs), we use a proxy indicating the degree to which a population relies on fishing for its sustenance. Obviously, when reliance on fishing is high, water reservoirs must be in easy reach. As before, we use this proxy of water access as a conditioner rather than a complement of high latitude's cool seasons, as detailed in SOM-Section S6.

POPULATION TIMING

We relate the population's CW-Conditions to a number of other variables of foremost interest. To begin with, we are interested in the length of time that has elapsed since modern humans originally arrived and began to populate a given habitat. In a developmental context, this is an obviously important variable. Indeed, the more time has passed since humans exist in a given habitat, the more time they had to learn how to take advantage of the habitat's naturally embodied opportunities and to refine and enrich this knowledge over the generations. For this reason, the sheer duration of human presence at a place should already, in and by itself, be conducive to a population's technological and organizational development—all else equal.

We do not have information about when exactly the first members of a population reached the habitat for which the SCCS records its lifestyle. But Stephen Oppenheimer and Alexander Harcourt provide rough estimates of how many thousands of years ago the world's regions have first been populated by our species.[706] Moreover, we have a rough idea about the routes that humans have taken on their way out of Africa to populate the other habitable areas of our planet. These migratory paths document the logical fact that places farther away from the supposed origin of humanity in East Africa have been populated correspondingly later than closer places. Accordingly, we can use a place's geographic distance from the supposed human origin in Ethiopia as a rough proxy for how long human populations existed there, assuming a longer-vs-shorter human presence in proportion to a place's closer-vs-farther distance to Ethiopia.

However, mere air distance overlooks that most regions of the world have been populated via land routes. Hence, the migratory distance from Ethiopia is for most places in the world—except all those in Africa itself—larger than the air distance.

Using waypoints, we can add up partial air distances to estimate a place's migratory distance from Ethiopia. For instance, the out-migration from Africa into Eurasia passed over the Sinai peninsula to Palestine. Thus, Palestine is the decisive waypoint out of Africa into Eurasia. Consequently, for all places in Eurasia, the migratory distance from Ethiopia is the sum of Palestine's air distance from Ethiopia, plus the respective place's air distance from Palestine. Then the original out-migration from Eurasia into the Americas led over the Bering Strait and Alaska, which makes the Bering Strait the decisive waypoint. Hence, any American place's migratory distance from Ethiopia is the sum of Palestine's distance from Ethiopia, plus the Bering Strait's distance from Palestine, plus the respective place's distance from the Bering Strait. Finally, the first human out-migration from Eurasia into Australasia supposedly led over the Southern tip of Malaysia (i.e., basically Singapore) and the Indonesian archipelago, so the location of Singapore is a decisive

waypoint. Consequently, an Australasian place's migratory distance from Ethiopia is the sum of the following partial distances: Palestine's distance from Ethiopia, plus Singapore's distance from Palestine, plus the respective place's distance from Singapore. In all these cases, a place's migratory distance from Ethiopia is considerably larger than the place's straight air distance from Ethiopia.

Following this scheme, we calculate the migratory distance of each population's location from the origin of humanity in kilometers, assuming that this migratory distance translates proportionally into a corresponding time sequence of first human presence. We use a simple linear transformation of migratory distances to estimate how long humans exist in a place, hence translating kilometers in the distance measure into years of human presence. Among the peoples covered by the SCCS, our calculation flags out the Yahgan (a tribe living in Terra del Fuego at the very Southern tip of South America) as the most distant population from human origin at a distance of about 31,300 kilometers. Transforming this distance measure into a temporal measure of human arrival, we estimate that the Yahgan probably arrived some 4,550 years ago in their habitat.[707] However, we need to recognize that the characteristics of this population coded in the SCCS have been ascribed to the year 1865 CE, at which point these people had 155 years less of a presence in their area than today. Thus, for all populations we subtracted from the estimated temporal length of their presence today the number of years separating 2015 from the year of record. In the case of the Yahgan population in Terra del Fuego, we accordingly estimate a presence of 4,400 years in 1865. In proportion to the initial estimates, these corrections change numbers only negligibly; yet for reasons of accuracy we stick to this correction.

Our data reveal that migratory distances provide a considerably better basis to estimate human arrivals than mere geographic air distances. This is obvious from the fact that our fine-scaled presence estimates correspond more closely with Oppenheimer's rough estimates when we use migratory instead of air distances as the estimation base. It is indeed a difference in correspondence between fifty percent in the case of geographic air distances and ninety percent in the case of migratory distances (for proof, see SOM-Figure 10-1-1).

Additional variables of interest include a place's disease security and food security as basic aspects of ecological opportunity endowments. As concerns measures of development in pre-industrial contexts, we look at a population's reliance on foraging versus advanced forms of agriculture, as well as urban settlement and state organization—which both follow from mature forms of surplus-yielding agriculture. Moreover, we consider the variety of a population's produced tools and the amount of trade ("tools and trade") as a measure of techno-commercial development. Finally, we focus on aspects of women's reproductive autonomy, which we consider one of the key human autonomies embodied in the CW-Condition.

HUMAN PRESENCE

Starting with the most basic fact, SOM-Figure 10-1-2 documents that the populations with the longest human presence at their place had a very weak or absent CW-Condition. These are the populations in East and Central Africa at the right-hand end in SOM-Figure 10-1-2. When we follow the distribution from right to left, that is from longer to shorter human presences, we see what happened during the sequence of human migrations into other parts of the world. Specifically, as out-migration from East Africa happened Northward towards the Middle East and then into Eurasia and further towards Northwestern Europe and Northeastern Asia, the CW-Condition becomes increasingly pronounced, visible in the upward slope of the distribution. Out-migration from South Asia further South and East towards Australasia also came with a stronger CW-Condition. Consequently, human out-migration along the African-Eurasian-Australasian route usually meant settlement under a more pronounced CW-Condition, evident in the steep slope upward from right to left in the right-hand part of the distribution in SOM-Figure 10-1-2.

With the continuation of human out-migration into the Americas, the pattern changes. Here, people started from the pronounced CW-Condition in North America's North, while their further migration southwards led them towards an increasingly weak CW-Condition, visible in the dramatic change of the curve from an upward right-to-left slope to a downward right-to-left slope. Further migration southward, finally, turns again into a migration towards an increasingly pronounced CW-Condition once American people crossed the equator, South of Ecuador. But the populations covered by the SCCS in the South of South America—the Tehuelche, Mapuche and Yahgan—are too few in number to turn the right-to-left slope of the fitting line upward again at the left-hand end of the distribution.

The takeaway from this evidence is that the overall pattern in the relationship between the CW-Condition and human out-migration is a tendency towards an increasingly pronounced CW-Condition alongside recency in the arrival of modern humans at a given place. This tendency reverts itself in one particular section of the human migratory path leading from Alaska to the equator in South America. However, it turns back to its previous tendency towards a stronger CW-Condition further down South from Ecuador. This means that—overall—CW-areas tend to be younger human habitats and that this is particularly true for the African-Eurasian landmass, where agriculture was invented first. Accordingly, the people arriving in the CW-areas of Africa-Eurasia had less time to invent agriculture than people in the places they left behind. For this reason alone, CW-areas should show a tendency to diminish a population's reliance on agriculture and the developments following agriculture, most notably urban settlements and state organization.

ECOLOGICAL SECURITY

We argued earlier that CW-environments are more secure in certain aspects because the cool temperatures reduce the number of sickening parasites, keep freshwater less infested and widen the dietary options by fish, seafood and dairy products. The ubiquitous availability of freshwater is another security element and the source of lush fauna and flora that makes sustaining a foraging

lifestyle relatively easy without over-depleting local resources. In line with these assumptions, we find that CW-habitats tend to embody higher degrees of disease and food security. This is obvious from SOM-Figures 10-1-3 and 10-1-4. CW-areas are also ecologically more secure because they are less exposed to uncontrollable natural disasters, including prolonged droughts, excessive heat waves, tropical storms and monsoon-like floods.

Moreover, the two scatterplots in SOM-Figure 10-1-5 demonstrate that the positive association of the CW-Condition with nutritionally and pathogenetically more secure environments is not an artifact of the CW-areas' tendency to reach higher levels of development later in time. Indeed, if we control the populations' levels of pre-industrial development (in terms of urban settlements and state organization), the CW-Condition retains a positive and statistically significant effect on an environment's nutritional and pathogenic security.

SUBSISTENCE METHODS

Besides the shorter human presence in CW-areas, their greater environmental security could be another reason why populations in these areas lived under little pressure to quit their foraging lifestyle and invent agriculture. As it turns out, the three boxplots in SOM-Figure 10-1-6 indeed confirm that populations pursuing evolutionary later forms of subsistence, including pastoralism and agriculture, tended to live in areas with a weaker CW-Condition. In numbers, populations not relying at all on animal husbandry have a median CW-score of 0.42, which contrasts with a median of 0.22 among those relying almost entirely on animal husbandry. With agriculture, it is 0.30 for those relying the most and 0.40 for those relying the least on crop cultivation. Vice versa, among populations relying the most on hunting and gathering the CW-score is 0.38, which contrasts with 0.20 among those relying the least on foraging. All these mean differences in the CW-Condition are statistically significant.

Because populations' reliance on foraging correlates inversely with their reliance on agriculture, we summarize both types of subsistence in a single bipolar variable, measuring reliance on agriculture-vs-foraging.[708] Looking at this variable, the scatterplot in the lower right corner of SOM-Figure 10-1-6 shows that, alongside increasing CW-scores, the reliance on agriculture drops on an increasingly steep downward slope. This tendency accounts for 21 percent of the total variation in pre-industrial subsistence modes. The group of populations deviating from this tendency—like the Hadza, Mbuti and Comanche—rely fully on foraging despite a weak or only mediocre CW-Condition. These deviating populations lived far from other centers of agriculture and their natural habitats were not very suited for agriculture to begin with, because of aridity and poor soil quality. Therefore, a weak CW-Condition makes it likelier but does not guarantee a reliance on agriculture, especially when local conditions are unsuited for farming. The opposite deviation from the main tendency, indicating a more pronounced reliance on agriculture than a strong CW-Condition would otherwise suggest, is less extreme and includes only a small number of populations, including the Romans and the Japanese. In contrast to the other deviating group of populations

(with little agriculture despite a relatively weak CW-Condition), these two deviating populations (with much agriculture despite a relatively strong CW-Condition) evolved in the vicinity of major agrarian civilizations: Japan in the vicinity of China and Rome in the vicinity of the Middle East.

Besides the neighborhood aspect, these patterns suggest that part of the tendency of the CW-populations to stick to foraging actually derives from the fact that these are evolutionary more recent populations in their habitats, for which reason they had less time to invent, discover and refine agriculture. The question then is whether this time factor accounts entirely for the CW-populations' tendency to rely on foraging, or whether something inherent in the CW-Condition in and by itself, like its embodied nutritional and pathogenic security, favors a continued reliance on foraging.

The two scatterplots in SOM-Figure 10-1-7 are the result of a regression predicting a population's reliance on agriculture-vs-foraging by (*a*) the CW-Condition of the respective population's habitat and (*b*) the length of the population's estimated presence in its habitat. As is obvious, the duration of human presence in a population's habitat explains some of the variation in the reliance on agriculture-vs-foraging. Actually, it takes away some of the explanatory power of the CW-Condition over these subsistence methods, reducing it from 21 to 13 percent. Nevertheless, the tendency of populations in CW-areas to stick to foraging and resist agriculture remains (*a*) highly significant and (*b*) a stronger force in shaping subsistence modes than the duration of humans' local presence. In other words, even among similarly young habitats, a stronger CW-Condition implies more reliance on forgaging and less on agriculture.[709]

URBANIZATION AND STATEHOOD

We have just seen that the CW-Condition embodies a genuine delaying tendency concerning the initial step of societal development, that is, the transition from foraging to agriculture. The question is whether this initial delay continues to operate on subsequent developmental steps that follow in the wake of adopting agriculture, most notably urban settlement and state organization. Alternatively, a delay of subsequent developmenbtal stages might merely be due to the initial delay and vanish once we control for the initial late start. As the boxplots in SOM-Figure 10-1-8 document, populations in habitats with a stronger CW-Condition are less developed when it comes to urban settlement and state organization. This tendency is modest, accounting for twenty-five percent of the variation in urban settlement and ten percent of the variation in state organization. Yet, it is a statistically significant tendency that—when continuously in operation—can easily accrue to an increasingly longer developmental delay over time.

However, as Figures 10-1-9 and 10-1-10 illustrate, when we control the seemingly negative effect of the CW-Condition on urban settlement and state organization for a population's level of agrarian development, it turns out that the CW-Condition has no impact at all. Instead, it is actually a population's level of agrarian development that influences its level of urban settlement and state organization, accounting for about thirty-five percent of the total variation in both instances. This

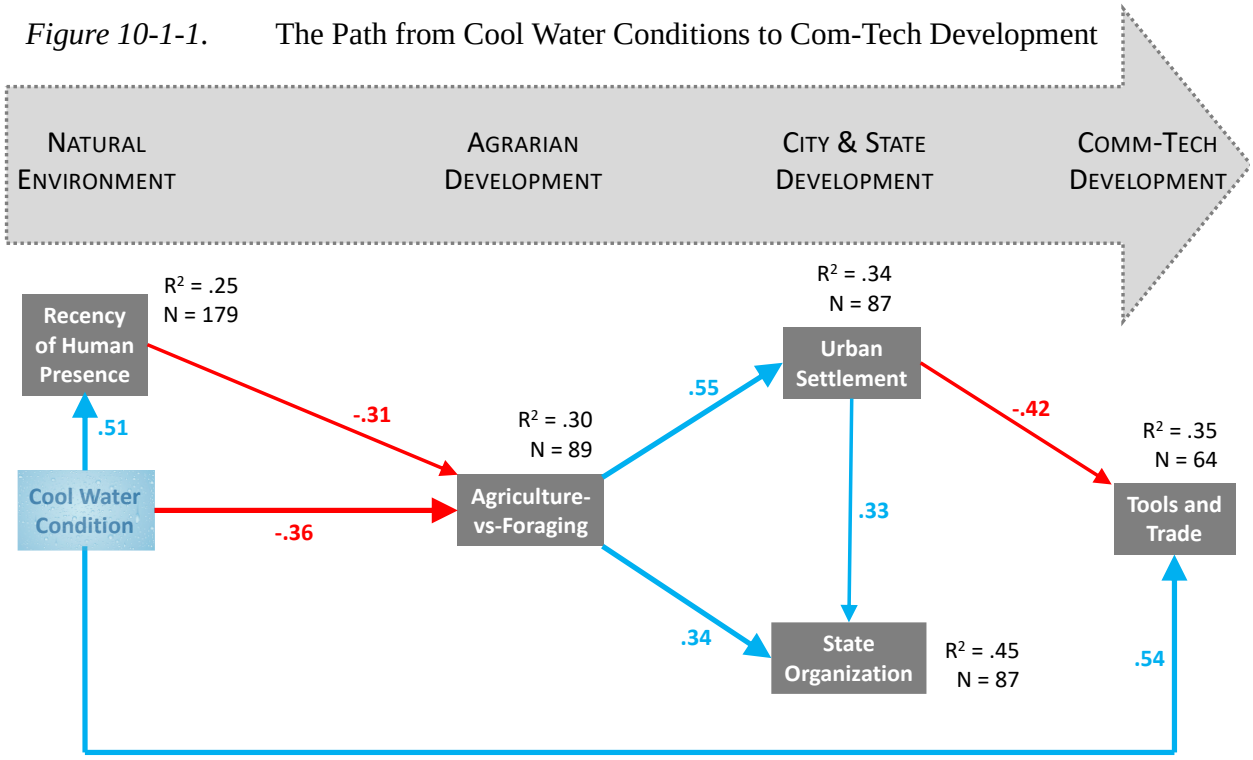
means that the CW-Condition restricted urban settlement and state organization only insofar as it delays the emergence of agriculture. But beyond the initial delay in adopting agriculture, the CW-Condition does not decelerate the consecutive developmental steps towards urban settlement and state organization. In other words, among populations at the same level of agrarian development, the CW-Condition neither impeded nor delayed urban settlement and state organization. We can also say that CW-areas either avoided the transition to agriculture or made it later but those CW-areas that did make the transition (however late) have *not* been slower than the non-CW areas in reaching the consecutive developmental stages of intensive agriculture, namely cities and states.

COMMERCIAL-TECHNOLOGICAL DEVELOPMENT

Apart from urban settlement and state organization, other indications of pre-industrial development and industriousness include the prevalence of trade, use of money and wage labor as well as technologies used for mining ores and building weapons, houses, boats and ships. We summarize these seven aspects of commercial-technological (comm-tech) development in a single variable labeled "tools & trade."[710] Interestingly, the upper scatterplot in SOM-Figure 10-1-11 shows that—in spite of its negative effect on agrarian development—the CW-Condition is modestly conducive to comm-tech development, as captured by "tools & trade." Using controls for a population's agrarian, urban and state development, the CW-Condition's positive influence on a population's comm-tech development surfaces even stronger. Indeed, as the lower scatterplot in SOM-Figure 10-1-10 shows, this tendency accounts for a noteworthy twenty-nine percent of the total variation in "tools & trade."

Using a series of sequentially ordered multiple regressions, the path diagram in Figure 10-1-1 summarizes our collection of separate findings in a causal funnel capturing societal differences along the logical sequence of pre-industrial development. As is evident, the CW-Condition embodies a delay already insofar as it is associated with later populated human habitats, which in and by itself disfavors the initial developmental step towards agriculture. In addition to this delay, the CW-Condition itself further disfavors the initial developmental step towards agriculture. All of this explains why the CW-areas turned out to be late in making progress in societal development: If they made that step at all, it took them much longer to develop mature forms of agriculture. However, once CW-areas overcame their initial delay and did adopt agriculture, their previous delay did *not* continue into the next developmental steps towards urban settlement and state organization. Compared to populations at the same level of agrarian development, those living under a pronounced CW-Condition were no less likely to develop cities and states. Finally, the initial delay in agrarian development turned into a pronounced advantage in comm-tech development. Indeed, among populations at the same level of urban settlement and state organization, those inhabiting CW-areas had advanced farther in developing tools and trade. This advantage placed the CW-areas in a decisively better position to pioneer the Industrial Revolution.

Figure 10-1-1. The Path from Cool Water Conditions to Com-Tech Development



Note: Results from a sequence of multiple regressions. The sequence is organized such that each variable in the path model is specified as the dependent variable of all other variables to its left. Entries are partial correlation coefficients. Any missing paths from left to right indicate that there is no significant effect. Recency of Human Presence denotes the time since the arrival of first modern humans in a tribe's habitat, which we proxy by the Migratory Distance from the Human Origin. All partial regressions include as a control the year for which the data were recorded.

FEMALE REPRODUCTIVE AUTONOMY

In previous chapters, we placed a great deal of emphasis on the CW-Condition's effects on female reproductive autonomy. The best indication we could find in the SCCS of this concept is information indicating whether a woman's consent is necessary to marry her as well as the women's mean age at first marriage. Unfortunately, this information is only available for a sub-sample of the SCCS, covering forty to fifty populations. Paired with other variables, the number of observations drops further down, even to a number as low as fifteen. The paucity of these data calls for serious caution concerning any evidence we might find in them. Still, out of sheer curiosity, it is of inherent interest to figure out whether these sparse data do at least not contradict our expectations.

With these caveats in mind, the boxplots in SOM-Figure 10-1-12 confirm (*a*) that in CW-areas women's consent is more necessary for a marriage than in non-CW areas and (*b*) that the average female marriage age increases alongside a stronger CW-Condition. This finding is fully in line with our expectations. Zooming in on women's marriage age, the scatterplot in SOM-Figure 10-1-13 illustrates that a stronger CW-Condition favors higher marriage ages among women, even if we control for a population's agrarian development. We obtain the same result when we control

for the use of irrigation and the plow in agriculture, both of which have been reported to magnify gender inequality.[711]

Finally, SOM-Figure 10-1-14 shows for an even more reduced set of fifteen populations that higher female marriage ages are conducive to a population's comm-tech development, controlling for agrarian development. Thus, populations on the same level of agrarian development in pre-industrial times tended to reach a higher level of comm-tech development when women married later. From an ethnographic angle, these findings confirm Jan Luiten van Zanden and his co-authors' massive evidence on the decisive role of female reproductive autonomy during the pre-industrial era in launching the Double Emancipatory Turn towards industrialization and democratization in the first half of the 19th century.[712]

We would not lend much credibility to the latter set of findings regarding women's marriage ages, given the sparsity of the data and the limited amount of controls they allow for. However, the fact that these findings confirm from a completely different angle what we already found with ample evidence at the country level increases the weight of these findings. At any rate, the takeaway is that historic data on local tribal populations around the globe support the key mechanisms that we established at the country level and that prepared pre-industrial populations for better or worse to launch the industrial-democratic double revolution, or in short: the Emancipatory Turn in human history.

EVIDENCE FROM THE ETHNOGRAPHIC ATLAS

An extension of the SCCS, known as the Ethnographic Atlas (EA)[713], also goes back to George P. Murdock's work and includes a larger set of historic tribal populations, namely some 1,290 tribes. The demographic characteristics included in the EA are, however, more crudely coded, less precise and cover a more variable set of populations from one variable to the next.

Nevertheless, we can report some confirming evidence for our SCCS-based findings from the EA, as documented in SOM-Figures 10-1-15 to 10-1-17 (see also SOM-Sections S6 and S7). To summarize, CW-populations in the EA exhibit more frequently emancipatory instead of patriarchal societal features on ten accounts:

(1) *roaming* foraging subsistence activities instead of labor-intensive forms of *settled* agriculture,

(2) *elected* instead of *inherited* or *appointed* local leaders,

(3) *absent* instead of *present* slavery,

(4) *weak* instead of *strong* kinship ties,

(5) *less* instead of *more* clan segmentation,

(6) *nuclear* instead of *extended* families,

(7) *neolocal* instead of *patrilocal* residence of family households,

(8) *bilateral* instead of *unilateral* descent,

(9) *exogamous* instead of *endogamous* marriages as well as

(10) *monogamous* instead of *polygamous* marriages.

Populations on the patriarchal end of these ten dichotomies score on average at about 0.18 on the 0-to-1 CW-index. By contrast, populations on the emancipatory end of these dichotomies score at about 0.30. The difference in the CW-Condition over these patriarchal-vs-emancipatory dichotomies is statistically significant in each instance. It varies in magnitude between r = .20 and .41, with the number of observed populations ranging from roughly 1,000 to 1,200. At any rate, the evidence from historic tribal populations confirms that the CW-Condition tilts the patriarchal-vs-emancipatory polarity in pre-industrial family, fertility and sex norms towards the emancipatory end, which pinpoints the emancipatory seed inherent in the CW-Condition.

10-2 The World's Geographic Grid Cells

Andreas Tollefsen, Havard Strand and Halvard Buhaug from the Peace Research Institute in Oslo (PRIO) provide a dataset whose observational units are spatial "grid cells." The size of these grid cells approximates 55 by 55 kilometers at the equator (i.e., 3,025 square kilometers per cell). Away from the equator southwards, the Southern borders of the grid cells continuously narrow until they condense in a single point at the South Pole (thus, comprising just a little more than 1,500 square kilometers). With growing distance from the equator northwards, the same happens with the Northern borders of the grid cells.

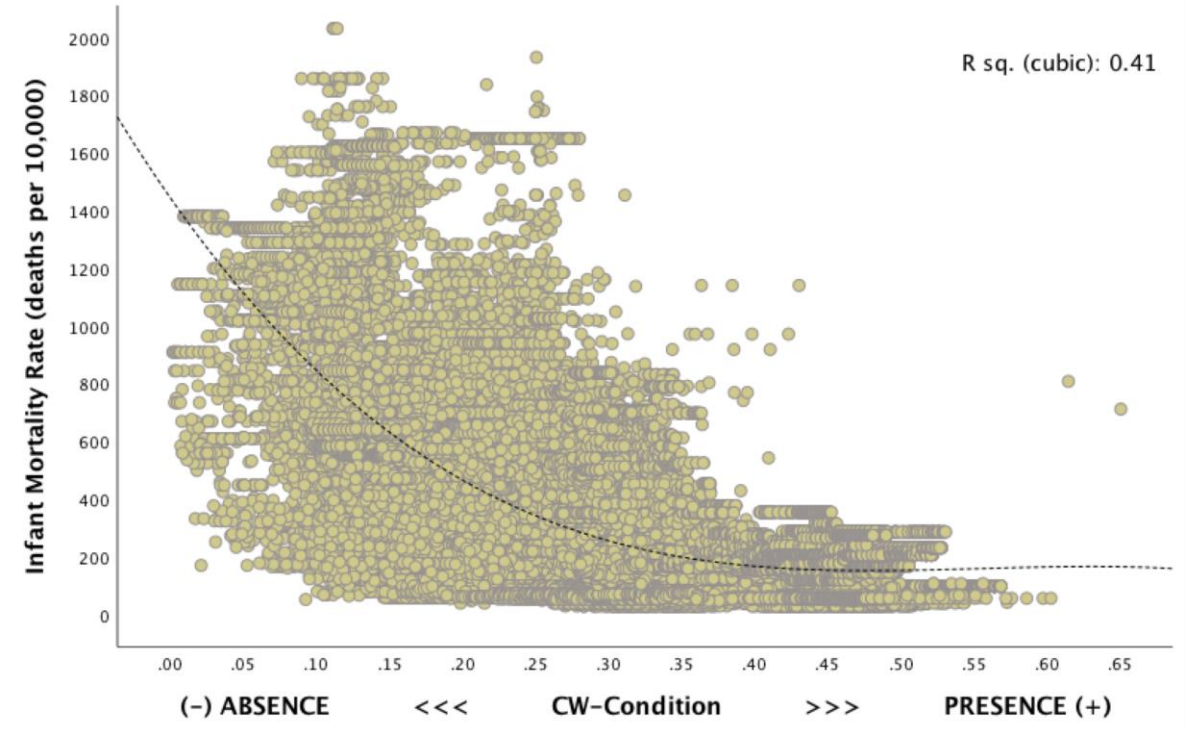
The whole earth's surface contains 259,200 grid cells, most of which cover uninhabited areas, namely oceans, the polar ice shields and deserts. The inhabited grid cells of today's country-territories amount to 64,818 in number, of which roughly 11,600 belong to Russia alone. In fact, the six largest countries out of a universe of some two-hundred—namely Russia, Canada, China, the U.S., Australia, Brazil—include almost half of all inhabited grid cells.

The major advantage of these data is that they cover sub-national units, so we can test whether some of the mechanisms that we claim to originate in the CW-Condition operate not only at the country level but also explain variation within countries. If so, we have good reasons to assume that these mechanisms operate already at a more fine-grained spatial resolution, from where they spiral upward to larger-scale spatial aggregations where they then become magnified by the larger spaces' gravitational force (i.e., spaces' power to generate single-peaked and median-clustered distributions in major population characteristics).

Another advantage of the grid cells is the enormously large number of observations and their perfectly equal territorial area size at the same latitude. On the down side, collecting data for the whole world at such a fine-grained spatial resolution requires enormous effort. Therefore, very few characteristics of societal development are available at this level and no serial panel data exist at the time of this writing. For our purpose, there are actually only two variables that matter in a developmental context: the grid-cell inhabitants' per capita incomes and the child mortality rates among the grid cell populations. As concerns the CW-Condition, we can rely on the grid-cell centroids' distance from the equator as a proxy for cool seasons. The grid-cell data do not include information on the continuity of rain but only on the annual average rainfall. We know that average annual rainfall is highest in tropical monsoon climates and, therefore, decreases with latitudinal distance from the equator. For these reasons, a larger *residual* amount of average rainfall in excess of latitude's prediction indicates more continuous rain. Hence, we add the residual level of average rainfall to the latitude itself in order to obtain a grid-cell measure of the CW-Condition.

A first observation to note is that the countries' area sizes and the number of grid cells that they include relate only negligibly to the existing variation in CW-Conditions across a country's grid cells. As surprising as this may seem in the face of countries' truly gigantic differences in territorial extension, spatial country size exerts no significant influence on inner-country variation

Figure 10-2-1. The Cool Water Condition and Infant Mortality across the World's Grid Cells



in CW-Conditions. In fact, fully eighty-nine percent of the entire global variation in CW-Conditions across all of the world's roughly 65,000 inhabited grid cells is *between* countries and only eleven percent is variation *within* countries. Partly because of this, similar country means in the CW-Condition do *not* hide over vastly differing within-country variability in the CW-Condition.

Given that only eleven percent of the total existing variation in the CW-Condition is within countries, it is unlikely to find a significant influence of the CW-Condition across grid cells *within* countries, especially when holding between-country differences in the CW-Condition constant. Accordingly, the grid cell analysis provides a particularly tough testing ground for the CW-Theory.

We argue that the CW-Condition embodies more hydration, nutritional and pathogenic security and, for this reason, naturally diminishes child mortalities relative to habitats with a weaker CW-Condition—all else equal. Another reason for the CW-areas' lower expected child mortality is their documented tendency to reduce birth rates, resulting in more parental care given to each child, including more care for individual children's health. The questions that we can now address are (*a*) whether grid-cell variability in the CW-Condition associates significantly with grid-cell variability in child mortality and, if so, whether this still holds after (*b*) controlling grid-cell variability in per capita incomes and (*c*) after isolating the *within*-country variability in the CW-Condition under control of the CW-Condition's *between*-country variability.

Table 10-2-1. The Impact of the CW-Condition on Infant Mortality Across the Inhabited World's 60,000 Geographic Grid Cells

	OUTCOME VARIABLE: Infant Mortality in 2000 CE (deaths per 10,000 born chidlren)				
PREDICTORS:	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	1,063	869	854	901	925
Cool Seasons (CS)$_{GL}$	-0.89 (-0.29)				
Steady Rain (SR)$_{GL}$	-0.35 (-0.26)				
CS$_{GL}$ * SR$_{GL}$	0.35 (0.11)				
(CS$_{GL}$ + SR$_{GL}$) / 2		-0.58 (-0.58)	-0.55 (-0.56)	-0.12 (-0.06)	-0.12 (-0.06)
GDP/P.C.$_{GL}$			-0.16 (-0.20)	-0.02 (-0.02)	-0.02 (-0.02)
(CS$_{CL}$ + SR$_{CL}$) / 2				-0.29 (-0.14)	-0.35 (-0.15)
GDP/P.C.$_{CL}$				-0.44 (-0.46)	-0.35 (-0.15)
No. of CL-grid cells					0.07 (0.06)
Adj. R^2	0.36	0.34	0.37	0.53	0.53
N (grid cells)	56,953	56,953	55,123	55,123	55,123
N (countries)	169	169	169	169	169

Notes: Entries are standardized regression coefficients (betas) with partial correlations in parentheses. Test statistics reveal no violation of "ordinary least squares assumptions" in terms of either collinearity, heteroskedasticity, influential cases or non-normal residuals. Data for all variables are for the year 2000. No asterisks used to indicate different significance levels as all coefficients are significant at the 0.1-percent level.

GL: Grid-cell Level.

CL: Country Level.

Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

Per capita income is an exceptionally powerful determinant of mortality because more prosperous regions host a more highly developed health sector and allow people to afford healthier food, hygiene and medical services. Given the pivotal role of income in depressing mortality and given that only a minor proportion of variance in these characteristics is located at the grid-cell level within countries, the odds are stacked against finding a significant effect of the CW-Condition on mortality at the grid-cell level. And yet, we find it nevertheless, as the scatterplot in Figure 10-2-1 documents. In fact, variation in the CW-Condition explains forty-one percent of the variation in child mortality alongside an exponentially dropping mortality slope across 56,953 grid cells around the globe.

The regression results in Table 10-2-1 explore this issue further. Model 1 introduces our two constituent measures of the grid-cell level CW-Condition—cool seasons and steady rain—and their interaction as separate predictors of grid-cell level child mortality in the year 2000 CE. The model explains thirty-six percent of the entire global grid-cell variation in child mortality across some 56,000 spatial units in 169 countries. The partial correlation coefficients (in parentheses) tell us that cool seasons and steady rain are equally influential in reducing child mortality. A change from the minimum to the maximum level in cool seasons and steady rain each incurs an expected decrease of child deaths of 15 per 100 born children, which marks a significant difference of 15 percentage points. The multiplicative combination of cool seasons and steady rain shows a minor

impact, which means that cool seasons and steady rain do not condition but complement each other in reducing child mortality. For this reason, an additive rather than a multiplicative combination of cool seasons and steady rain is more appropriate to capture the impact of both variables in a single CW-measure.[714]

As Model 2 shows, this CW-measure alone captures almost completely the two separate effects of its constituents. Model 3 adds grid-cell per capita income to the CW-Condition to explain child mortality. As one would expect, grid-cell income per capita shows a diminishing effect on child mortality. However, per capita income does not render the grid-cell CW-Condition insignificant. What is more, the grid-cell CW-Condition clearly trumps in strength the mortality-diminishing effect of income. For this reason, adding grid-cell income only adds a negligible three percentage points to the explained variance in mortality due to the grid cell CW-Condition alone.

A much larger increase in the explained variance in child mortality (i.e., up to 53%) occurs when we introduce country-level variation in per capita incomes and the CW-Condition, as Models 4 and 5 in Table 10-2-1 indicate. This significantly reduces the influence of income variation at the grid cell level and the CW-Condition. This is not surprising, since by far the largest amount of grid-cell variation in these variables is *between*-country variation, rather than *within*-country variation. Thus, once we separate these variance components, the explanatory power left to the within-country variation drops. Still, the within-country variation in the CW-Condition and income remains significant and continues to show the expected logical direction of impact: lowering child mortality. Overall, the grid-cell level analysis confirms the importance of the CW-Condition for emancipatory dynamics in societal development. Specifically, low child mortalities are essential to shift people's reproductive lifetime investment from the patriarchal to the emancipatory side, that is, from fertility to schooling, which advances populations' cognitive mobilization—the key demographic quality to enable a mass-scale industrial-democratic development.

Besides, the fact that—spatially speaking—climate and development vary (*a*) much more *between* than *within* countries and (*b*) show a much bigger impact *across* than *inside* countries testifies to a fundamental element of evidence: Countries stick out as by far the most powerful spatial unit in shaping the human condition. Still, the observation that the supposed CW-effect is visible even beneath the surface of the overwhelming gravitational force of countries speaks all the more to its truthfulness.

10-3 The Russian Empire's Oblasts

by *Maria Kravtsova*

This sub-chapter presents supplementary evidence for the CW-Condition's emancipatory effects (past and present), zooming into the sub-national level of the by far largest territorial state on the globe: Russia. We examine region-level data from the Czarist Empire's roughly hundred gubernatorial districts, called "oblasts," based on archival records from several censuses in the 19th century, most notably in 1897. We look at more recent data from the Russian Federation's Statistics Bureau. Since Russian history is mostly known for its overall autocratic—instead of emancipatory—trajectory, the empire provides a particularly challenging case to demonstrate the CW-Condition's emancipatory effects.

We concentrate our attention on the link between the CW-Condition and female reproductive autonomy. In our understanding, reproductive autonomy reflects diminished fertility pressures on women to produce as many children as possible throughout their fertile life span. When women are pressured to produce as many children as possible, they have less time left to build their own and their children's human capital and they are less likely to challenge their husbands' idle patriarchal posture and position in the family.[715]

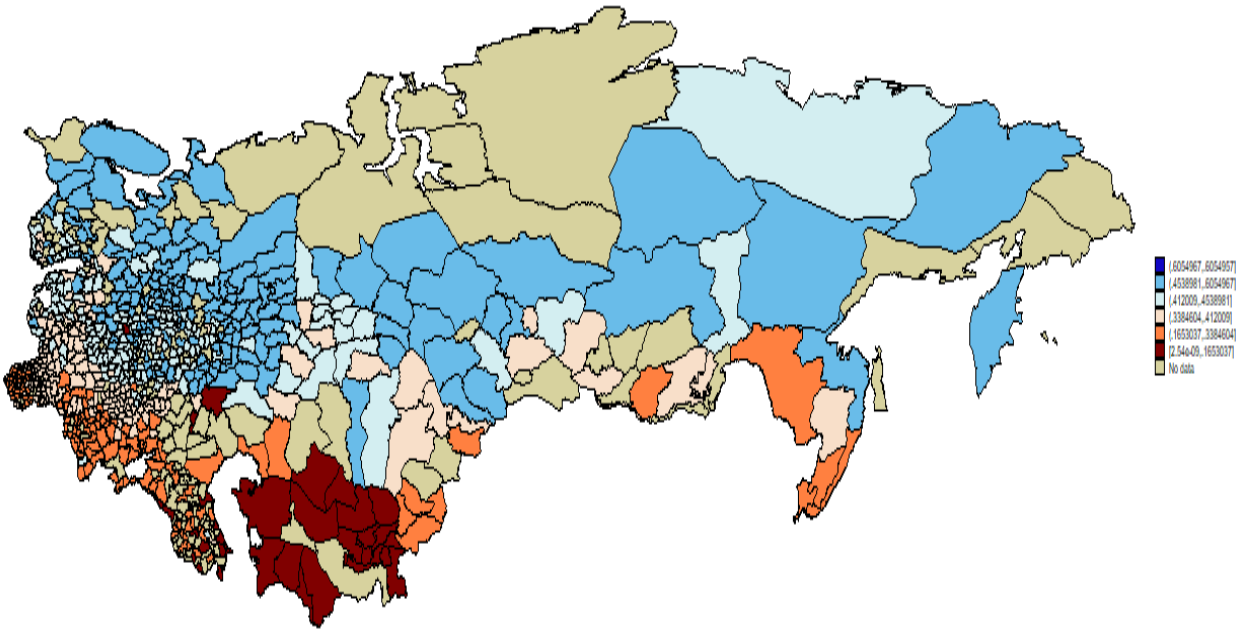
So far, we have measured reproductive autonomy inversely by female fertility rates, female ages at first marriage, consensual marriage rules, and nuclear family features that reflect women's control over their sexuality.

The Russian data do not include a measure of consensual marriage rules, while nuclear households require a case-specific interpretation in the Russian context.[716] In Northwestern Europe, nuclear families have been linked with "unigeniture" as the dominant inheritance practice: The oldest child (preferably the son) inherits the entire family farm and lives there with his closer family. At the same time, the siblings leave to find their own households, often far away from their kin. This pattern was conducive to the independence of the nuclear family from their extended kin in many aspects, including a freer choice of when to have children and how many.

By contrast, unigeniture was as uncommon in the Russian Empire as it was in other agrarian empires. Instead, apart from outright confiscation, "partible (male) inheritance" prevailed, such that all the sons divided the parental farm among themselves and live together on it. In this case, the core households live surrounded by their kin and experience less autonomy from obligations to the wider family circle.

For these reasons, we concentrate on female fertility rates and ages at first marriage. As we will see, the results replicate our country-level findings as well as those for tribes and grid cells: *Oblasts* in Russia with a more pronounced CW-Condition show historically higher ages at first marriage and lower numbers of births per woman. Not surprisingly, fertility rates and ages at first

Figure 10-3-1. The CW-Map of Russia



Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

marriage among women are closely correlated: Women who marry later give birth to fewer children over their fertile lifespan. From a "short-vs-long" life history perspective, this is exactly what we would expect. And while higher ages at first marriage address more directly the capacity of women to build their own skills and savings, low marital fertility rates mirror more closely a mother's investment in her individual children's qualities, assuming that children with fewer siblings receive more attention and care.

A specificity of the Russian Empire is the early abandonment of breastfeeding among Christian-Orthodox/Caucasian women. This peculiarity is likely to alter the otherwise positive effect of the CW-Condition on child mortality. Indeed, Christian-Orthodox/Caucasian women (who largely prevailed in Russia's CW-regions) stopped breastfeeding already several days after giving birth, instead feeding their babies early on with bread, cereals and cow milk.[717] Why this distaste for breastfeeding existed is a conundrum, but it increased child mortality, especially in the very initial childrearing phase until the age of one year, turning diarrhea into a main cause of infant death.[718] By contrast, the Muslim/non-Caucasian population, which prevailed outside Russia's CW-areas, practiced breastfeeding into higher infant ages. Consequently, child mortality from birth to the end of the first birthyear has been lower outside than inside Russia's CW-regions.

However, once children survive the period in which breastfeeding would have been healthier, our initially expected negative mortality effect of the CW-Condition now kicks in powerfully:

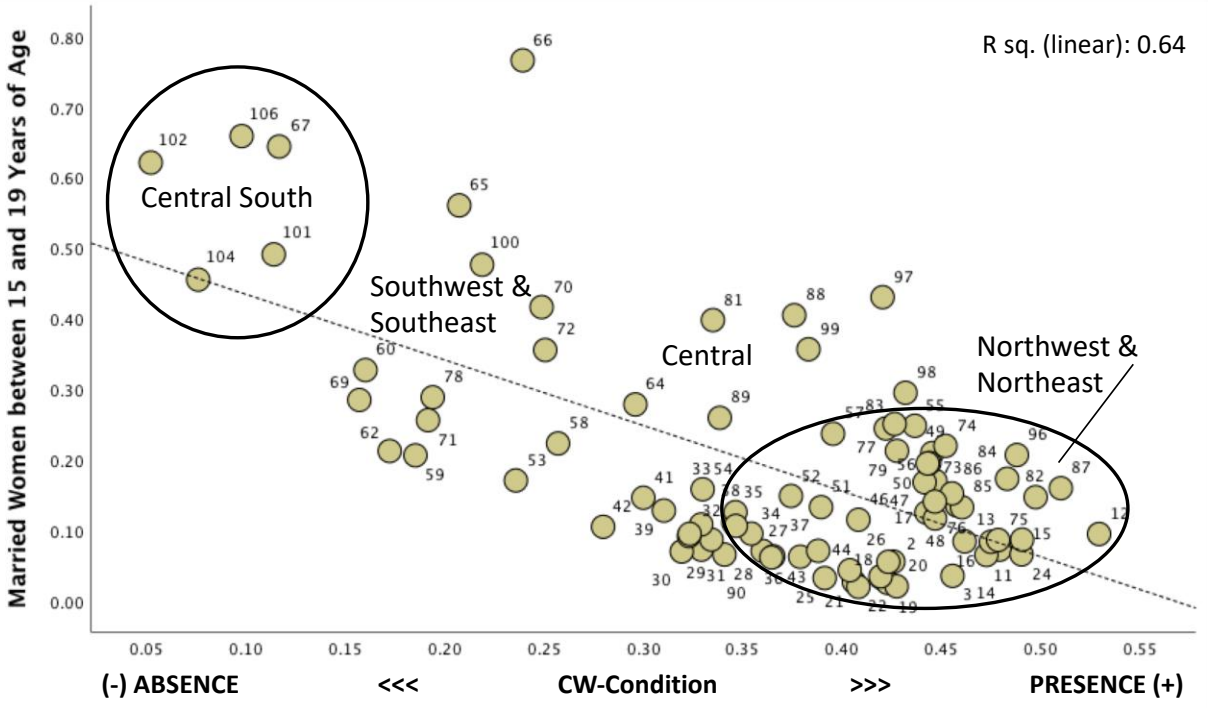
Children between three and four years of age showed lower mortality inside than outside Russia's CW-areas. In other words, because of the Russian peculiarity with breastfeeding practices, the correlation between the CW-Condition and infant mortality points in diametrically opposite directions, depending on the age group of infants one is looking at. So again, the CW-Condition in Russia correlates positively with historic infant mortality in the age group from birth to one year, while the same condition correlates negatively with child mortality in the age group from three to four.

SOM-Table 10-3-1 documents our historic data and their sources. To calculate *oblast*-specific scores of the CW-index, we use temperature and precipitation data for the biggest cities of the Russian *oblasts*.[719] Figure 10-3-1 presents the distribution of the CW-scores across the *oblasts* of Czarist Russia. Using the Prussian agricultural census from 1886, Vasili Fouka and Alain Schlaepfer estimate the labor intensity of a variety of crops.[720] We document their calculation in SOM-Table 10-3-2 and use their formula to obtain *oblast*-specific measures of labor intensity. In total, fifty-eight of the ninety-eight *oblasts* obtain a score on the labor intensity index.[721] Besides, we operationalize female reproductive autonomy, using (*a*) marital fertility rates and (*b*) the percentage of married women in the age group from fifteen to nineteen years of age. We treat this information as an inverse indication of female reproductive autonomy.

The correlations in SOM-Table 10-3-3 illustrate that the CW-regions of the Russian Empire were more densely populated, more industrialized and more affluent at the end of the 19th century. Their populations are also more literate.

The main crop cultivated in the CW-areas of the Russian Empire is rye. Since rye cultivation requires a low number of workers per unit of land, as evidenced in SOM-Table 10-3-2, agriculture in CW-territories is less labor intensive. Consistent with this evidence, SOM-Table 10-3-5 shows that relatively large land plots (i.e., 4-6 hectares) prevail in CW-regions because large pieces of land can be cultivated with the effort of a single household. To keep land plots sufficiently large under partible inheritance sets an incentive to lower the number of surviving children. It is a bit speculative, but for this reason the practice of infanticide might explain the higher than usual child mortality shortly after birth in Russian CW-areas. At any rate, the negative correlation between the CW-Condition and agricultural labor intensity confirms our proposition that lower fertility pressures and stronger female reproductive autonomy in CW-areas reflect lower demands for cheap mass labor, including the work of children and aid by extended kin.

Figure 10-3-2. The CW-Condition and Young Married Women across Historic Russian Oblasts



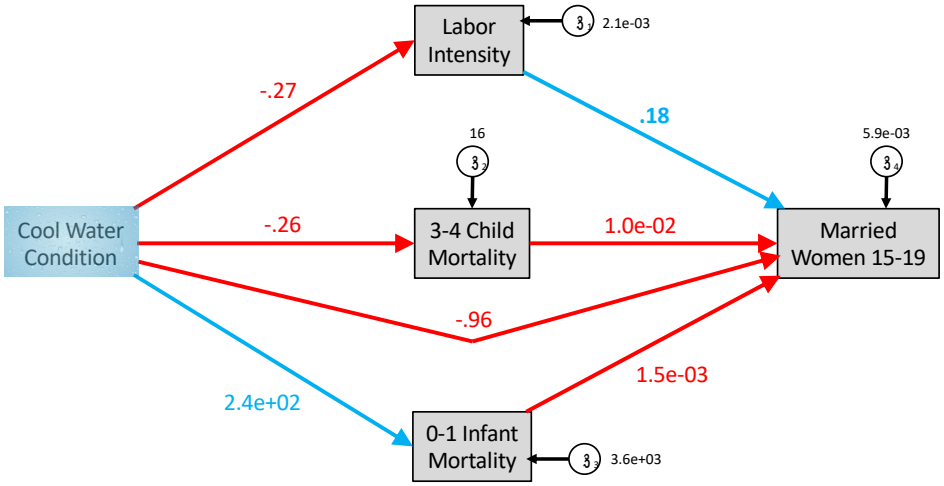
Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

As expected, SOM-Table 10-3-6 documents a strong correlation between the CW-index and the proportion of women marrying at a very young age in around 1900 CE: With a correlation coefficient of r = -.80, this is the strongest association in our data. Figure 10-3-2 visualizes the strongly negative effect of the CW-Condition on the proportion of women being married at ages fifteen to nineteen.

Unexpectedly at first glance, the link between the CW-Condition and fertility rates is insignificant. But the adversarial correlations between the CW-Condition and child mortalities in different age groups resolve this issue: Child mortality at ages zero to one and child mortality at ages three to four both correlate positively with female fertility; and since the CW-Condition affects these two mortalities adversely, it shows no overall correlation with fertility.

The path model in SOM-Figure 10-3-1 situates the correlational findings in a bigger picture with an underlying causal narrative. The calculations indeed suggest that (*1*) the CW-Condition embodies lower agrarian labor intensity, which then (*2*) diminishes fertility pressures. Moreover, we see (*3*) a negative effect of the CW-Condition on child mortality at ages three to four and (*4*) a negative effect of child mortality in this age group on fertility rates. Simultaneously, we observe (*5*) a positive effect of the CW-Condition on infant mortality at ages zero to one (perhaps, as mentioned, indicating the practice of infanticide to avoid rapidly shrinking land plot sizes under partible inheritance). Finally, the two child mortalities each exert (*6*) a negative effect on female

Figure 10-3-3. The Effect of CW-Condition on Historic Labor Intensity, Mortalities and Marriage



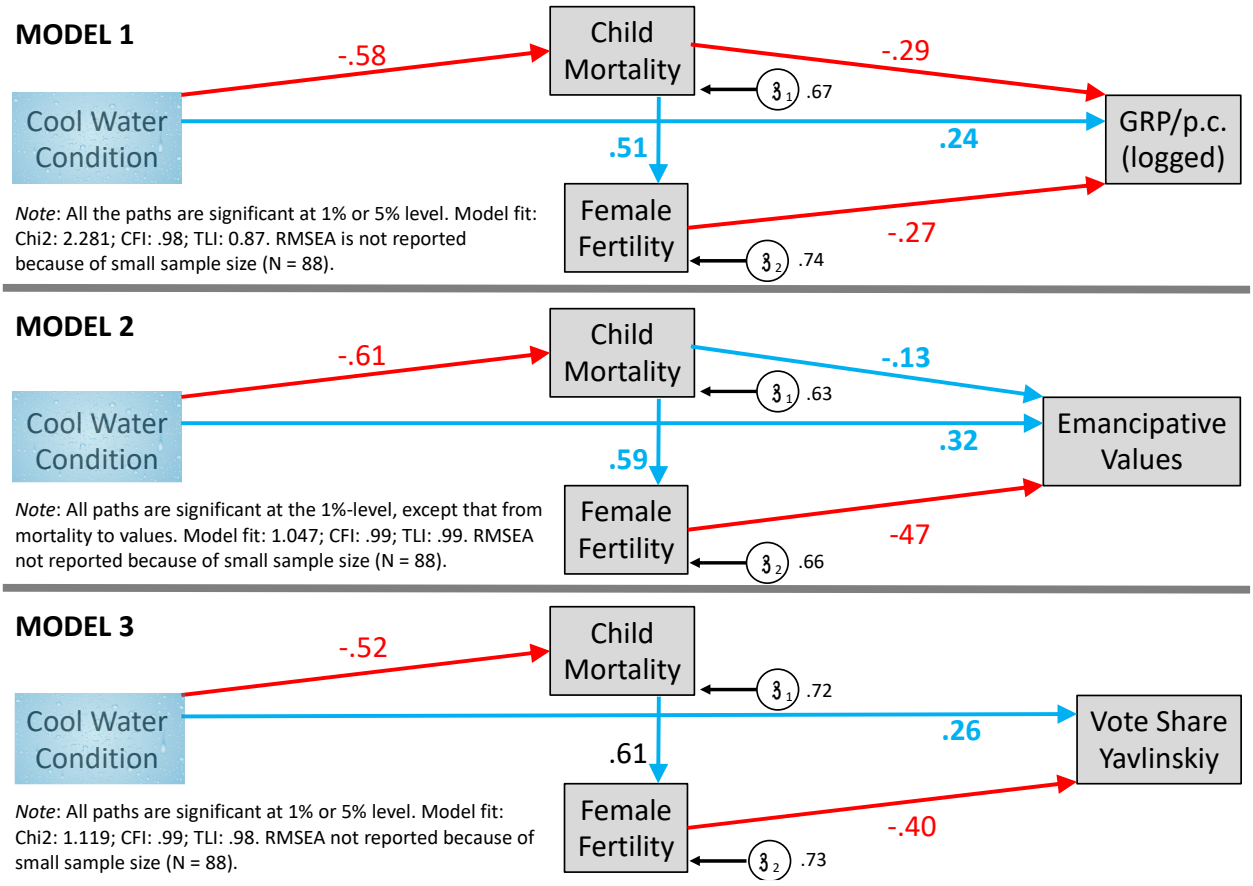
Notes: The most coefficients are significant at 1 % level, the effect of CWI on child mortality 3-4 is significant at 5%, the effect of labor intensity on women's age at first marriage is insignificant, N with FIML =98. Model fit: Chi-Square 1.56*; CFI 1.000; TLI 1.065. We don't compute RMSEA because it is not recommended for the models with small sample size (N = 88).

fertilities. The contrariness of the CW-Condition's effects on the two child mortalities is so exhaustive that no room is left for an additional direct effect of the CW-Condition on female fertility.

The path model in Figure 10-3-3 uses the percentage of women married at ages fifteen to nineteen as the outcome variable. The negative effects of the CW-Condition on infant mortality at ages zero to one and child mortality at ages three to four remain significant. Logically, higher child mortalities in both age groups go hand in hand with a larger proportion of married teenage girls. Labor intensity, however, turns insignificant in this model. In its place, the CW-Condition here shows a powerfully direct and negative effect on the percentage of married teenage girls, in addition to its two adversarial mortality effects.

Despite their nuanced differences, both models strongly support the idea of a causal role of the CW-Condition in the making of autonomous agrarian households and families. The question is whether we see more credibility in a model in which the CW-effect is entirely absorbed by its impact on labor intensity and child mortalities, or in a model in which—in addition to these indirect effects—there is still a direct effect. Obviously, this depends on the choice of the final outcome variable, which raises the question of whether there are good reasons to consider one of them preferable over the other.

Figure 10-3-4. The Effect of the CW-Condition on Current Emancipatory Outcomes



Relying on model fit statistics, the evidence speaks in favor of the proportion of married teenage girls rather than fertility rates to be the more indicative measure. This would also be plausible if one recognizes that historic church records are—for obvious reasons—more reliable when it comes to marriages than fertilities: Practically all marriages have been professed by the church, but not every birth might have been registered (especially when infanticide was practiced). For this reason, the second path model in Figure 10-3-3 seems preferable. This would imply placing less emphasis on the CW-Condition's lowering effect on labor intensity as the mechanism through which the CW-Condition contributes to female reproductive autonomy. But we believe this conclusion would be premature because our labor intensity index only captures differences in labor intensity related to crops. This is a limitation because the lush pastures typical of CW-areas also lend themselves to animal husbandry, which is even less labor-intense than growing the crops suitable to the CW-Condition. Therefore, we should wait to see how an improved version of the labor intensity index works (including the role of livestock farming) before we dismiss it as a possible mechanism through which the CW-Condition enhances female reproductive autonomy.

The CW-Condition's emancipatory effect within Russia is not limited to historic developmental outcomes with an emancipatory signature. Instead, the effect is also visible among current outcomes, and quite strongly so. We demonstrate this point with respect to three such outcomes: (*a*) the per capita Gross Regional Product (GRP) in 2019 across today's governmental districts; (*b*) the district populations' aggregate emancipative values in 2020; and (*c*) the vote share per district for the liberal candidate Grigoriy Yavlinskiy ("Yabloko" party) in Russia's 2000 presidential elections.[722] In all three instances, it is evident that the CW-Condition continues to positively affect current emancipatory outcomes, visible in higher per capita GRPs, stronger aggregate emancipative values and larger liberal vote shares for Yavlinskiy in districts with a stronger CW-Condition. The three diagrams in Figure 10-3-4 visualize the evidence, showing that the emancipatory CW-effects are both indirect and direct.

Our results from the Russian Empire's historic *oblasts* confirm in a more limited, smaller-than-global context that the CW-Condition is conducive to female reproductive autonomy as well as other emancipatory outcomes, past and present. The mechanisms feeding this effect are twofold. First, lower labor intensity for the staple agricultural products suited to the CW-Condition (especially rye) emits lower fertility pressures on women, thus favoring diminished fertility rates. Second, lower child mortality in the age group three to four in CW-regions results in lower fertility and higher ages of women at first marriage. Depending on the specification of the final outcome variable, the CW-effect on female reproductive autonomy is either fully indirect, operating entirely over the two specified mechanisms (when historic female fertility is the outcome variable); or the CW-effect is only partly indirect and shows a direct effect in addition (when the historic proportion of married teenage girls is the outcome variable). The jury is still out to examine which of these two scenarios is more accurate. But whichever it is, the evidence underlines a causal role of the CW-Condition in the making of autonomous family households. And this is a key element of the CW-Theory of human emancipation writ large.

Despite Russia's vast territorial size, the CW-Condition among the empire's historically most populated districts varies in an only limited range compared to the global CW-variation across countries. To be specific, the inner-Russian variation in the CW-Condition remains within a range of 0.05 to 0.52 score points but heavily clusters around a score of 0.42 (see Figure 10-3-2). The coefficient of variation for the inner-Russian differentiation in the CW-Condition is .09 (of a possible maximum of 1.0), which indicates a five-times lower variation in the CW-Condition than across the world as a whole (global coefficient of variation of .45.), in line with Russia's share in the inhabited world's surface area of almost twenty percent. Hence, for the CW-mechanisms to become visible within Russia, they have to work within a much narrower margin, that is, on a finer resolution of variance/covariance patterns. But this makes it more likely that the mechanisms—even if they exist—get buried under measurement imprecision. If they nevertheless surface against these odds, as they do, the CW-Theory has another grain of credibility. Given the outlined peculiarities of the Russian case, this conclusion seems to be all the more forceful.

10-4 The European Union's Sub-National Regions

The European Union's (henceforth: EU) census units provide another domain of evidence for the CW-Condition's emancipatory effect at the sub-national level. The EU's statistics agency, *Eurostat*, uses a layered system of census units, called the Nomenclature of Territorial Units for Statistics (NUTS).[723] We find the spatial resolution of these sub-national regions with the greatest richness of data at the second level of disaggregation—what Eurostat defines as "NUTS-II" regions. The EU comprises 296 NUTS-II regions. The population size of the NUTS-II regions varies between 29,000 and 12 million residents. Their territorial size ranges from 13 to 227,000 square kilometers.[724]

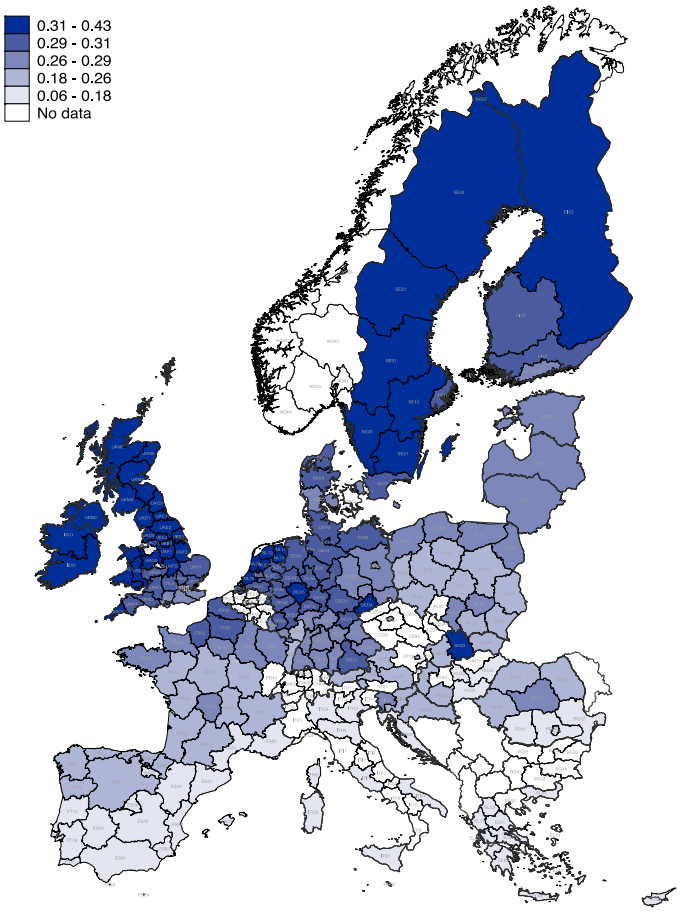
In the following, we first document variation in the CW-Condition across the EU's NUTS-II regions, to which we refer simply as EU provinces, for ease of readability. Then we illustrate the sub-national relationship between the CW-Condition and present-day variation in (*a*) socioeconomic development, (*b*) emancipative values, and (*c*) impartial government—manifestations of the three complementary ingredients (material, psychological, legal) of places' overall human empowerment. We then use regional historic data from the late 19th and early 20th centuries to show that a stronger CW-Condition among EU provinces is associated with lower fertility, higher marriage ages and better population health on the eve of industrialization. Finally, we integrate these findings into a *cross-centennial path model* that evidences the causal flow of impact from the quasi time-invariant CW-Condition via (*a*) female reproductive autonomy at the eve of industrialization to (*b*) socioeconomic development, emancipative values and impartial government today.

THE CW-CONDITION IN NUTS-II REGIONS

We measure the CW-Condition in EU provinces using daily weather data, averaged over the period from 1950 to 2017, from 4,551 local stations. Based on information about average annual temperatures, the extent of seasonal variation in daily temperatures, the ratio of the amount of rainfall in the driest to that of the wettest month and the abundance of water reservoirs, we estimate each province's overall CW-Condition. The idea underlying the resulting CW-Index (CWI) is to capture the combination of cool summers and mildly cold winters with continuous rainfall throughout the seasons and an abundance of freshwater reservoirs. We use various alternative combinations of these pieces of information to see which combination best captures the CW-Condition's supposed emancipatory effect.

As SOM-Figure 10-4-1 demonstrates, there is an overwhelming degree of temporal constancy in the countries' cross-sectional differences in these climate data, showing practically invariant intercept differences along temporally flat trajectories with negligible fluctuations over time.

Figure 10-4-1. The Topography of the CW-Condition (1950-2017) across NUTS-II Regions

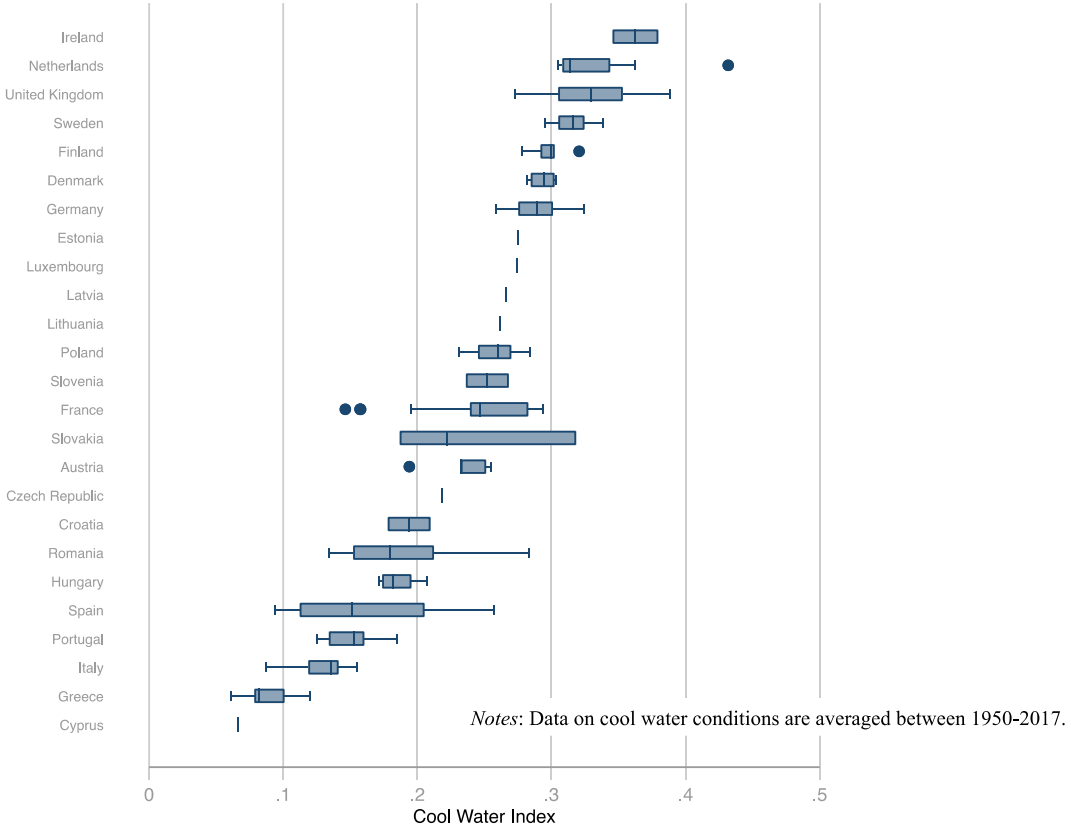


Notes: Data on cool water conditions are averaged over 1950-2017 (sorted by country mean).

Hence, sub- national CW-Conditions are extremely stable over long stretches of time. In numbers, among the EU provinces, the CW-Condition is time-invariant to fully ninety-three percent for over fifty years. Put differently, the years in which the CW-Condition is measured account for only seven percent of the CW-Condition's total variation. In other words, variability in the CW-Condition is way more *spatial* than *temporal*. This finding confirms our premise of temporally rather constant climate differences across sub-national provinces, at least within our planet's current inter-glacial climate period.

Figure 10-4-1 illustrates that sub-national CW-Conditions in the EU vary on a geographic gradient: The CW-features increase toward Europe's Northwest, while they decrease toward both the South and the East. The southward descent in the CW-Condition is due to increasing seasonal temperatures and decreasing seasonal steadiness in rainfall as one moves continuously South from Northwestern Europe's core CW-area (i.e., the British islands, Northern France, Northern Germany, the Netherlands, Belgium and South Scandinavia). The eastward descent in the CW-Condition is due to growing seasonal temperature extremes, reflecting increasingly continental climates at greater distances from the Atlantic. Moreover, Figure 10-4-2 shows that fully seventy percent of the sub-national variation in the CW-Condition is due to differences *between*, rather than *within*, countries. Interestingly, by far most of the *within*-country differences in the CW-

Figure 10-4-2. Regional Variation in the CW-Condition (1950-2017) by Country



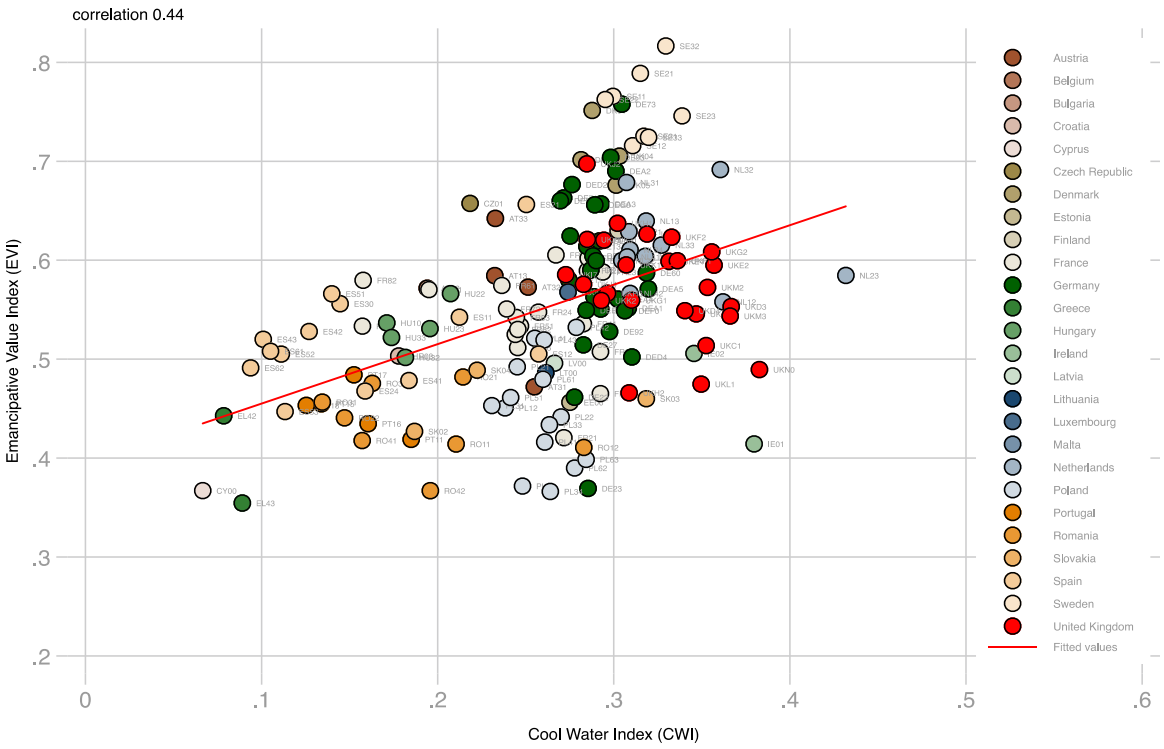
Condition (70% to be precise) is due to differences in minimum rainfall, controlling for latitude, longitude and altitude.

THE CW-CONDITION AND SOCIOECONOMIC DEVELOPMENT

Due to the CW-Theory, sub-national levels of socioeconomic development should map in roughly corresponding fashion to sub-national CW-Conditions. To test this expectation, we use data on the regions' per capita income, secondary education, infant mortality as well as female labor force participation and technological progress, measured as the percentage of households with internet access. SOM-Table 10-4-1 documents these measurements.

Within Europe, there is a substantial degree of variation in socioeconomic development. For instance, from 2000 to 2016, average provincial income levels in the UK, Austria and Germany are about two times higher than in Portugal, Slovenia and Malta. Likewise, female labor force participation in Sweden, Denmark and Finland is by thirty percentage points higher than in Italy, Spain and Greece. Similarly, regional levels of infant mortality in Sweden and Finland are half as large as in Romania, Malta and Hungary. SOM-Figure 10-4-2 visualizes the regional differences

Figure 10-4-3. The CW-Condition and Emancipative Values across NUTS-II Regions



Notes: Data on cool water conditions are averaged over 1950-2017. Emancipative Values Index (EVI). Source: European Values Survey 2008-2009 (not imputed).

in socioeconomic development across the EU. The map shows that provincial variation within countries is way more limited. In other words, countries tend to be developmentally homogenous in the spatial dimension. More than eighty-five percent of the spatial variation in education, population health and material prosperity is due to differences *between*, instead of *within*, countries. This finding underlines the importance of countries as the most significant spatial units in shaping variation in impairing-vs-empowering living conditions.

The cross-provincial differences in socioeconomic development covary substantially with differences in the CW-Condition, which correlates at $r = .70$ with both female labor force participation and technological progress, at $r = .60$ with educational enrollment, and at $r = .50$ with per capita income. Needless to say, these correlations are statiscially significant.

SOM-Figure 10-4-3 visualizes these province-based correlations. Interestingly, provinces in Eastern European countries like Hungary, Croatia, Poland, Romania and Slovakia have lower average household incomes than expected given their CW-Condition. The legacy of several decades of inefficient planned economies under Soviet-style communism turns these countries into lasting under-achievers relative to their purely CW-based economic potential. On the other hand, Southern European provinces in Spain, Greece and Italy have higher levels of population health than their CW-Condition suggests. Most likely, considerable net transfers from Northern European regions

to the South have turned the South into a lasting over-achiever in health relative to the South's purely CW-anchored potential.

THE CW-CONDITION AND EMANCIPATIVE VALUES

The CW-Theory suggests that variation in the provincial populations' emancipatory orientations maps correspondingly onto variation in provincial CW-Conditions. To test this proposition, we use two different measures of emancipatory orientations. For one, we use Christian Welzel's emancipative values index (EVI). Based on data from the European Values Study in 2008-9, we find considerable variation in emancipative orientations across countries' provinces. For instance, as SOM-Figure 10-4-4 illustrates, provincial levels of emancipative values in Scandinavian countries, like Sweden and Denmark, are about twice as high as in Eastern European countries, including Poland, Bulgaria and Romania. As with socioeconomic development, SOM-Figure 10-4-5 shows that about seventy percent of the provincial variation in emancipative values is due to differences *between*, rather than *within*, countries. Hence, countries are not only the decisive spatial frame for socioeconomic development but also for shaping prevalent cultural values.[725]

As the CW-Theory suggests, provincial differences in emancipative values map correspondingly onto provincial variation in the CW-Condition. Across 162 EU-provinces with available data, the CW-Condition correlates at $r = .44$ with provincial variation in emancipative values, as documented in Figure 10-4-3.

To cross-validate this finding, we use alternative measures of the provincial populations' emancipatory orientations from the European Social Survey (ESS) over the period 2010-16. To measure emancipatory orientations based on the ESS, we rely on Shalom Schwartz's conservation-vs-openness values, assuming that openness in this polarity represents emancipatory orientations.[726] As SOM-Tables 10-4-2 and 10-4-3 document, openness values correlate at considerable strength and in the expected direction with emancipative values.[727]

SOM-Figure 10-4-6 visualizes that more than eighty-five percent of the EU's provincial variation in openness values is—again—due to differences *between*, rather than *within*, countries. As is evident, the countries with the weakest openness values are Slovakia, Bulgaria and Poland. By contrast, we find the strongest openness values on average in Sweden, Denmark, the Netherlands and Germany.

When it comes to the typical political discourses in each nation, the media usually emphasize the adversarial elements, focusing on party competition, ideological conflict and personal confrontations. Against this backdrop, it is striking to realize the high degree of agreement on cultural values within national populations—agreement at least in the spatial dimension.[728] As SOM-Figure 10-4-7 illustrates, openness values due to the Schwartz map in similar strength on the provincial CW-Conditions as do emancipative values based on Welzel ($r = .42$ in both instances).

THE CW-CONDITION AND IMPARTIAL GOVERNMENT

As with socioeconomic development and emancipatory orientations, the CW-Theory predicts that the EU's provincial variation in the quality of governance maps correspondingly on provincial variation in the CW-Condition. By government quality, we mean the extent to which state action pursues an indiscriminate provision of the common good instead of being guided by powerholders' selfish interest in personal benefit. Understood in this manner, we assess the quality of governance in NUTS-II provinces using data from the Quality of Government Institute's European Regional Survey in 2010 and 2013. In these surveys, respondents assess the degree of impartiality in their provincial governments' service delivery, including education, healthcare and law enforcement. To summarize people's assessments, we use the European Quality of Government Index (EQI) introduced by Nicolas Charrron, Lewis Dijkstra and Victor Lapuente. For our purposes, we rename this index into Indiscriminate Governance Index (IGI) because the term "indiscriminate" specifies in what substantive sense the "quality" of government is high or low.[729]

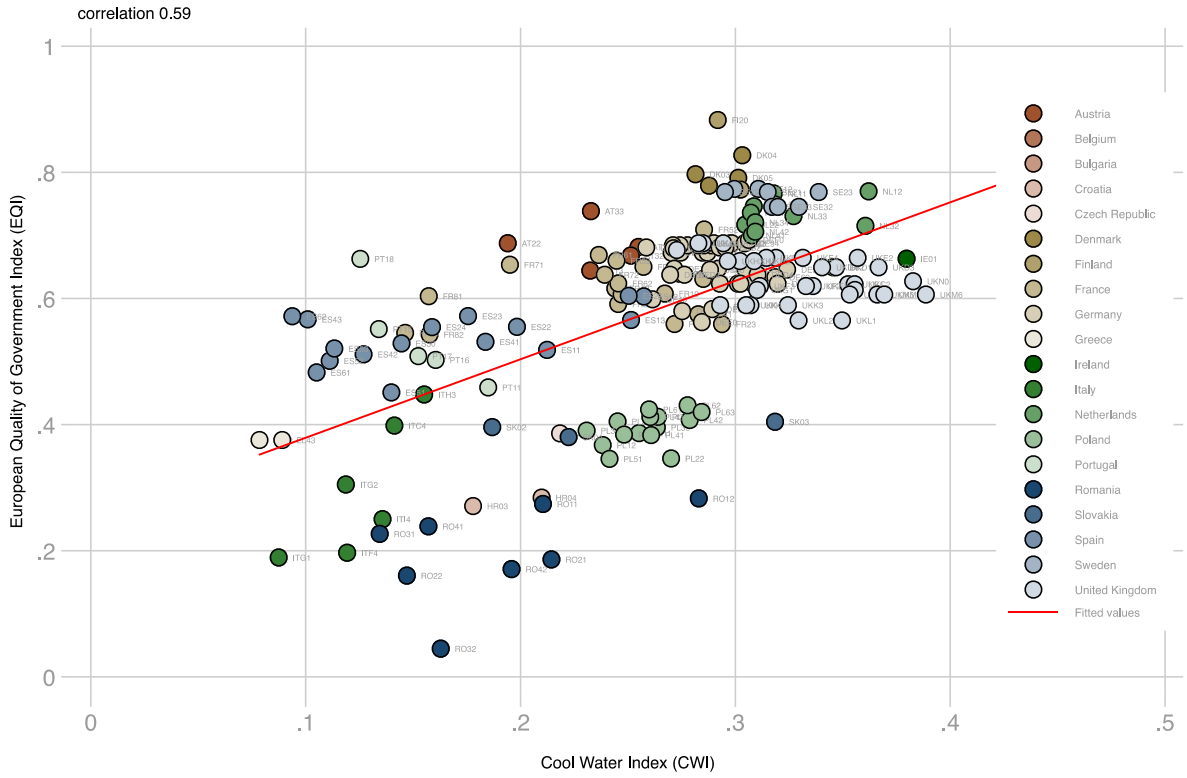
The IGI-measure is perceptive rather than objective because it captures lay perceptions of government quality. This raises the issue of misperceptions or expectation bias. Indeed, citizens may be more critical of their government, but not because of any real failure of government, but because emancipative values raise people's expectations. Plausible as such measurement bias might be, in reality it does not appear to be disproportionate: Research on perceptions of corruption shows that citizens' subjective judgments correspond fairly closely with the more objective judgments of experts.

Against this backdrop, SOM-Figure 10-4-8 maps the provincial topography of the IGI across the EU. As with all the other developmental outcomes, the exact same geographic pattern emerges. Northwestern European regions perform best in government impartiality, while regions in the South and East perform worse, with the very Southeast being the worst. Indeed, Greece holds the lowest position, pinpointing the country's rampant corruption culminating in the financial crisis of 2008 and the subsequent turbulences.

SOM-Figure 10-4-9 visualizes the EU's within- and between-country variation in government impartiality. It is clear from the diagram that within-country variability in government impartiality is negligible. Indeed, more than eighty percent of the provincial variation in government impartiality is due to differences *between*, rather than *within*, countries. Obviously, this pattern repeats itself with any social indicator of significance in a developmental context.

Only Belgium and Italy stick out as nations with unusually large within-country variation in indiscriminate governance, reflecting the quality differences in government between the Walloon (low quality) and Flemish (high quality) part in Belgium, as well as those between the South (low quality) and North (high quality) in Italy. We suspect that similarly large differences in Europe would only be observed across the German-/French-/Italian-speaking *Kantons* in Switzerland, yet Switzerland is not part of the EU's data collection.

Figure 10-4-4. The CW-Condition and Impartial Governance across NUTS-II Regions

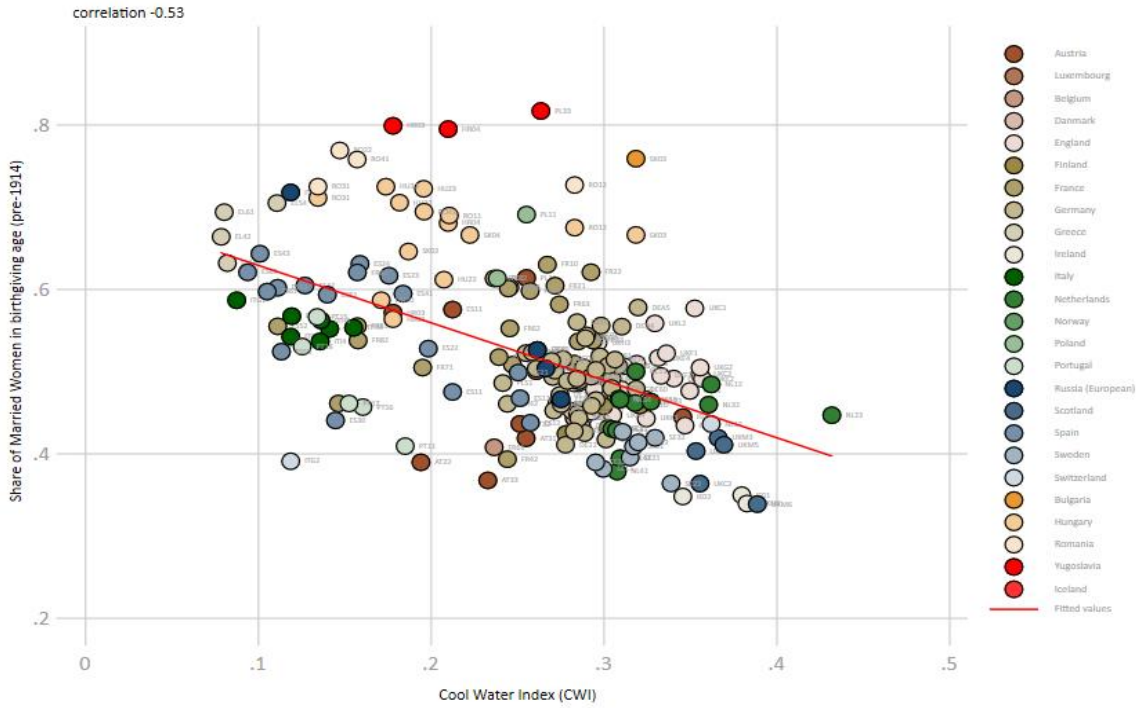


Notes: IGI (also known as EQI) and its sub-indicators. Source: European Union Regional Survey. IGI is averaged over the period 2010-2013. Data on cool water conditions are averaged over 1950-2017.* p<0.05 **p<0.01 ***p<0.001.

Linking provincial variation in government impartiality with provincial differences in emancipative values and the CW-Condition, the relationships surface in their expected shape. Across 255 EU-provinces, government impartiality correlates at r = .66 with emancipative values and at r = .59 with the CW-Condition. SOM-Table 10-4-4 documents the first correlation, while SOM-Figure 10-4-10 visualizes it. Likewise, SOM-Table 10-4-5 documents the second correlation, while Figure 10-4-4 provides a visualization.

The hierarchical-linear regressions in SOM-Table 10-4-6 confirm the previous findings in a more sophisticated multilevel framework, distinguishing individual-, province- and country-level variance components. Specifically, we regress perceived government impartiality at the individual level on the province-level as well as country-level CW-Condition and province- as well as country-wise emancipative values, controlling for the individuals' education, income, age and gender. As is evident from these models, the CW-Condition and emancipative values at the country level show a strong positive effect on the individuals' perceived government impartiality. Since by far most of the variation in these variables is—once more—between rather than within countries, province-level variation shows no effect of its own on people's perceived government impartiality, once we control the absorption of provincial variation by countries. Again, this finding provides

Figure 10-4-5. The CW-Condition and the Historic Share of Married Women across NUTS-II Regions (pre-1914)



Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

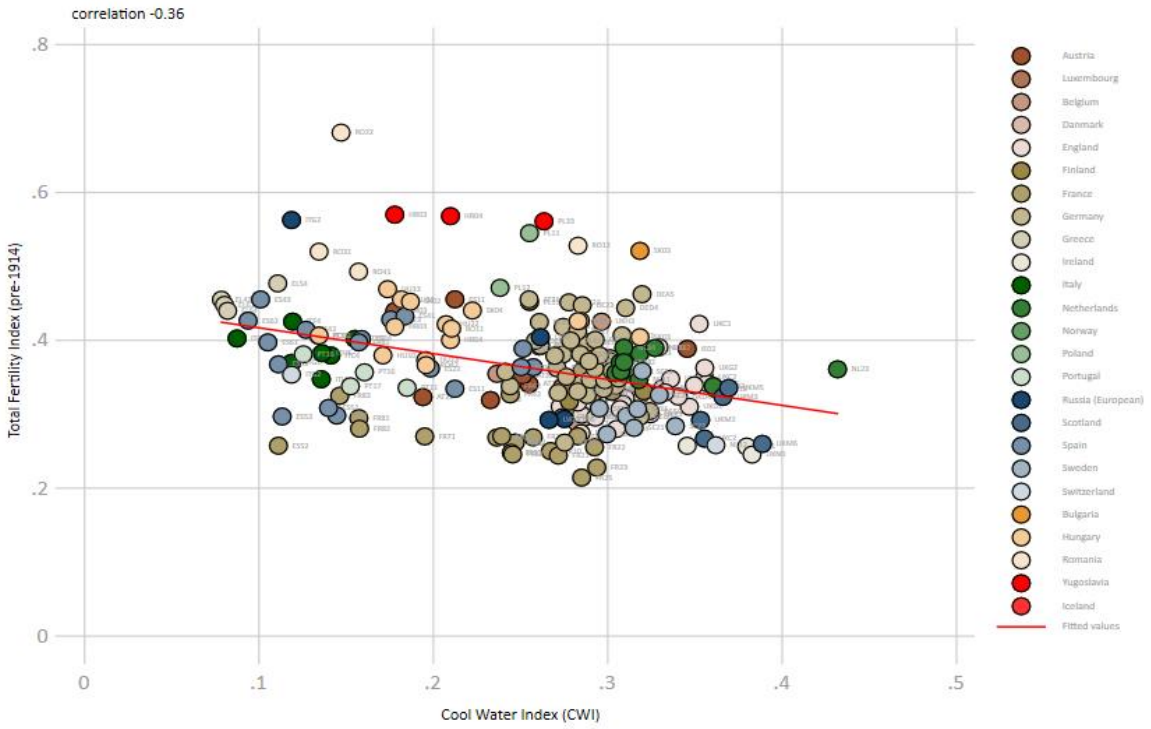
striking evidence that people's life quality and populations' overall human condition is most powerfully shaped in the spatial frame of countries, and much less so in the frame of sub-national provinces.

THE CW-CONDITION AND HISTORIC PROVINCIAL DEVELOPMENT

The CW-Theory assumes a causal chain spanning several centuries. Therefore, we extend the findings related to contemporary developmental outcomes by including historic family, fertility and sex norms as an intervening station in the causal sequence. This way, we demonstrate the supposed connection from the quasi-timeless CW-Condition to historic female fertilities and marriage ages (i.e., between 1830 and 1914) to contemporary emancipatory outcomes, all the while retaining the sub-national provincial focus inside Europe.

Researchers from Princeton University coded church marriage registers to trace the fertility decline in European regions. The data give us a sense of demographic development between 1800 and 1914 for a considerable portion of European regions. The evidence enriches our previous results by a longitudinal perspective reaching farther backward in time. We model the temporal sequence of influences by applying path-analytical techniques.[730]

Figure 10-4-6. The CW-Condition and Historic Female Fertilities across NUTS-II Regions (pre-1914)



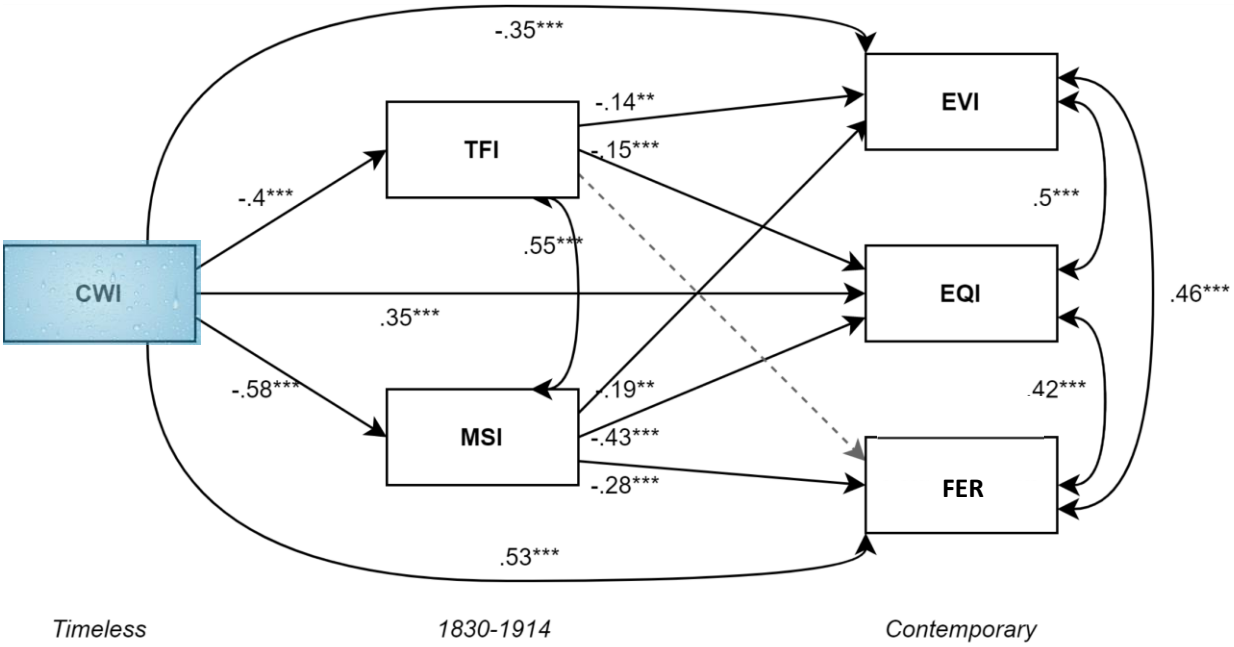
Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

The Princeton data include several variables suitable to undergird our theoretical reasoning. These variables cover the female mean age at first marriage, the proportion of women ever being married in the age range from twenty-four to fifty, the female fertility rate as well as the non-marital fertility rate. The unit of analysis are small provinces or larger cities throughout Europe, which we match with the contemporary NUTS-II units.[731]

Due to the CW-Theory, living under the CW-Condition emits lower fertility pressures on women. Consequently, women marry later and give birth to fewer children, while taking greater care of each child. The resulting nuclear family pattern implies greater independence in family and life planning and enhances the value placed on the individual as an autonomous person in her own right. The enculturation of these and other aspects of egalitarian individualism encourage long-term life orientations and—eventually—contribute to longer life histories.

SOM-Figure 10-4-11 shows the sub-national variation in historic female fertilities and marriage ages across countries. As is evident, the same geographic patterns already seen in contemporary developmental outcomes now surface again with historic sexual reproduction patterns. First, by far most of the spatial variation in historic female fertilities and marriage ages is due to differences *between*, rather than *within*, countries. Second, the European Northwest is most advanced in female reproductive autonomy (i.e., lower fertilities and later marriages of women), while this

Figure 10-4-7. Path Model from the Timeless CW-Condition to Historic Marriage Shares to Present-Day Emancipative Values, Impartial Governance and Female Employment Rates across NUTS-II Regions



Acronyms: CWI: Cool Water Index; MSI: Marriage Share Index (females at fertile age); EVI: Emancipative Values Index; FER: Female Empplyment Rate; IGI: Impartial Governance Index; TFI: Total Fertility Index.

feature fades towards both the European South and East. This evidence is strongly reminiscent of the famous "Hajnal Line," running as a diagonal from St. Petersburg to Trieste, with patriarchal family patterns to the East and South of that line and a highly unusual emancipatory pattern dominating to the North and West—an early manifestation of Northwestern Europe's "WEIRDness."[732]

Figures 10-4-5 and 10-4-6 illustrate that these provincial differences in historic marriage and fertility patterns map in considerable strength and in the expected direction on provincial differences in the CW-Condition. SOM-Figures 10-4-12 to 10-4-15 show that, in turn, provincial variation in contemporary developmental outcomes maps in strongly corresponding fashion on provincial variation in historic fertility and marriage patterns.

The strongest effect of historic fertility and marriage patterns on contemporary emancipatory outcomes runs from women's historic marriage ages on the "sexual choice"-component of emancipative values. This is no surprise because the "sexual choice"-component of emancipative values addresses questions of reproductive freedom that touch directly upon sexual norms.[733] Although the data allow to illustrate this relationship only at the country level (shown in SOM-Figure 10-4-16), the mere strength of the relationship is remarkable (r = .74). The relationship is also noteworthy for another reason: The issue of sexual self-determination captured by the "sexual choice"-component of emancipative values is a recently emerging topic. Accordingly, differences in

historic marriage and fertility patterns have predisposed societies early on to embark on emancipatory trajectories. Progress on these trajectories keeps holding on, visible in more recent achievements such as sexual self-determination. In other words, historic conditions have planted the seeds of emancipatory developments that then continue to germinate much later in time.

A CROSS-CENTENNIAL PATH MODEL

The descriptive results above support the CW-Theory. To further strengthen this support, we integrate the previous findings in an encompassing model. The results presented in SOM-Figure 10-4-17 and Figure 10-4-7 are three-stage path diagrams that estimate the flow of impact from (***1***) the quasi-*timeless* CW-Condition via (***2***) the *historic* reproductive autonomy of women toward (***3***) *contemporary* emancipatory outcomes, including socioeconomic development, emancipative values and impartial governance. The model tests whether the effect of the CW-Condition on contemporary socioeconomic development, emancipative values and impartial governance is in part or fully mediated by female fertilities and marriage ages early in the industrial era. We complement this analysis by a model that adds relevant controls at the country level.[734]

The models demonstrate that all supposed paths are significant and point in the expected direction. This result is remarkable, given that European sub-national provinces represent a very particular and small segment of the world and that, for this reason, the variance in all involved variables is seriously truncated. And yet, we clearly find the supposed emancipatory effects of the CW-Condition on historic female fertilities and marriage ages. We also find the cross-centennial effect of the CW-Condition on present-day emancipatory outcomes. These results are robust against the inclusion of country-level per capita incomes in 1800-1850 and household autonomy over these years. In a nutshell, Figure 10-4-7 shows that the quasi-timeless CW-Condition among European sub-national provinces favored female reproductive autonomy (i.e., the combination of inverted total fertility rates and the marriage age index) during the apex of early industrialization in 1850-1914, which then together with the CW-Condition favors human empowerment today in 2009-10 (i.e., the combination of socioeconomic development, emancipative values and impartial governance).

10-5 Provinces of the World's Largest Countries

Today's more than two-hundred countries cover about 131 million square kilometers of our planet's surface area. But the world's nine largest countries alone cover already 68 million square kilometers of this surface area, which is roughly fifty-three percent. In other words, five percent of the world's countries have jurisdiction over ten times the Earth's inhabited area that the average country controls. These countries include (in the order of their territorial extension) Russia, Canada, the US, China, Brazil, Australia, Kazakhstan, India and Sudan. Of course, countries of such spatial dimensions are divided into smaller territorial units, like the fifty states of the US. For ease of readability, we address these sub-national units in the following as *provinces*. In total, the nine countries under consideration comprise 275 such provinces.

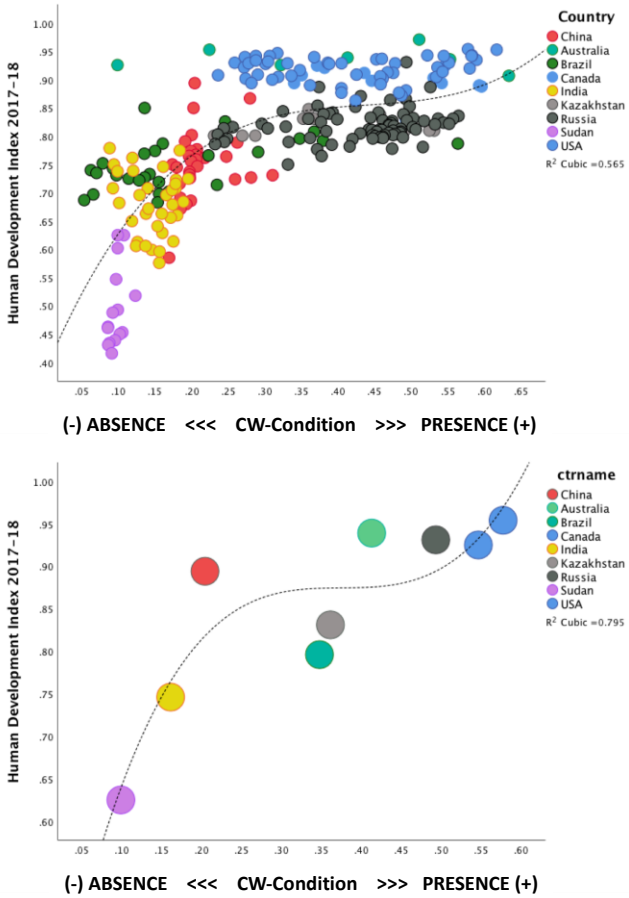
Pooling those 275 provinces into one dataset, with measures taken of their CW-Condition and developmental outcomes, is an artificial creation because there is no obvious commonality that combines these countries in a cultural universe of any joint meaning. Indeed, apart from the triviality that these are just the largest countries in the world, nothing ties them together as a group—neither neighborhood, nor political alliances, cultural traditions, levels of development or similar regimes. Few scholars will see an intuitive connection between Sudan and Kazakhstan, Brazil and Australia, the US and India or Canada and China, more than between any randomly selected pair of countries from the world's entire pool of nations. In a nutshell, this is an arbitrary collection of countries, except on the grounds of area size.

Precisely because of the randomness of this country selection, pooling the related provinces into a single universe in which to examine whether provinces with a stronger CW-Condition are also more emancipatory in their developmental outcomes (independent of the country to which they belong), strikes us as yet another rather tough and, hence, conclusive test of the CW-Theory. The reason is simple: It is less likely to find any meaningful pattern of spatial covariation across several hundred provinces pooled together for no other reason than their countries' area size.

We estimate each province's CW-Condition using the provincial capital's absolute latitude and thermal seasonality as well as rainfall data from the sources listed in Chapter 3. And we combine this information in the same manner as Chapter 3 explains. Specifically, we average seasonality-minimized coolness and the ratio of rainfall in the driest over the wettest month and weight this average by multiplication for coastal proximity. As before, the resulting CW-index works in such fashion that scores increase (*a*) alongside cooler summers and less extreme summer-winter differences in temperature, (*b*) alongside a rainfall pattern that is steady on a decently high base level and (*c*) alongside proximity to the sea.

As concerns developmental outcomes with an emancipatory signature, there are not much comparable data on the provincial level that is standardized across countries. The most reliable and encompassing indicator we could find is the Human Development Index (HDI) by the United

Figure 10-5-1. The CW-Condition and Human Development across 275 Provinces of the World's Nine Largest Countries



Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

Nations Development Program. Indeed, the HDI is available for all 275 provinces of the nine countries in question. It combines per capita incomes, average life expectancies and indicators of education in a single index. We presume that the three polarities represented by these indicators—namely poverty-vs-prosperity, mortality-vs-longevity and illiteracy-vs-education—are indicative of impairing-vs-empowering human conditions writ large.[735]

Figure 10-5-1 plots the 275 provinces' HDI-scores on the vertical axis against their CW-scores on the horizontal axis. As is evident, variation in the provinces' CW-Condition explains fifty-seven percent of their variation in the HDI, with a stronger CW-Condition implying a better HDI performance. The relationship is cubic rather than strictly linear, with the HDI performance growing more steeply at the lower and the upper scale ends of the CW-Condition, and less steeply within the middle range of the CW-Condition. Why the relationship appears in such an inverted S-curve shape is not intuitively obvious but what is clear is that the direction, significance and strength of the relationship unequivocally confirm the CW-Theory: Sub-national provinces with a stronger CW-Condition tend to be more advanced in human development.

The relationship between the CW-Condition and the HDI across the 275 provinces amounts to a statistically significant correlation of $r = .67$. [736] Since development takes shape mostly within the spatial frame of countries, it is not surprising that the cross-provincial correlation is mostly due to provincial differences *between* rather than provincial differences *within* countries. This becomes

obvious when we center the provinces' scores for the CW-Condition and the HDI on the respective country means and recalculate the correlation. The correlation strength then drops to $r = .16$, which is weak but still positive and statistically significant.[737] Hence, the CW-Theory is also confirmed from a purely within-country perspective.

SOM-Figure 10-5-1 singles out just one country, China, with its thirty-one provinces to exemplify the within-country cross-provincial relationship. Hong Kong and Macau are over-achievers, with a considerably higher HDI score than their CW-Condition suggests. Obviously, this is due to these two cities' strategic harbors and their inherited strong position in sea trade, which the European colonial powers (Britain in the case of Hong Kong, Portugal in the case of Macau) further consolidated. Vice versa, Tibet is a clear under-achiever, with an HDI score visibly below what its CW-Condition suggests. In this case, we may guess that the underperformance reflects economic disadvantages resulting from the Chinese occupation regime. Yet, apart from these three outliers, the distribution between the lowest CW-scoring province, Gansu, and the highest CW-scoring province, Shanghai, looks pretty linear—thus, confirming the CW-Theory. This is a striking result because Chinese provinces only vary in a score range between 0.22 and 0.42 in the CW-Condition.

For the federal states of two countries, the US and India, we have measures that represent female reproductive autonomy, that is, how empowered women are to shape their reproductive career—in other words, how free women are in deciding if, when and whom to marry, how to live together and how many children to raise.[738] The upper diagram of SOM-Figure 10-5-2 pools the fifty-one US states and nineteen Indian states and plots them on the CW-Condition (horizontal axis) and on female reproductive autonomy (vertical axis). We obtain again a curvilinear relationship, although this should not bother us too much because the key takeaway is that the relationship is significant and positive in direction, thus documenting for Indian and US states that a stronger CW-Condition at the provincial level associates with more female reproductive autonomy. The lower diagram in SOM-Figure 10-5-2 separates the Indian and US states by marking them in blue and red. The diagram, thus, visualizes that Indian and US states exist in different zones of both the CW-index and the reproductive autonomy scale, with Indian states varying within a narrow range on the lower end of the CW-index, and also on the lower end of reproductive autonomy. Still, the diagram shows that the positive cross-provincial relationship between the CW-Condition and reproductive autonomy holds within both countries. For India, however, to obtain this result we had to exclude the state Jammu and Kashmir, which is a special case given the ongoing tensions between India and Pakistan over Kashmir. At any rate, sub-national evidence from the world's largest countries, which cover more than half of planet Earth's inhabited surface area, unequivocally confirms the CW-Theory.

10-6 Supra-National Area Units

To examine the predictions of the CW-Theory, we can vary the spatial perspective downward to the *sub*-national level. But we can also change the perspective upward to the *supra*-national level. The supra-national perspective is relevant because joint ethno-linguistic ancestries, shared imperial legacies and common religious and law traditions pool countries into distinct ancestral universes with shared geo-political identities and joint international alliances. These universes provide transnational diffusion spaces for ideologies, institutions, customs and other products of human culture. Through this cultural diffusion, countries of the same ancestral universe develop on similar trajectories of social progress, which creates sameness in developmental outcomes *within* and *otherness* in such outcomes between ancestral universes and their settlement spaces. In other words, populations evolve inside the gravitational field of their particular ancestral universe.

Looking at ethno-linguistic population families brings the CW-induced relationships more clearly to the surface. The reason is straightforward but poorly understood: Analyzing culture at a higher level of aggregation isolates the *large*-scale variation *between* spaces, while blinding out the *small*-scale variation *within* them. Since *small*-scale variation *within* spaces is systematically inflicted with measurement imprecision, blinding out this variation is a *noise-cleansing act*. For this reason, relationships between cultural variables always surface clearer in strength when widening the focus from comparing smaller-scaled units inside narrower spaces towards comparing larger-scaled units across a wider space. This is exactly what aggregation is doing, which is why aggregation is an act of bringing the real strength of culture's gravitational force to the surface. We call this principle the "law of aggregation": The more macroscopic in space the unit of analysis is at which one looks, the clearer one can see culture's power to create distinction between units.[739]

Metaphorically speaking, the gravitational power of the universe's black holes over the stars in their galaxies is greater than the stars' gravitational power over the planets in their solar systems, which is in turn greater than the planets' gravitational power over the moons in their orbits. Likewise, the gravitational power of human civilization's ancestral universes over their nations is stronger than the nations' gravitational power over their provinces, which is in turn stronger than the provinces' gravitational power over their inhabitants. In systematic terms, the law of aggregation informs the following insight.

Insight:

*In a nested hierarchy of inhabited spaces, **cultural gravity**—i.e., the tendency to enlarge cultural differences between units relative to those within units—surfaces more visibly with each step of aggregation upward from more **micro**scopic to more **macro**scopic spaces. Figure 10-6-1 visualizes this logic.*

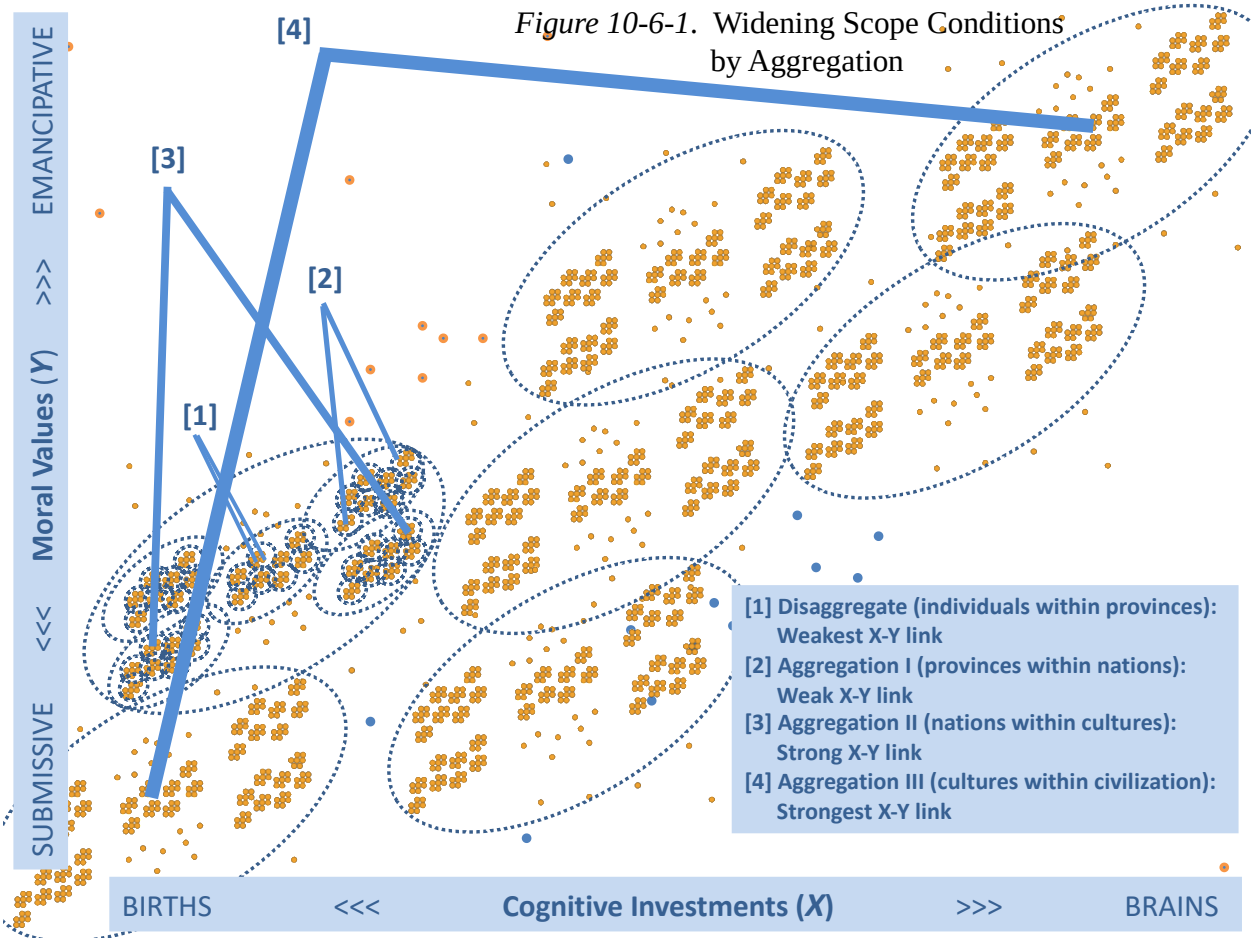
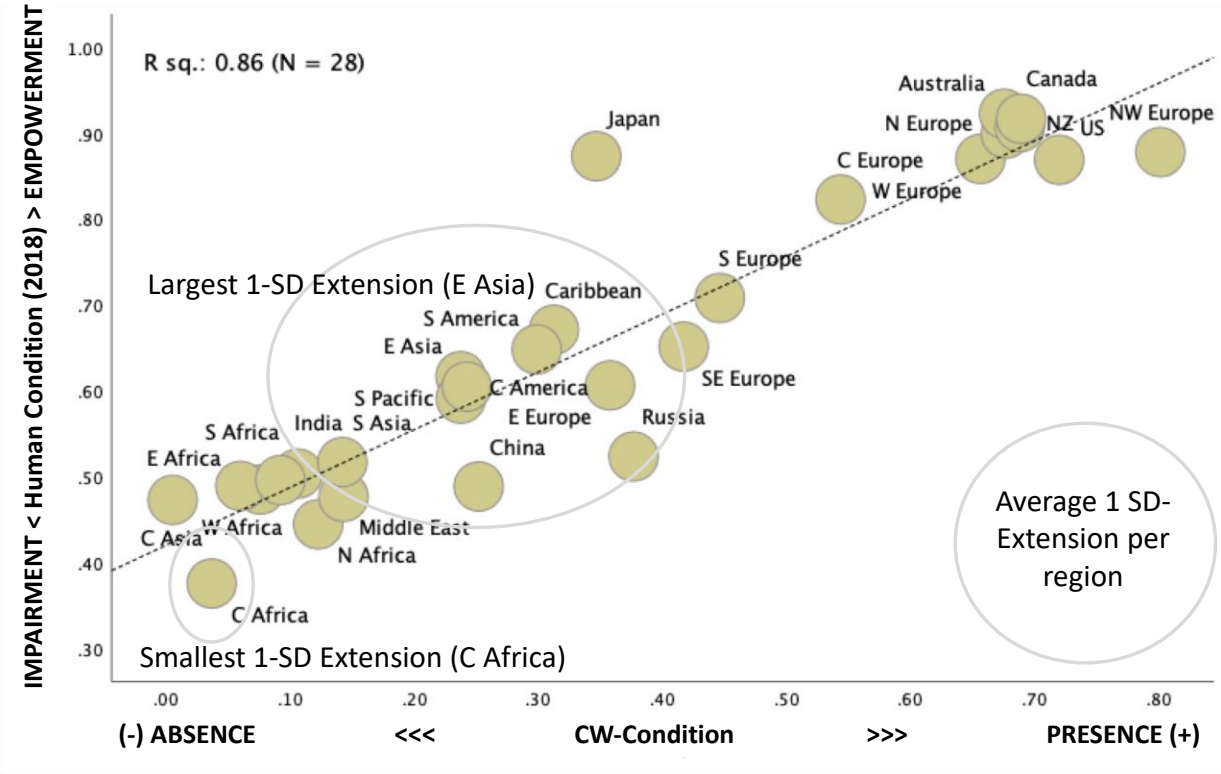


Figure 10-6-1. Widening Scope Conditions by Aggregation

We examine supra-national aggregations of countries at two different levels of spatial resolution. To begin with, we examine twenty-eight geographic regions in the world, selected on the basis of spatial neighborhood. These regions include a maximum of nineteen countries in the case of West Africa and a minimum of six countries in the case of East Asia. Some very large countries represent their own region, namely Russia, Canada, the US, Australia and China. Next, we move one step of spatial aggregation upward and examine the predictions of the CW-Theory at the level of our twelve ethno-linguistic population families, also labelled ancestral universes or culture zones. We focus on two developmental outcomes with an emancipatory signature, one contemporary and the other one historic: namely an overall *impairing-vs-empowering human condition* in 2018 (in short: human empowerment) and *smaller-vs-greater reproductive autonomy* of women in about 1800 (in short: female autonomy).

Figure 10-6-2 displays the relationship between the CW-Condition and human empowerment in 2018 across the world's twenty-eight supra-national neighborhood regions. The relationship is strongly positive and very tight, with an explained variance of eighty-six percent, thirteen percentage points more explained variance than among the world's 170 countries with available data.

Figure 10-6-2. The CW-Condition and Human Empowerment in 2018 across 28 Global Regions



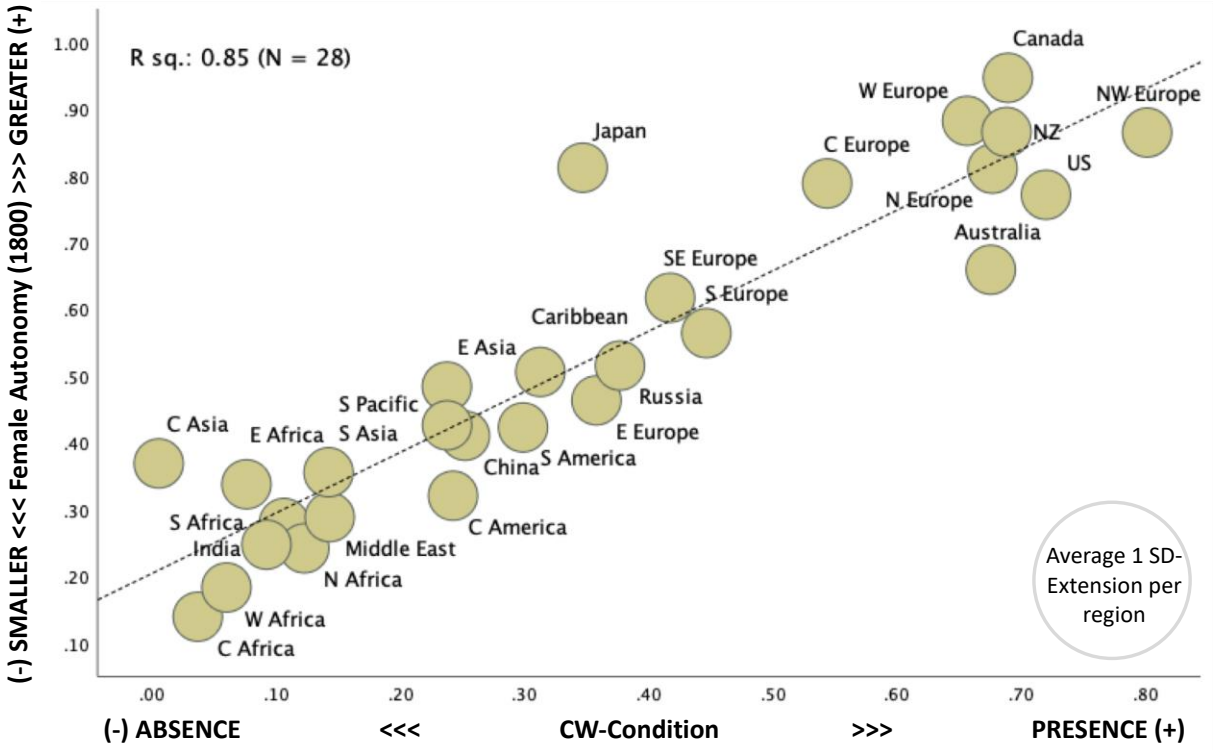
Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

Japan is a slight outlier because its score in human empowerment is higher than its CW-Condition predicts. The circle in the lower-right corner of the diagram shows the extension of the space within which we find two thirds of a neighborhood region's countries.

Figure 10-6-3 provides a picture that looks astoundingly similar to that in the previous diagram, although the dependent variable is quite different, namely fertility pressures on women in about 1800 CE, with lower such pressures indicating greater female autonomy in family and life planning (i.e., reproductive autonomy). The explained variance is now 85 percent, with a stronger CW-Condition indicating lighter fertility pressures on women at the eve of the double industrial-democratic revolution, signaling the onset of modern era.

Figures 10-6-4 and 10-6-5 plot again impairing-vs-empowering human conditions in 2018 and smaller-vs-greater female autonomy in 1800 against the largely time-invariant CW-Condition, now using the world's twelve ethno-linguistic population families (i.e., ancestral universes, culture zones) as the spatial unit of observation. This is a step of aggregation higher than the world's twenty-eight supra-national neighborhood regions and the "law of aggregation" applies again: Moving up to the next higher level of spatial macroscopy brings systematic relationships more

Figure 10-6-3. The CW-Condition and the Nuclear Family Pattern in 1800 across 28 Global Regions



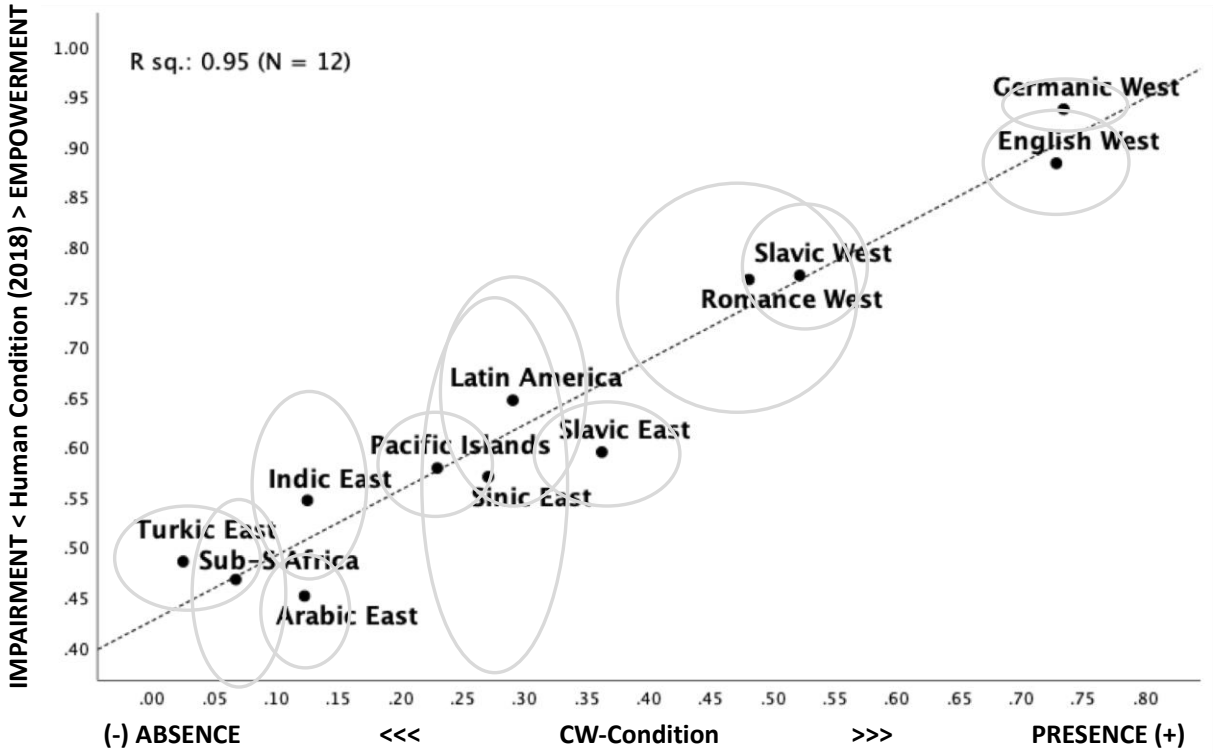
Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

strongly to the surface. Indeed, the explained variances increase to ninety-three and ninety-five percent—which is truly powerful. Technically, the small number of observation units (N = 12) at this high level of aggregation should not be taken as a reason for caution—as it would have to, if the twelve units were an *arbitrary* selection from an *infinite* universe. Instead, the twelve units are not a sample; *they are the universe*.

In summary, no matter whether we look at the level of provinces within countries, the level of countries within ethno-linguistic population families or at the level of population families within human civilization, the emancipatory CW-effect always shows up significantly, yet in increasing strength alongside higher levels of spatial macroscopy in this multilevel hierarchy of spatial nestedness.

All in all, we can confidently conclude that the results presented throughout this book are not an artifact of using countries in today's borders as the unit of analysis. Quite the contrary, various different angles on sub- and supra-national spaces echo in strikingly strong fashion our country-level results. On levels of spatial aggregation higher than countries, most notably population families and neighborhood regions, the power of the CW-effect surfaces even stronger, as we have just seen in glaring clarity. In conclusion, the CW-effect is not an artifact of selecting particular levels of spatial resolution: It surfaces at the sub-national, national and supra-national levels and

Figure 10-6-4. The CW-Condition and Human Empowerment in 2018 across the World's 12 Culture Zones



Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

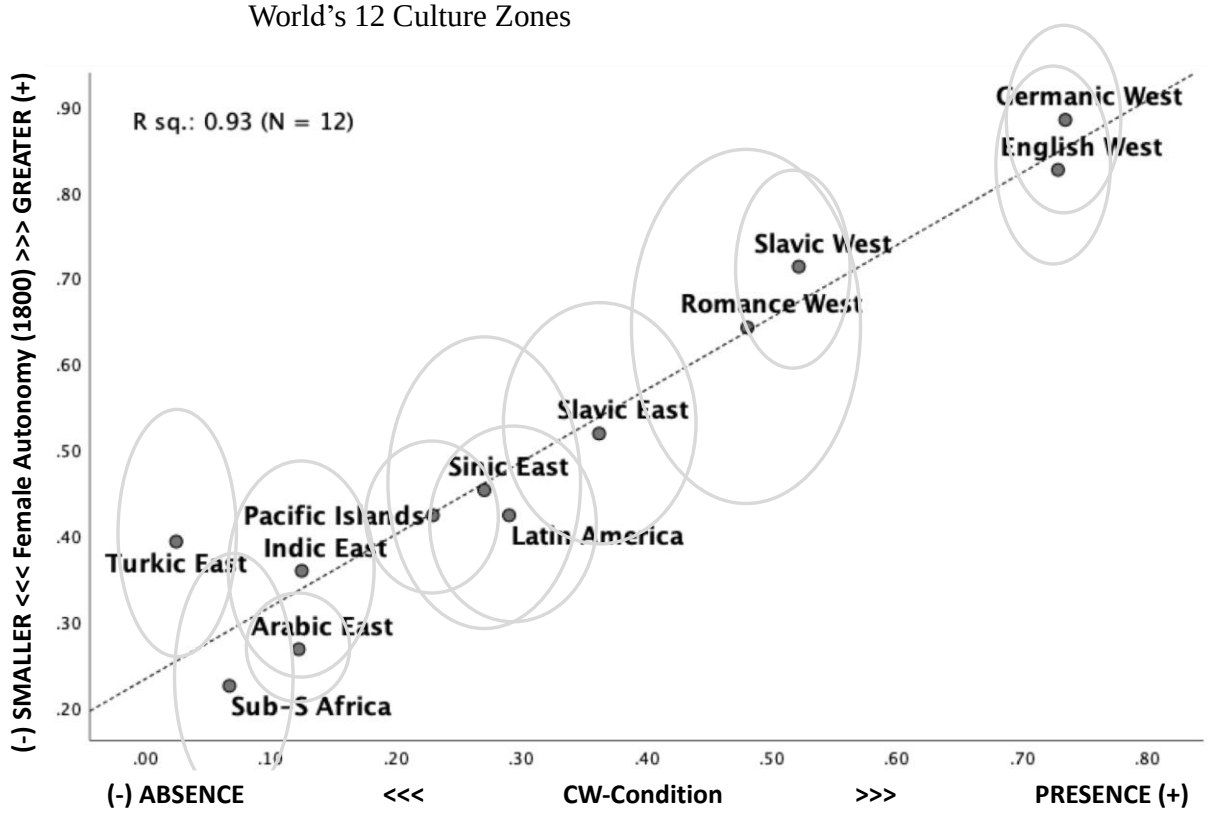
is universal in this very sense, albeit at increasing strength with each higher level of spatial macroscopy, due to the law of aggregation.

EXCURSION: THE MIRACLE OF AGGREGATION

The emancipatory CW-effect surfaces stronger on the national than on the sub-national level, and stronger on the supra-national than on the national level. This observation reflects the fact that cultural diffusion proceeds in a space-bound manner, with the respective spaces defined by ethnolinguistic population families and their geographic spread, as migratory histories have shaped them.

Accordingly, space-bound cultural diffusion makes provinces more similar *within* and more distinct *between* nations. Likewise, space-bound cultural diffusion makes nations more similar *within* and more distinct *between* population families. Therefore, space-bound cultural diffusion embodies a tendency to diminish the *within*-unit partition of inter-cultural variation, while enlarging its *between*-unit partition. This shift in the ratio of variance partitions means that the *within*-unit partition of inter-cultural differences is *more* and the *between*-unit partition *less* dense in scope. Because measurement imprecision increases exactly with the density in scale scope, the elimination of the denser variance partition that happens through aggregation greatly reduces

Figure 10-6-5. The CW-Condition and the Nuclear Family Pattern in 1800 across the World's 12 Culture Zones



Note: Measurements are explained in the online *SOM* documentation at: https://coolwatereffect.com.

measurement imprecision related to distributional density. In other words, isolating the between-unit variance partition through aggregation exhibits distributions of lower density and, hence, lower measurement imprecision because of a fuller occupation of scale scope. Consequently, variance/covariance patterns surface more clearly at higher levels of spatial aggregation.[740]

Against this backdrop, we define cultural gravity as a spatial aggregation's power to shift variance/covariance partitions in given variables towards a greater share of the *between*-unit partition relative to the *within*-unit partition. Following this definition, we can actually calculate the force of an aggregation's cultural gravity. The calculation goes like this:

At the first level of aggregation, the share of roughly two-hundred nations worldwide among the approximately 3,000 sub-national provinces of which they are composed is ten percent or a proportion of 0.10. By implication, as sub-national provinces pool into nations, the number of spatial units shrinks by ninety percent or by a proportion of 0.90. In our data, the sub-national province-level variance in the CW-Condition absorbed by nations is almost seventy percent or 0.70. Hence, according to our formula, the gravitational power of nations over sub-national provinces is (0.90 * 0.70 =) 0.63 (out of a maximum of 1.0). In turn, this means that the gravitational power of nations over sub-national provinces generates 63 percent between-unit variation in the CW-Condition, in contrast to 37 percent within-unit variance.

At the second level of aggregation, our twelve ethno-linguistic population families around the globe represent a share of six percent among the roughly two-hundred nations of which they are composed, which means a reduction in the number of units by ninety-four percent or by a fraction of 0.94 as nations pool into supra-national population families. The cross-national variance in the

CW-Condition absorbed by population families is seventy-four percent or 0.74. Hence, according to our formula, the gravitational power of population families over nations is (0.94 * 0.75 =) 0.70. In other words, the gravitational power of population families over nations generates 70 percent between-unit variation in the CW-Condition, compared to 30 percent within-unit variance. In light of these numbers, gravitation among nations inside population families diminishes more within-unit variance in the CW-Condition than does gravitation among sub-national provinces inside nations—in line with the law of aggregation.

With developmental outcomes—including material conditions, mentality patterns and institutional configurations—cultural gravitation looks very similar in proportion to the variations in the CW-Condition absorbed by higher-level spatial aggregations. Indeed, as with geo-climatic conditions we also observe with developmental outcomes that—as smaller spatial clusters pool into bigger ones—variance partitions organize themselves in such fashion that the smaller spatial clusters become increasingly *similar* with each other *within* their embedding universes and increasingly *distinct* to each other *between* these universes.

In a sense, these spatial gravity patterns reflect a most basic principle that evolution's "selfish gene" engine has hard-wired into human psychology: ingroup conformity and outgroup distinction. Since ethnic and linguistic similarities are the most easily perceptible sensual markers of familiarity, it is no surprise that ethno-linguistic ancestries operate as a prime force in human history in shaping ingroup conformity and outgroup distinction—thus, shaping cultural universes.

The shift of variation/covariation from the within- to the between-unit domain describes a general evolutionary tendency in the emergence of culture. And it corresponds in striking clarity with the macroscopic principle in the law of gravity. As said, the gravitational power of the universe's black holes over the stars in their galaxies is stronger than the stars' gravitational power over the planets in their solar systems, which in turn is stronger than the planets' gravitational power over the moons in their orbits. Likewise, the gravitational power of human civilization's population families over their nations is stronger than the nations' gravitational power over their provinces, which in turn is stronger than the provinces' gravitational power over their inhabitants.

10-7 Migrants to Sweden

by *Bi Puranen*

During the refugee crisis in 2015, the most emancipatory country in the world—Sweden—welcomed on a per capita count by far the most immigrants from some of the least emancipatory countries in the world, including Syria, Libya, Eritrea, Ethiopia, Somalia, Iraq and other countries of Northern and sub-Saharan Africa, the Middle East and South Asia. The resulting cultural contrast offers another indicative test setting to examine some of the CW-Theory's key implications. In this setting, it is worthwhile to look at first-generation migrants because they have been socialized in their country of origin rather than in their destination country's highly emancipatory and secular culture. Indeed, if the CW-Theory is accurate, the migrants' posture to emancipative values should still reflect the weakness-vs-strength of the CW-Condition in their country of origin.

Among the roughly hundred countries on the globe covered by the *World Values Survey*, Sweden shows the strongest emphasis on emancipative values (i.e., a population average close to 0.74, with a standard deviation of 0.14). Due to the emphasis of Swedish foreign policy on multilateralism, development aid, peacekeeping and international solidarity, Sweden is also the country that welcomed by far the most migrants on a per capita basis during the refugee crisis in 2015. This applies in particular to refugees from war- and terror-torn countries, namely Syria, Eritrea, Somalia, Iraq and Afghanistan. The Swedish government invests a great deal of effort into the cultural integration of these refugees. Part of these efforts was the funding of a large representative survey among first-generation migrants to Sweden to figure out how different these migrants' value orientations are compared to the typical Swedish citizen. This migrant survey was coordinated in 2018 by Bi Puranen from the Institute for Future Studies in Stockholm as part of the *World Values Survey*'s seventh wave.[741]

The majority of interviewed migrants (53%) come from countries in the Middle East and North Africa (MENA), notably Afghanistan, Iran, Iraq and Syria. Around one fifth is from sub-Saharan Africa, with the plurality coming from Somalia and Eritrea. Other migrants come to Sweden from South Asia, South East Asia and East Asia, and Central and Eastern Europe, with small groups of migrants from countries elsewhere worldwide, including a smaller number of migrants from Western countries.[742] Three quarters of the migrants moved to Sweden from authoritarian states[743], with around one fifth coming from low-income economies.[744] When asked why they had left their home country, the majority (57%) said that they fled to escape war, violence and terror, while a quarter (27%) answered to seek for a better living standard.[745] The survey draws upon the core questionnaire used for the seventh *World Values Survey* with the addition of items that are of particular interest in an acculturation context.[746]

Emancipative values are a key marker of cultural difference, especially in a Western/non-Western comparison. Of course, the expectation is that migrants from non-Western countries score significantly and considerably below typical Swedes on emancipative values, which—together with other Scandinavian countries—emphasize these cultural values more than the

people in other world regions. Another important marker of cultural difference is religiosity: Sweden is a highly secular country, while many of the migrants from the Middle East, North Africa and South Asia come from strongly religious countries. These differences from the Swedish host population should be particularly pronounced for first-generation migrants who have not been socialized under the imprint of Sweden's secular-emancipatory culture.

With respect to the Swedish situation, the CW-Theory suggests that the migrants' expectedly strong religiosity and weak emancipative values reflect the lack of emancipatory traditions in their countries of origin, which in turn go back to a generally weak CW-Condition in these countries. This is clearly our expectation because we have seen throughout this book that a weak CW-Condition triggers patriarchal civilizational dynamics that keep emancipative values dormant and enculture submissive values instead. Now, if most migrants come indeed from countries with categorically weaker CW-Conditions than Sweden, the migrants' supposedly weak emancipative values might contrast starkly with the median Swede's strong emancipative values, all the while the migrants' might hardly differ in their emancipative values among each other, as their emphasis on these values is weak anyways. But even though the migrants' countries of origin exhibit categorically weaker CW-Conditions than Sweden, these countries of origin still vary at least to some degree in the exact strength of their CW-Condition. This raises the question of whether these smaller-scale differences in CW-Conditions translate into corresponding differences in the migrants' emancipative values. If so, this would confirm the CW-Theory within scope conditions so narrow that the likelihood of confirmation drops, thus lending further credibility to the CW-Theory when confirmed against these odds.

We test the CW-Theory against Jonathan Schulz and his co-authors' Western Church thesis, which implies that the expectedly strong religiosity and weak emancipative values among first-generation migrants to Sweden reflects these people's socialization in countries with a generally shorter, or absent, Western Church (WC-) exposure. Since the CW-Condition and the WC-exposure are themselves correlated with each other, both expectations might hold true. But even if so, the question remains which of the two expectations is more strongly confirmed in direct comparison and which one turns out to be more robust when considered in the context of the migrants' individual characteristics. As said, the migrants' religiosity is expected to be generally stronger, their emancipative values generally weaker and the CW-Condition and WC-exposure of their countries of origin generally less pronounced compared to Swedish standards. And yet, depending on their particular country of origin and its cultural distance to the West, migrants are certainly not completely invariant on these issues. Therefore, the existing—albeit limited—variation among migrants on these issues provides a particularly tough test case for the WC- and CW-Theories.

The two boxplots in SOM-Figure 10-7-1 illustrate two patterns. First and as expected, the CW-Condition of the migrants' home countries are way below Sweden's own CW-score (left-hand diagram). Accordingly, the migrants' mean level of emancipative values is also greatly below the Swedish standard (right-hand diagram), although not without visible variation. Second, the few Western migrants to Sweden come from countries with a CW-Condition that is considerably closer to Sweden's CW-Condition and they emphasize emancipative values at a strength considerably closer to the Swedish level than is the case for the large majority of migrants from the East and the Global South. Since a strong CW-Condition and strong

emancipative values are signature features of Western civilization, this pattern is by no means surprising.

Table 10-7-1. Explaining the Emancipative Values of Migrants to Sweden

	DEPENDENT VARIABLE: Emancipative Values[a)]				
	Model 1	Model 2	Model 3	Model 4	Model 5
Age[b)]	-.03 (-.03)		-.02 (-.02)	-.05 (-.04)	-.06 (-.05)*
Gender[c)]	.04 (.05)*		.04 (.04)*	.04 (.05)	.05 (.06)*
Married[d)]	-.02 (-.02)		-.02 (-.02)	-.03 (-.03)	-.04 (-.03)
No. of Children[e)]	-.02 (-.02)		-.04 (-.04)	-.01 (-.01)	.01 (.00)
Education Level[f)]	.20 (.20)***		.17 (.18)***	.20 (.21)***	.21 (.27)***
Language Proficiency[g)]	.10 (.08)***		.17 (.15)***	.06 (.05)	.07 (.06)**
Economic Integration[h)]	.02 (.02)		-.01 (-.01)	-.01 (-.01)	-.01 (-.01)
Duration of Residence[i)]	.04 (.04)		-.01 (-.01)	-.01 (-.01)	-.02 (-.02)
Muslim[j)]	-.11 (-.09)***			-.12 (-.10)***	-.12 (-.10)
Religiosity[k)]	-.22 (-.21)***			-.16 (-.14)***	-.14 (-.13)***
WC-Exposure[l)]		.07 (.04)**	.06 (.04)	.08 (.05)*	.04 (.04)
CW-Condition[m)]		.28 (.17)***	.20 (.12)***	.13 (.08)***	.08 (.08)***
Controls for Economic Development and Democracy Level in Country of Origin	No	No	No	YES	No
Adj. R^2	.22	.12	.21	.25	.15
N (respondents)	1,287	2,264	1,545	1,211	1,140 (Westerners out)

Notes: Entries are standardized beta-coefficients with partial correlations in parentheses. Test statistics for multicollinearity, heteroskedasticity and influential cases reveal no violation of OLS assumptions. [a)] Welzel's Emancipative Values, multi-point 0-to-1 scale. [b)] Measured in years. [c)] Dummy (1: female, 0: male) [d)] Dummy (1: married, 0: otherwise) [e)] Count variable. [f)] 9-point scale in ascending order of education level. [g)] Dummy (1: interview in Swedish or English, 0: all else). [h)] 4-point scale indicating in ascending order whether respondent has a job, a car and savings (0: none of them, .33: one of them, .66: two of them, 1: all of them). [i)] Measured in number of years since 2007. [j)] Dummy (1: Muslim, 0: all else). [k)] 10-point scale on importance of God.[l)] Western Church exposure of respondent's home country from Schulz et al. [m)] CW-Condition of respondent's home country. Data source: The World Values Survey (WVS-7) - survey of migrants to Sweden part. Significance levels: * p < .10, ** p < .05, *** p < .01.

SOM-Table 10-7-2 shows that the CW-Condition and WC-exposure of the migrants' countries of origin correlate strongly with each other and that both correlate strongly negatively with the migrants' religiosity and strongly positively with their emancipative values, which in turn correlate strongly negatively with each other. However, the correlations with the CW-Condition are slightly stronger than those with the WC-exposure, providing a somewhat more credible confirmation of the CW-Theory than the WC-Theory.

The regression models in Table 10-7-1 test whether the CW-Condition and WC-exposure continue to retain significant predictive power over the migrants' emancipative values under mutual control and in the context of the migrants' individual characteristics. Among the individual characteristics, age and gender are included as standard demographic controls. Marital status and the number of children are included under the assumption that being married and having more children are markers of traditional family, fertility and sex norms, which implies weak emancipative values. Education is supposed to increase emancipative values because it might make people more familiar with Western ideas, such as democracy, or because education enhances people's ability to think for themselves, in which case they do not want to be told what to believe and what to do—a predisposition under which the emphasis on self-determination inherent in emancipative values should be more appealing. Language proficiency in Swedish and English is supposed to correspond with stronger emancipative values because speaking these Western languages might indicate a greater cognitive involvement in Western thinking and its underlying values, of which emancipative values are a signature. Economic

Table 10-7-2. Explaining the Religiosity of Migrants to Sweden

	DEPENDENT VARIABLE: Religiosity[a)]				
	Model 1	Model 2	Model 3	Model 4	Model 5
Age[b)]	-.03 (-.03)		-.03 (-.03)	-.01 (-.01)	-.01 (-.01)
Gender[c)]	.07 (.08)***		.09 (.10)***	.08 (.10)***	.09 (.10)***
Married[d)]	.04 (.04)*		.04 (.04)*	.04 (.04)*	.05 (.05)**
No. of Children[e)]	.05 (.04)*		.07 (.06)**	.04 (.03)	.03 (.03)
Education Level[f)]	-.04 (-.05)**		-.04 (-.04)	-.02 (-.03)	-.03 (-.03)
Language Proficiency[g)]	-.25 (-.24)***		-.28 (-.25)***	-.16 (-.14)***	-.16 (-.15)***
Economic Integration[h)]	-.08 (-.08)***		-.07 (-.07)***	-.05 (-.05)**	-.06 (-.06)**
Duration of Residence[i)]	-.03 (-.03)		-.00 (-.00)	-.00 (-.00)	-.00 (-.00)
Muslim[j)]	.26 (.24)***			.25 (.24)***	.27 (.25)***
WC-Exposure[k)]		-.10 (-.06)**	-.01 (-.01)	.04 (.02)	.04 (.04)*
CW-Condition[l)]		-.29 (-.18)***	-.26 (-.16)***	-.29 (-.18)***	-.15 (-.15)***
Controls for Economic Development and Democracy Level in Country of Origin	No	No	No	YES	No
Adj. R^2	.26	.14	.28	.32	.20
N (respondents)	2,051	3,069	1,940	1,940	1,825 (Westerners out)

Notes: Entries are standardized beta-coefficients with partial correlation coefficients in parentheses. Test statistics for multicollinearity (VIFs), heteroskedasticity (White test) and influential cases (DFFITs) reveal no violation of Ordinary Least Squares assumptions. [a)] 10-point scale on importance of God in respondent's life.[b)] Measured in years.[c)] Dummy (1: female, 0: male)[d)] Dummy (1: married, 0: otherwise) [e)] Count variable.[f)] 9-point ordinal scale in ascending order of education level.[g)] Dummy (1: interview in Swedish or English, 0: all else). [h)] 4-point ordinal scale indicating in ascending order whether respondent has a job, a car and savings (0: none of them, .33: one of them, .66: two of them, 1: all of them). [i)] Dummy (1: Muslim denomination, 0: all else). [j)] Measured in number of years since 2007.[k)] Western Church exposure of respondent's home country from Schulz et

integration and duration of residence in Sweden are supposed to contribute to stronger emancipative values, although the duration of residence only shows limited variation from one to ten years and does not eliminate the fact that migrants are first-generation migrants who finalized their formative phase of socialization in their country of origin (a reason why migrants from Africa and the Middle East in this sample do not differ in their emancipative values from the people in their countries of origin). Since people from a Muslim background and strongly religious people tend to adhere to patriarchal family, fertility and sex norms and because these norms stay in conflict with emancipative values[747], we expect Muslim denomination and religiosity (independent of its specific denomination) to exert a depressing effect on emancipative values.

Model 1 in Table 10-7-1 shows only the effects of the respondents' individual characteristics. It turns out that the migrants' education and religiosity exert by far the strongest effects on their emancipative values and do so in the expected direction, that is, increasing emancipative values in the case of more education and decreasing them in the case of stronger religiosity. Language proficiency (with a positive influence) and Muslim denomination (with a negative influence) are also highly significant in the expected direction. Besides, we tested for an interaction between Muslim denomination and religiosity but found no significant effect, indicating that the impact of these two manifestations of religion is additive rather than mutually amplifying. Taken together, the significant variables explain twenty-two percent of the total variation in the migrants' emancipative values, which—for individual-level data—is quite impressive.

Model 2 uses only the WC-exposure and the CW-Condition of the migrants' countries of origin as predictors. With only these two background variables, the model explains a highly

significant twelve percent of the total variation in the migrants' emancipative values. The effects of both the WC-exposure and the CW-Condition are significant and positive but, under mutual control, the CW-Condition's effect is more significant and more than four times larger in magnitude than the effect of the WC-exposure.

Model 3 adds both the two background variables and the previous set of individual characteristics, except the religion-related variables. The CW-Condition retains its highly significant positive effect, while that of the WC-exposure drops further in magnitude and turns insignificant. This model also controls for the level of economic development (using the UNDP's Human Development Index[748]) and the level of democracy (using V-Dem's Liberal Democracy Index[749]) of the migrants' country of origin at the time when they left it.

Model 4 now adds the two religion-related variables. The CW-Condition again retains its highly significant positive effect, while the effect of the WC-exposure now just passes the lowest significance threshold, yet the effect remains weak. The effect of the CW-Condition, albeit remaining significant and positive, drops to two-thirds of its previous magnitude after introducing religiosity. Hence, religiosity absorbs some of the CW-effect, which suggests that the positive CW-effect on emancipative values operates partly via its diminishing effect on religiosity, which then in turn gives room for stronger emancipative values. Model 5 excludes migrants from Western countries in order to test whether the CW-effect only shows up as significant and positive because of the sharp contrast in the CW-Condition and emancipative values between migrants from Western and non-Western countries. Yet, the CW-effect remains highly significant and positive, while the WC-effect turns insignificant again and remains weak. Because of the truncation of variance that the exclusion of Western migrants incurs, the explained variance now drops to fifteen percent, which is nevertheless still decent for individual-level data.

The regression models in Table 10-7-2 mirror those from before; we just switch to religiosity as the dependent variable. As is obvious throughout all models, the CW-Condition shows a highly significant and strongly diminishing effect on the migrants' religiosity, also under exclusion of Western migrants. The effect of the WC-exposure is mostly insignificant and weak and not consistently negative. In combination with the fact that the CW-effect on emancipative values drops in magnitude upon the inclusion of religiosity, the CW-Condition's strongly diminishing effect on religiosity shows that the CW-Condition enhances emancipative values partly by diminishing religiosity. Given that the WC-exposure is itself a directly religion-related variable, the fact that its effect on religiosity is greatly outperformed by the CW-Condition lends further credibility to the CW-Theory.

Summary

Beyond countries, evidence from a great variety of diverse spatial perspectives strongly confirms some of the key emancipatory impulses that our country-level examination attributes to the CW-Condition. Depending on the specific spatial resolution, different data are available, for which reason the confirming pieces are not exactly identical across all spatial perspectives.

Yet, the conclusion remains that from each out of seven entirely different spatial perspectives, we find striking confirmatory evidence for an emancipatory impulse of the CW-Condition.

First, among several hundred local pre-industrial populations around the world (mostly at the pre-industrial stage), populations in CW-areas persist in larger migratory distance from the supposed human origin in East Africa, which implies that CW-areas are generally younger human habitats. These habitats tend to exhibit greater food and disease security, suggesting a depressive effect on mortality, which implies reduced fertility pressures on women. Pre-industrial local populations under the CW-Condition tended to adopt agriculture later (or did not adopt it at all) but once and where they did it, their commercial and technological development proceeded faster than that of non-CW populations. Women in local CW-populations married later and their consent has been more mandatory than in non-CW populations, which shows a beneficial effect on commercial and technological development. CW-populations were less engaged in slavery and other forms of forced labor; they rose their children in a less punitive manner and taught them more individual self-reliance; and they entertained more autonomous and consensual forms of local decision making under the inclusion of women.

Second, using the world's roughly 64,000 inhabited sub-national grid cells, it turns out that the CW-Condition and its supposed developmental outcomes, like child mortalities and per capita incomes, vary more massively between than within countries, proving once more that countries provide the decisive territorial frame for societal development. Nevertheless, even when isolating the pure within-country variation among the inhabited world's sub-national grid cells, the CW-Condition exhibits a significantly and strongly depressing effect on child mortality, even controlling for the grid cells' per capita incomes.

Third, zooming into the largest country of the world, Russia, there is only limited variation in the CW-Condition and historic emancipatory outcomes among the Czarist empire's 98 sub-national districts (i.e., *oblasts*). Still, cross-district variation in the CW-Condition significantly associates with lower labor demands in agriculture, reduced child mortality in the age range from one to five, lower female fertility and higher marriage ages of women as well as enhanced industrial productivity. These historic emancipatory outcomes in turn strongly predict provincial differences in contemporary emancipatory outcomes, including per capita incomes, emancipative values and a vote cast for liberal-progressive candidates.

Fourth, looking at the EU's roughly 300 sub-national NUTS-II regions, cross-regional variation in the CW-Condition strongly associates with corresponding variation in emancipatory outcomes today, including material conditions (economic development), mentality patterns (emancipative values) and institutional settings (indiscriminate government). Moreover, cross-regional variation in the CW-Condition correlates strongly negatively with historic female fertilities and positively with historic female marriage ages, which are manifestations of female reproductive autonomy back in time—a key aspect of emancipatory societal constellations. Logically, the CW-Condition's emancipatory effect on these historic, sexuality-related variables partly mediates the CW-Condition's effect on contemporary emancipatory outcomes.

Fifth, focusing on the 275 sub-national provinces of the world's nine largest countries (i.e., Russia, Canada, the US, China, Australia, Brazil, Kazakhstan, India and Sudan), we find that cross-provincial variation in the CW-Condition significantly associates with corresponding variation in the Human Development Index and indicators of female reproductive autonomy.

These results replicate themselves even under much narrower scope conditions, that is, when zooming in into the US's, China's and India's sub-national divisions.

Sixth, instead of concentrating on the sub-national level, one can also examine the links of the CW-Condition to historic and contemporary emancipatory outcomes at the supra-national level, looking at twenty-eight supra-national geographic neighborhoods and twelve ethno-linguistic population families. Here, the positive link between the geographic neighborhoods' and population families' aggregate CW-Condition and female reproductive autonomy in 1800 CE as well as the positive link between the CW-Condition and human empowerment in 2018 surfaces powerfully. Stronger links among more highly aggregated units of analysis result from a sequence of facts:

(*a*) variation in geo-climatic configurations, like the CW-Condition, is much more pronounced *between* than *within* spatial units;

(*b*) cultural diffusion of developmental outcomes proceeds more easily *within* than *between* spatial units;

(*c*) the space-boundedness of cultural diffusion makes developmental outcomes more similar *within* and more dissimilar *between* spatial units;

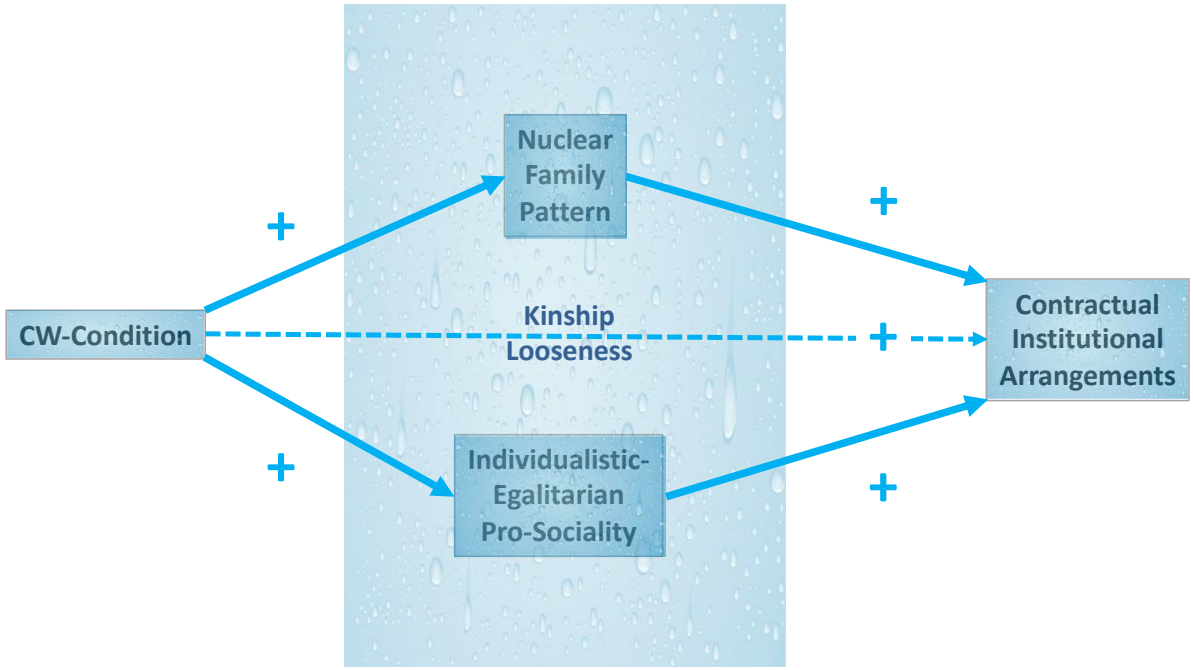
(*d*) as a consequence, variation in both geo-climatic conditions and developmental outcomes—as well as the covariation between the two—are by a sizeable magnitude larger and more systematic *between* than *within* the spatial units under consideration;

(*e*) the more highly aggregated in space one's units of observation are, the more of the *small*-scale and *arbitrary within*-unit variation is blinded out and the more of the *large*-scale and *systematic between*-unit variation is in focus;

(*f*) therefore, patterns of covariation between geo-climatic conditions and developmental outcomes gain in clarity as we climb up the *ladder of spatial macroscopy* (from provinces inside nations to nations inside culture zones to culture zones inside human civilization).

Seventh, we zoom into Sweden as the *most* emancipatory country in the world and as the one that welcomed on a per capita count the most immigrants from some of the world's *least* emancipatory countries during the refugee crisis of 2015. We focus on first-generation migrants because they have not been socialized under Sweden's highly emancipatory culture but under the culture of their country of origin. Fully in line with expectations derived from the CW-Theory, we find that variation in the CW-Condition of the migrants' countries of origin strongly predicts the migrants' support for emancipative values: Migrants from countries with a more pronounced CW-Condition show stronger support for emancipative values. Partly, the emancipatory effect of the CW-Condition operates via a depressing effect on the migrants' religiosity. This is not surprising because religiosity is the most powerful source of patriarchal family, fertility and sex norms and these norms contradict the emphasis on gender equality and reproductive freedoms inherent in emancipative values. Once more, this finding highlights the

Figure 10-1. The CW-Condition‘s Contractarian Effect in an Integrated Mediation Model



Note: Graphic summarizes the mediation of the CW-condition‘s contractarian effect as it appears simultaneously on three domains of evidence (nations of the world, Europe‘s sub-national provinces and pre-industrial ethnicities around the globe), controlling for Western church exposure and other historic influences.

CW- condition’s depressing effect on patriarchal family, fertility and sex norms as a key mechanism of its overall emancipatory impact.

Beyond countries, seven entirely different domains of evidence confirm an emancipatory impulse of the CW-Condition on developmental outcomes. And all seven instances confirm with a variety of indicators that the CW-Condition’s emancipatory impulse originates in this condition’s operation against patriarchal control over female sexuality in the families and households of ordinary people.

To further support this conclusion, SOM-Sections S6, S7 and S8 provide a plethora of supplementary evidence. SOM-Section S6 uses the study design of Jonathan F. Schulz and his co-authors’ “Western” church analyses by adding the CW-Condition to their predictors of their favored emancipatory outcomes, including kinship intensity and elements of egalitarian individualism. Using the best available CW-index on each of three domains of evidence, we find that the CW-Condition significantly and strongly predicts historic as well as contemporary emancipatory outcomes across countries, local tribal groups and sub-national European provinces. These results are robust against the inclusion of the Western church whose influence actually turns out to be insignificant or negligible in size, once the CW-Condition is factored in.

SOM-Section S7 dissociates from Schulz et al.’s study design and its specific selection of outcome variables, which are relevant but not pivotal in our overall emancipatory framework. Thus, S7 presents an encompassing mediation analysis, using a less optimal CW-index but one that is perfectly consistent across the three mentioned domains of evidence: countries, tribes, provinces. As schematized in Figure 10-1, the mediation analyses reveal that the CW-

Condition favors contractual institutional arrangements in government, and does so via its strengthening of kinship-loose nuclear family patterns and an egalitarian-individualistic form of pro-sociality at the grassroots of society. Again, these findings hold in equal strength across countries, tribes and provinces, with the latter examined under considerably narrowed scope conditions inside Europe. And once more, the evidence proves robust against the inclusion of the Western church, in spite of using an index that—for reasons of consistency—measures the CW-features with less precision. Given that measurement imprecision operates as a disturbance term that deflates rather than inflates truly existing relationships, the fact that the supposed emancipatory CW-effects become evident against this deflationary tendency lends further credibility to these effects' validity.

Finally, SOM-Section S8 presents yet another simplified version of the CW-index. This is done to demonstrate that the CW-Condition's emancipatory effects are neither due only to its equatorial distance or coastal proximity aspect but due to the very interaction between the two. Also, leaving out the contextual culture zone element from the CW-index's measurement does not undermine the emancipatory functioning of the index. The same holds true under control of a Northwestern Europe dummy, which captures every possible singularity of this region, even those of which we are not aware. Including this region dummy does not disturb the CW-index's emancipatory performance, which invalidates the concern that this performance only surfaces because the CW-index is tailored to a maximum capture of Northwestern Europe's singularities.

In summary, the emancipatory impulses of the CW-Condition show up under an impressive multitude of different index operationalizations, different control variable sets, different dependent variable specifications, different modeling techniques and different domains of observation in both time and space. All in all, we consider the hypothesized emancipatory role of the CW-Condition as empirically credible under the scrutiny of observational data of any possible scope and variation.

11 The CW-Condition and Genes

Contrary to the new fashion in the social sciences, we see little evidence for a prominent role of genes in societal development—except for the trivia that humans' genetically encoded capacity for learning lays the foundation of our species' potential to develop culture.

The strongest evidence we could find for the role of genetic traits in populations' development shows that lactose tolerance, which could be seen as a genetic marker of individualism, is strongly favored by the CW-Condition. The individualistic impetus of lactose tolerance in turn tends to shape languages in favoring linguistic agency. These findings make sense insofar as they pinpoint a connected ecological-genetic-linguistic foundation of individualism. However, the influence of the CW-Condition on contemporary emancipatory outcomes is by no means mediated via genetic or linguistic anchors. Instead the CW-Condition completely bypasses these anchors, showing a direct influence on emancipatory features, most clearly on greater female reproductive autonomy and its subsequent effect on higher cognitive lifetime investments. Because of that, the genetic and linguistic anchors need to be interpreted much more as *markers* than as *determinants* of an emancipatory pathway towards human empowerment.

We experimented with alternative indications of genetic population differences. Yet, the evidence for a role of these differences in societal development is weak. Specifically, we analyzed the demographic prevalence of the Val$^{108/158}$Met polymorphism of the COMT (catechol-o-methyltransferase) gene, the long-allelic version of the 5-HTTLPR gene and the DRD4 receptor gene. All three genes affect the emission level of stimulating hormones, most importantly dopamine and serotonine. Data from the "allele frequency database" (ALFRED) at Yale University seem to suggest that these genes exist in different frequencies in different populations.[750] What is more, these genes seem to be linked with traits that supposedly predispose people "chronically" to individualism . In the case of the COMT gene, there is a positive link with one of the "Big Five" personality traits that should perpetuate an individualistic predisposition: "openness to change."[751] In the case of the HTTLPR gene, there is a proven link of its long-allelic version with individualism.[752] As far as the DRD4 receptor gene is concerned, scholars claim that it predisposes people to "novelty seeking," which is definitely an individualistic orientation.[753]

However, we could not establish any significant influence from the demographic frequencies of these genes further down the path diagram in Figure 9-1a to 9-1c, when placing them next to dairy options in the layer of genetic factors. To avoid over-complicating the diagram, we simply left these variables out. This decision is also justified in light of the small number of countries for which these measures are available ($N \sim 45$). Furthermore, it is not evident that measures of the demographic prevalence of these and other genes are collected with similar sampling procedures,

which casts serious doubts on cross-national comparability. Until better and more complete genetic data are available, the final judgment about the role of genetic population differences in societal development is pending.

A Racial "Theory" of Development

We would not be surprised if the evidence for a prominent role of genetic population differences remains weak. With the emergence of culture, our species has moved evolution onto an entirely new level at which selection continues to do its work, but it does so in escape from the slow pace of genetic mutations. On the level of culture, selective pressures operate much faster in (*a*) creating variation among inheritable features and (*b*) in sorting out the differential success of the respective variants.[754] The reason for the greatly accelerated speed of cultural evolution compared to genetic evolution is clear: Genetic evolution is driven by random mutations, which is a completely mindless process that has no intention and no agent behind it. In stark contrast, cultural evolution advances through intentional learning, experimentation and invention, which is an agency-driven process. In a sense, by giving rise to the human mind, evolution has so to speak invented its own agent and designer, most obviously manifest in genetic engineering. In fact, in shaping brains, evolution has invented awareness of itself.[755] At any rate, detachment from genetic determinacy is, thus, the very essence of cultural evolution; it is actually its whole point. Recognizing this fundamental fact, the idea that variation in prevalent genes between populations exerts a major influence on societal development is, in our eyes, inherently implausible.

One genetic theory of societal development, however, deserves our attention because it seems to have intuitive appeal among some scholars. The key point of departure is that human individuals differ in their cognitive ability, as measured in standardized Intelligence Quotient (IQ) tests. It is undisputed that these individual-level differences in IQ-test performance are to a large extent genetically inherited, thus indicating innate differences in cognitive ability.[756] Now, it is well documented that populations also differ in their aggregate IQs alongside ethnic lines, to the effect that Caucasian "Whites" on average outperform African "Blacks."[757] And because individual-level differences in IQ performance are genetically inherited to a considerable extent, the ethnicity-level differences in aggregate IQs might also be genetically inherited. If so, populations with higher aggregate IQs are naturally smarter, which would explain why the Global North is more developed than the Global South and why, within the US, African Americans are poorer on average than Caucasian Whites. Observations such as these offer indeed the stuff for a genetic theory of societal development, which boils down to a racial theory of human intelligence.

But why would human intelligence differ in the aggregate alongside hereditary ethnic ancestries? Some scholars argue that a population's migratory distance from the human origin corresponds with genetic differences. One of these differences involves a cognitive correlate of innate intelligence: novelty seeking. The idea is that populations at greater migratory distance from the supposed human origin in East Africa have spent more time at the migration frontier.[758] These

populations faced more serious challenges because they encountered unknown ecological niches that required novelty coping strategies. Thus, selective pressures for novelty seeking and intelligence increased with a population's migratory distance from the human origin, bestowing higher average IQs on the more distant populations. If so, any influence attributed to migratory distance in our path model (see Chapter 9) would indicate an influence of population differences in innate intelligence. Seemingly supporting this idea, our measure of a territory's migratory distance from the human origin correlates positively with the average IQ of the population inhabiting the respective territory.[759]

Indeed, given their correlation with "natural" features, population differences in average IQs might indicate innate intelligence differences that have been selected for by more challenging environments. The evidence seems to speak even more clearly in favor of this reasoning with respect to temperature: The coolness component of the CW-Condition correlates more strongly with average population IQs than a population's migratory distance from the supposed human origin in East Africa.[760] In conclusion, then, the prominent role that the migratory distance from the human origin and especially the CW-Condition play for human empowerment in our analyses could be taken to mean that populations develop better when their naturally selected intelligence is higher in the aggregate. This would also offer an easy explanation of sub-Saharan Africa's misery: Africans are not smart enough to overcome their hardship.[761] This would resonate with the debate in the US about the genetic determinacy of African Americans' lower average performance in IQ-tests.[762] By the same token, the school performance of Asian Americans, the economic upsurge of some East Asian countries and the traditional economic success of Ashkenazi Jews all would fall in line with these groups' higher average scores in standard IQ tests.[763] Recent claims by Chinese anthropologists that East Asian *homo sapiens* does not share all other human ethnicities' African origin but evolved separately seemingly[764] supports the idea that East Asians' high performance in IQs is ethnically innate, thus feeding the notion of a superior East Asian race now on its way to the top of the world.

Flaws in the Racial "Theory" of Development

Advocates of this ethnic theory of intelligence have found a seemingly convincing defense against the accusation of their findings as propagating racism. As the advocates argue, the fact that a finding is uncomfortable does not make it untrue. Exactly—so, let's focus on the truth part.

The first problem with the ethnic theory of intelligence is logic. Pre-humans have populated many areas of our planet far beyond East Africa, including colder habitats in Eurasia. This raises the obvious question of why then the leap from pre-hominid to hominid levels of intelligence happened in the heat of Africa when the selective pressure for smartness is supposedly so much higher in colder regions. The ethnic theory of intelligence offers no answer to this question.

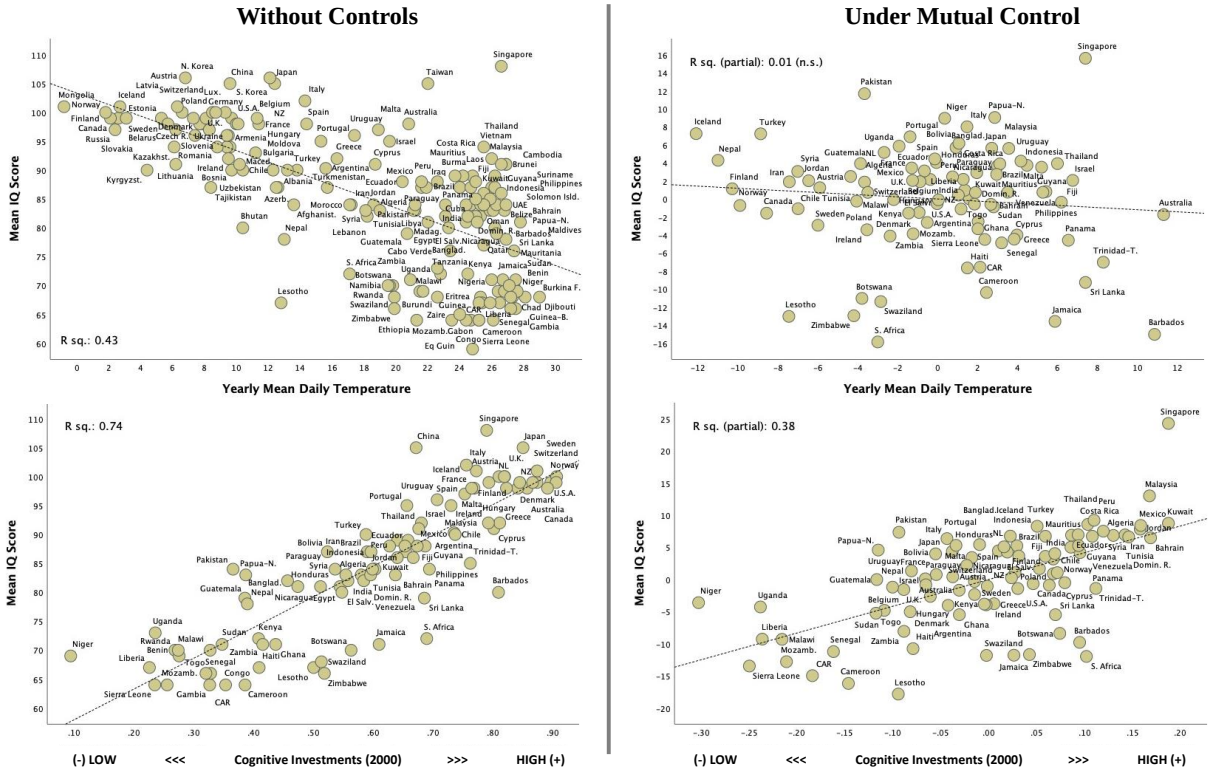
Next, in *The Mating Mind*, Geoffrey Miller suggests that intelligence evolved not so much for its survival value but for its value in courtship.[765] If this is an accurate proposition and the ethnic

theory of intelligence is also true, it follows suit that courtship and mating are more important to humans in cold than in hot climates. We see no plausible reason for such a conclusion, leaving aside the lack of any evidence.[766] Driven by the need of biological reproduction, humans mate in every habitat that they have conquered, which effectively eliminates any geo-climatic differential in the importance of courtship.

What is more, the high performance of East Asians in IQ tests is easily explained, without any reference to genes. For one, the high performance appears specifically in numeracy parts of IQ tests, not in the verbal skill parts. This is an important qualification, especially in connection with the fact that East Asian languages are logographic—a feature known to stimulate spatial imagination. In the same vein, the representation of numerals in these languages is more intuitive and better linked with imaginative memory components, leading to higher math performances among East Asians already in early childhood.[767] In this context, there exists fascinating experimental evidence that speaks flatly against the ethnic theory of intelligence. Dungans, an ethnicity in Kyrgyzstan, are very close in genetic origin to Han-Chinese. Dungans speak Mandarin but do usually not write in Mandarin; instead, they use the Cyrillic alphabet in their writing. Now, if the ethnic theory of intelligence was correct, then the Dungans' average IQ must be as high as that of Han-Chinese people—all else equal. If, however, the linguistic theory of intelligence is accurate, the Dungans' average IQ should be closer to that of other Cyrillic-writing ethnicities in Kyrgyzstan than to that of Han-Chinese—again, all else equal.[768] As a controlled experiment reveals, the latter is the case, which clearly favors the linguistic theory of intelligence over the ethnic theory. We could easily extend the list of facts that appear inherently implausible, if the idea that "racial" intelligence differences are innate was true. But let's move from selected counterfactuals to systematic evidence.

It is one thing to admit that differences in intelligence between individuals are to a significant extent genetically inherited. But it is a completely different thing to claim that variance in *group*-mean IQs as well are genetically inherited. An alternative interpretation is that these group differences do not derive from natural *selection* but instead reflect group differences in intellectual *training* and *exposure* to cognitive stimulation, which in turn derive from different levels of socioeconomic development. Indeed, higher levels of socioeconomic development involve earlier and longer lasting education, a more extensive penetration of society with scientific knowledge, a greater role of analytical thinking and abstract concepts in daily activities and professional careers, a more intense exposure to information flows and greater experience with sophisticated communication technology. In that sense, socioeconomic development promotes a population's intellectual training in conceptual thinking, which in turn raises its average IQ, especially in tests tailored to capture the human ability to think in abstractions, be it in geometry, arithmetic or poetry. If so, higher population-level IQs are the consequence rather than the source of more advanced socioeconomic development. In this case, the ethnic theory of intelligence gets the causal arrow in the relationship between IQs and development wrong: The arrow runs from development to IQs, not the other way around.

Figure 11-1. The Effects of Heat Exposure and Cognitive Investments on IQs

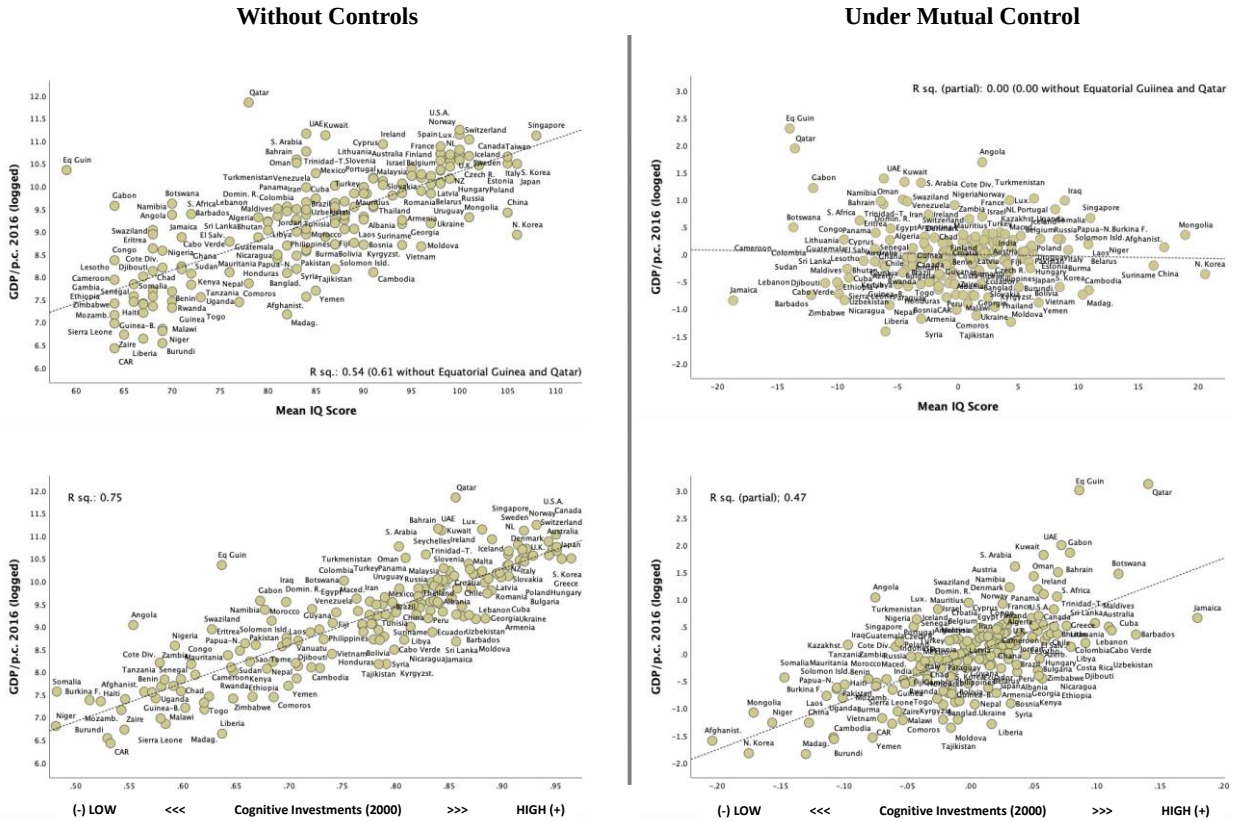


Note: IQ measures from Vanhanen and Lynn from various years in the early 2000s.Low-vs-high cognitive investments are identical with Welzel's (2013) breeding-vs-building index, which combines schooling years and inverse fertility rates

These alternatives are easily testable through regression analyses. If the interpretation of population-level IQ differences as being naturally selected is accurate, then characteristics measuring the populations' natural conditions must prevail as predictors of population-level IQs in a multivariate setting. If, by contrast, population-level IQs result from the populations' cognitive training, characteristics related to the populations' intellectual mobilization and informational stimulation must prevail as predictors of population-level IQs.

The regression test demolishes the ethnic theory of intelligence.[769] Using the strongest nature-related correlate of population IQs—mean annual temperatures—we detect a strongly negative relationship: The populations' mean IQ scores drop systematically alongside higher mean annual temperatures.[770] At first glance, this finding seems to support Tatu Vanhanen's theory due to which the technological requirements to survive in cold climates emitted stronger selective pressures for human intelligence. The upper-left diagram in Figure 11-1 visualizes the relationship.[771] However, our "quantity breeding-vs-quality building" index of reproductive investment[772] shows a much stronger impact on the populations' mean IQ scores than annual mean temperatures (lower-left diagram in Figure 11-1).[773] On the "quantity breeding" side of reproductive behavior, children face a high mortality rate, have many siblings and receive little attention, care and education. On the "quality building" side, it is the opposite: Mortality and fertility are low and parents invest a lot of

Figure 11-2. The Effects of IQs and Reproductive Investment on Prosperity



Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

effort into their children's skills and education. For this reason, the "quantity breeding-vs-quality building" index is an excellent measure of cognitive investment, stimulation and training. Now, under mutual control, it turns out that cognitive training retains its positive and significant effect on population IQs (lower-right diagram), while the effect of annual mean temperatures evaporates (upper-right diagram). Higher population IQs are, hence, not the result of an environmental selection that makes higher IQs genetically innate to certain populations. Instead, higher population IQs are the result of more cognitive training, which is inherent in the quality-building type of reproductive investment.

It is certainly true that variation on the breeding-vs-building continuum of reproductive investment in turn is environmentally selected, visible in the CW-Condition's tendency to shift reproductive investment from quantity-breeding to the quality-building.[774] But this only means that cognitive training varies alongside the CW-Condition, while the innate part of human intelligence that undergoes this training does not.[775]

The ethnic theory of population IQ differences implies that some populations are more developed because their people are naturally smarter. We, however, argue that population IQ-differences do not exist because these differences are innate but because differences in reproductive behavior expose people in different degrees to cognitive training.

If our proposition is accurate, then the residual variation in population IQs that exists independent from cognitive training should be so negligable that it exerts no effect of its own on development. To test this proposition, Figure 11-2 uses again the "quantity breeding-vs-quality building" index of reproductive investment as our indicator of the populations' exposure to cognitive training. As the dependent variable, we choose per capita incomes in 2016, which is the most widely used indicator of economic development.[776] In the two left-hand diagrams we see that, in the absence of any control, both population IQs and cognitive training predict per capita incomes quite well, although the predictive power of cognitive training is considerably larger, with seventy-five percent of explained variance compared to fifty-four in the case of IQs. Given this difference in predictive power, it is not surprising to see in the two right-hand diagrams that, under mutual control, the effect of cognitive training exceeds the one of population IQs. But not only that. The IQ-effect actually dissolves under control of differences in cognitive training. In other words, differences in population IQs exert no developmental effect at all, independent from cognitive training. Even if we interpreted the variation in population IQs in the upper-right diagram of Figure 11-2 as innate, we must conclude that innate intelligence has no developmental effect whatsoever, whereas cognitive training has.[777]

These findings are consistent with the cognitive mobilization argument and speak conclusively against the idea of some populations being *naturally* smarter than others. High child mortalities and high female fertilities combined with low education are hardly genetically inherited. All three of these "quantity breeding" aspects of reproductive behavior diminish exposure to cognitive training. As we have pointed out, these preferences for reproductive strategies prevail for other reasons than genes. And these preferences are changing over time from quantity breeding to quality building as environmentally induced fertility pressures recede under the imprint of dropping child mortalities almost everywhere in the world.

Insight:

> *Our conclusion from these findings is that the innate potential of human populations to develop is equal; what makes all the difference are external opportunities to unlock this potential.*

This conclusion is more easily reconcilable with the "Flynn effect": the significant rise of IQs among various populations.[778] The pace of these increases is too fast to be driven by changes in genes; and the fact that these increases have been observed specifically in societies with advanced knowledge economies further corroborates the interpretation of population IQs as an indicator of cognitive *training*, not *potential*. Consequently, the interpretation of the link between population IQs and societal development needs to be reverted: Higher population IQs are not the cause but the consequence of societal development.

Summary

Statistics about ethnic intelligence differences exist and are widely used, often leading to heated controversies with malignant mutual accusations that are more inspired by ideology than by evidence. The Bell Curve Hypothesis by Richard Herrnstein and Charles Murray is one of the most prominent examples.[779] Published in 1994, the authors assembled systematic evidence for White Americans' higher average IQ-scores compared with African Americans. Since intelligence is partly genetically inherited, the Herrnstein/Murray evidence supposedly implies that African Americans' lower cognitive performance in IQ-tests is due to their genetically inherited lower cognitive ability. If so, we had an easy explanation of White Americans' greater economic success and African Americans' underperformance in the US.

Generalizing this argument from the US to the world as a whole, all average IQ-differences between ethnic groups result from innate group-related differences in cognitive ability, which then offers a simple explanation of societies' different developmental success: The more developed countries are more successful because they are composed of cognitively more capable ethnicities. Much of Africa would, hence, remain "underdeveloped" because its dominant ethnicities lack cognitive ability. This is the implicit essence of the ethnic intelligence theory of developmental differences and it offers a categorical alternative to the CW-Theory. The difference is indeed categorical because the CW-Theory attributes developmental differences not to differences in the quality of the respective *populations* but to differences in the quality of their *habitats*, thus pitching a decidedly *ecological* explanation of development against a fundamentally *biological* explanation.

In light of the inherent contradiction between these two types of explanation, it is of critical importance to know which one comes closer to the truth. Fortunately, it is easy to subject them a conclusive test, using the latest data of countries' per capita incomes as the dependent variable, which is still the most intuitive and most widely used measure of developmental success. If the CW-Theory of development is correct and developmental success originates in the habitats' ecological qualities, the CW-Condition must be the more powerful predictor of per capita incomes. If the ethnic intelligence theory of development is correct and developmental differences originate in the populations' biological qualities, the populations' average IQs must be the more powerful predictor. The regression test closes the case on this issue conclusively: In the bivariate consideration, the CW-Condition's predictive power over per capita incomes surpasses that of average IQs by a remarkable margin and—under mutual control—the effect of average IQs turns entirely insignificant while that of the CW-Condition remains intact. Consequently, *ecology* trumps *biology* in the making of civilization.

Remarkably, the above regression test treats the ethnic intelligence theory favorably because it operates under the premise that group-mean differences in IQs are entirely a matter of genetic inheritance. The obvious question, however, is whether this premise has any justification at all and to what extent group-related differences in average IQs actually are genetically inherited, rather than developmentally induced. In the latter case, the causal arrow runs into the opposite direction of what the ethnic intelligence assumes: Populations' average IQs are a symptom instead of a cause of their development.

Cognitive performance in IQ-tests always has two components: cognitive ability, which is a matter of genes, and cognitive training, which is a matter of socialization. The critical question, then, is which component determines the differences in country-based average IQs more: Are the better performing societies better because of their people's higher cognitive ability or because of these people's better cognitive training? To answer this question, we must consider the arguments that advocates of the ethnic intelligence theory provide to claim that country-related differences in average IQs indicate primarily differences in cognitive ability.

The simplest argument has been put forward by Tatu Vanhanen. Populations in colder climates are confronted with harder cognitive challenges because—in order to survive in colder climates—people must develop smarter technologies related to clothing, heating and housing. Accordingly, cold environments emit a stronger selective pressure for particularly high levels of human intelligence. As a consequence, more intelligent individuals reproduce more successfully and this modifies the gene pool over the generations in making the genes of intelligent people more frequent. The respective population's innate cognitive ability then rises in the aggregate. Should this be true, a country's mean annual temperature is an excellent indicator of the respective habitat's selective pressure for innate cognitive ability and, hence, should turn out as the more powerful predictor of a population's average cognitive performance in IQ-tests.

If, by contrast, average cognitive performance in IQ-tests reflects related differences in average cognitive training, indicators of cognitive training should be more important. Our indicator of cognitive training is the *quantity breeding*-vs-*quality building* orientation in people's reproductive investment, which represents the trade-off between fertility rates and schooling rates, indicating more cognitive training in the case of lower fertility and higher schooling rates. Clearly, when families give birth to fewer children and invest more time and attention into the development of each child's individual skills, this is about the children's cognitive training, rather than their innate cognitive ability.

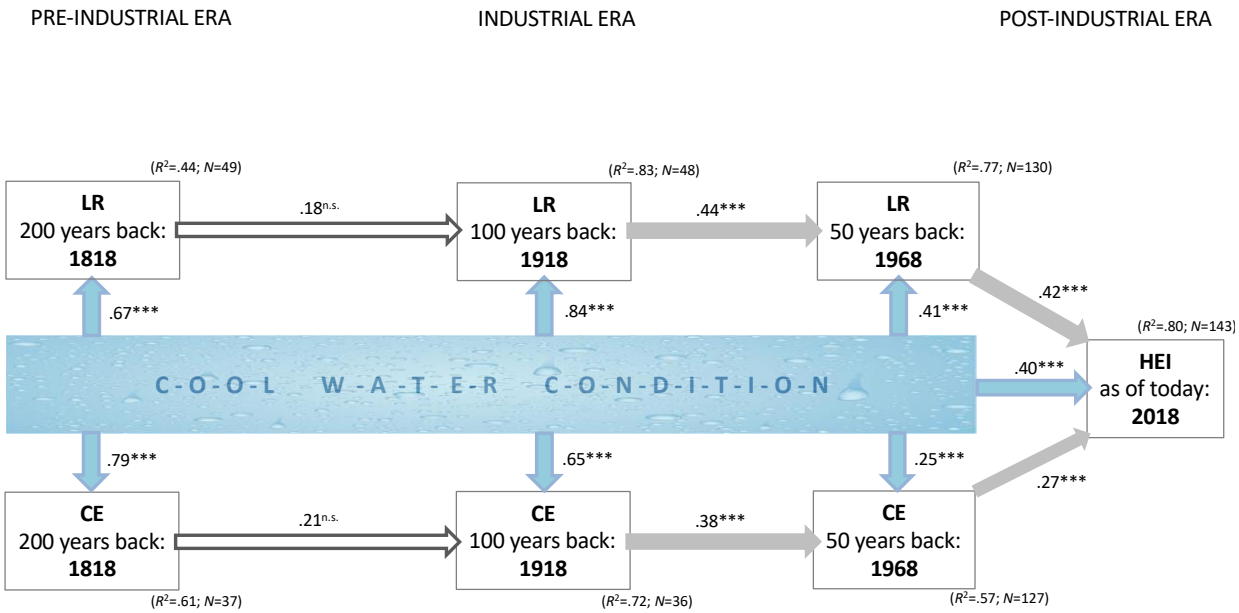
The regression test resolves this issue, and again quite conclusively. In a merely bivariate consideration, both mean temperatures and reproductive investment predict average population IQs but reproductive investment does so much better than mean temperature. Under mutual control, only reproductive investment shows significant predictive power over IQs. Consequently, average population IQs are much more about the amount of cognitive training in a society than naturally selected differences in overall cognitive ability. In summary, there is little evidence for the ethnic intelligence theory. Once more, our findings about the pivotal role of reproductive investment underline the importance of family, fertility and sex norms in societal development.

12 The Recess of the CW-Condition's Grip

Throughout this monograph, we document in multiple ways that the CW-Condition exerts a powerful impact on developmental outcomes with an emancipatory signature. Yet, we do not need to turn into fatalists in the face of geo-climatic determinism. For geo-climatic determinism does not exist in perfection; it is a matter of degree. And this degree is shrinking over time. To evidence this point, Christian Welzel[780] used World Bank data to show that, from 1980 till 2010, education and longevity grew more rapidly and steeply in countries with a weaker CW-Condition than in those with a stronger CW-Condition. In other words, non-CW regions are catching up, especially in matters of the quantity-to-quality ("births"-to-"brains") transition in women's lifetime investment. At the same time, the extent to which countries intensified their integration into global networks of economic, social and political exchange (i.e., "globalization") strongly predicts their progression in the demographic quantity-to-quality transition, 1980 till 2010 that is.

In a related analysis, Welzel[781] chooses two periods that are separated by the end of the Cold War—a historic watershed that coincides with an acceleration of the world's countries' integration into global networks of exchange. In both periods, Welzel predicts economic growth by the strength of the CW-Condition in a country and its degree of global integration. Welzel takes economic growth data from the World Bank's Development Indicators Series[782] and global integration data from the collection of Axel Dreher and his colleagues.[783] Of course, the CW-Condition did not change between the two observation periods, while global integration increased considerably across the board, albeit to different degrees between countries. Against this backdrop, the author finds that in the period from 1970 till 1990 as well as in the period from 1990 till 2010, both the countries' CW-Condition and their degree of global integration positively predict economic growth (i.e., the increase in the countries' absolute per capita Gross Domestic Product from the beginning to the end of the two periods). But while in the first growth period, the impact of the CW-Condition ($r_{\text{partial}} = .48$) is more than twice as strong than the impact of the countries' global integration ($r_{\text{partial}} = .25$), the two predictors completely switch position in the second growth period and now the impact of the countries' global integration is more than twice as strong ($r_{\text{partial}} = .52$) than the impact of the CW-Condition ($r_{\text{partial}} = .25$). In a nutshell, progressing globalization is evening out geo-climatically induced differences in developmental pace—even more so as globalization progresses disproportionately fast in previously less developed societies.

Figure 12-1. The Emancipatory Effect of the CW-Condition over Time



Acronyms: CE – Civic Entitlements; HEI – Human Empowerment Index; LR – Life Resources.

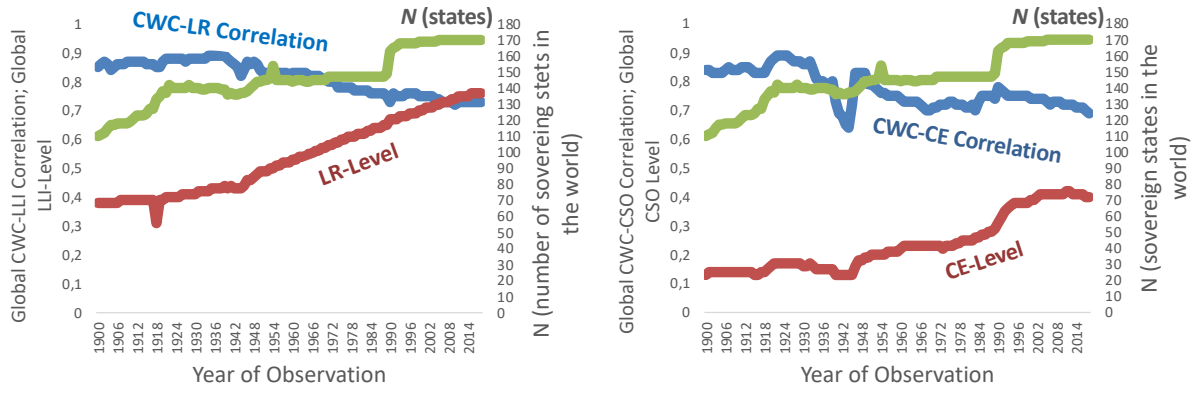
Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

The Glacial Meltdown of the CW-Effect

Throughout this book, our examination evidences a powerful and lasting effect of the CW-Condition on developmental outcomes, most notably those with an emancipatory signature—ever since the first differentiation in such outcomes began to become visible at the eve of the colonial era. However, a true "reversal of fortunes" in the history of civilization is on the horizon: Since recently, we see a slow but steady shrinkage in the power of CW-Condition's emancipatory effect on a global scale.

To dig deeper into this issue, Figure 12-1 traces the CW-effect over a sequence from the pre-industrial to the industrial to the post-industrial eras. The final outcome variable is the human empowerment index in 2018. For the previous stages in the sequence, we decompose the human empowerment index into its material and legal components—life resources and civic entitlements (the motivational component, emancipative values, is not traceable that far backward in time and left out for this reason). A key lesson from this evidence is that the emancipatory effect of the CW-Condition is not exhausted once the initial dose has been emitted two-hundred years ago. Instead,

Figure 12-2. The Glacial Melting of the CW-Condition's Emancipatory Effect alongside Emancipation's Global Progression



Acronyms: CE – Civic Entitlements; CWC – Cool Water Condition; LR – Life Resources.

Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

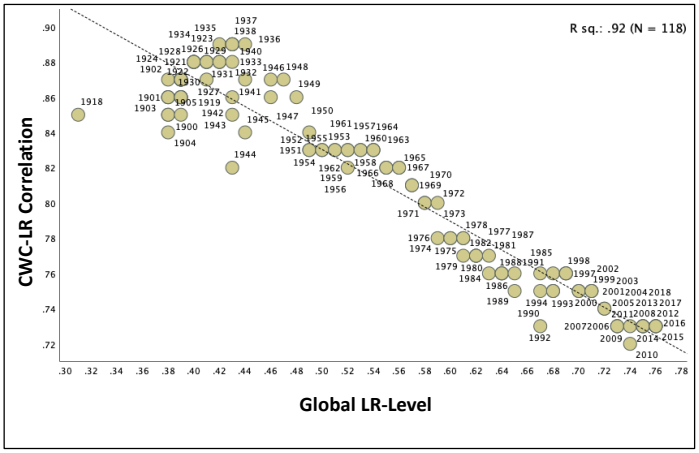
as a factor that is permanently present, the CW-Condition *continues* to exert an emancipatory effect throughout subsequent stages of development until this day.

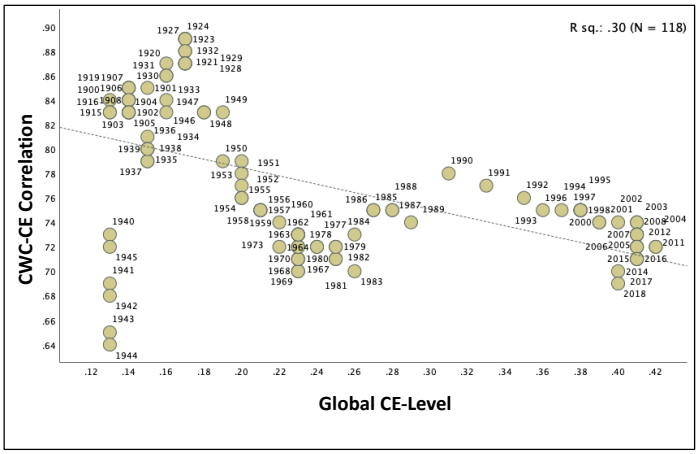
Nevertheless, Figure 12-2 reveals a steady weakening of the CW-Condition's emancipatory effect from the industrial to the post-industrial era. From 1900 till 2018, the CW-Condition's predictive power over life resources correlates with the recency of the year in which it is measured strongly negatively at r = -.90 (N = 119; p < .001). With civic entitlements, the equivalent correlation is again strongly negative at r = -.75 (N = 119; p < .001). On average, the CW-Condition's determination of emancipatory outcomes shranks by .002 correlation-points each year over the past century, with the slope of the decline getting steeper.

Understanding the CW-Effect's Meltdown

This is an important insight because it reveals that, through the passage of time, emancipatory outcomes slowly but steadily detach themselves from geo-climatic conditions. Moreover, Figure 12-2 illustrates that the glacial decline in the CW-Condition's determination power is paralleled by a continuous global progression in life resources and civic entitlements, which documents humankind's glacial ascension on an emancipatory trajectory. As shown in Figure 12-3, mere passage of time explains 86 percent in the decline of the CW-Condition's grip on the global

Figure 12-3. The Glacial Melting of the CW-Condition's Emancipatory Effect by Globally Rising LR- and CE-Levels





Acronyms:
CWC – Cool Water Condition
LR – Life Resources
CE – Civic Entitlements

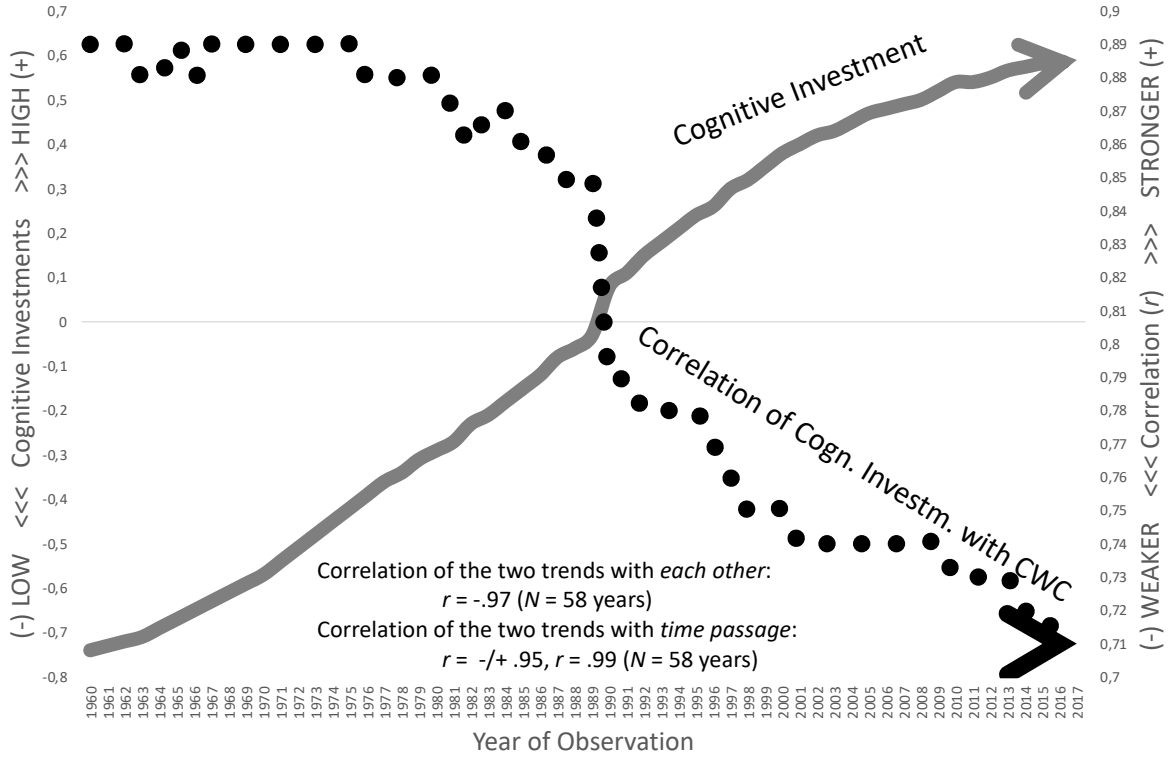
Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

distribution of life resources and 56 percent in the decline of its grip on civic entitlements over the past 118 years.

Asking what it is about the passage of time that weakens the CW-Condition's emancipatory effect, Figure 12-4 gives an answer, showing that the temporal rise in the global level of life resources and civic entitlements unties these two emancipatory outcomes from the CW-Condition. Thus, humanity's constant emancipatory progression itself decouples emancipatory outcomes steadily from the CW-Condition. Obviously, emancipatory dynamics are escaping the iron grip of geography and become increasingly a matter of the policy choices that societies pursue.

But is there a more deep-seated undercurrent driving humanity's emancipatory ascension and the CW-Condition's fading power over emancipatory dynamics? We think that there indeed is such an undercurrent. We see it in human civilization's pervasive quantity-to-quality shift in reproductive investment that turns high female fertility rates into high child schooling rates—which is a sea change in civilizational evolution that is literally happening everywhere in the world, as we have seen in Figures 5-7a to 5-7d in Chapter 5.

Figure 12-4. The Global Quality Shift in Reproductive Investment and the Meltdown of Geographic Determinism



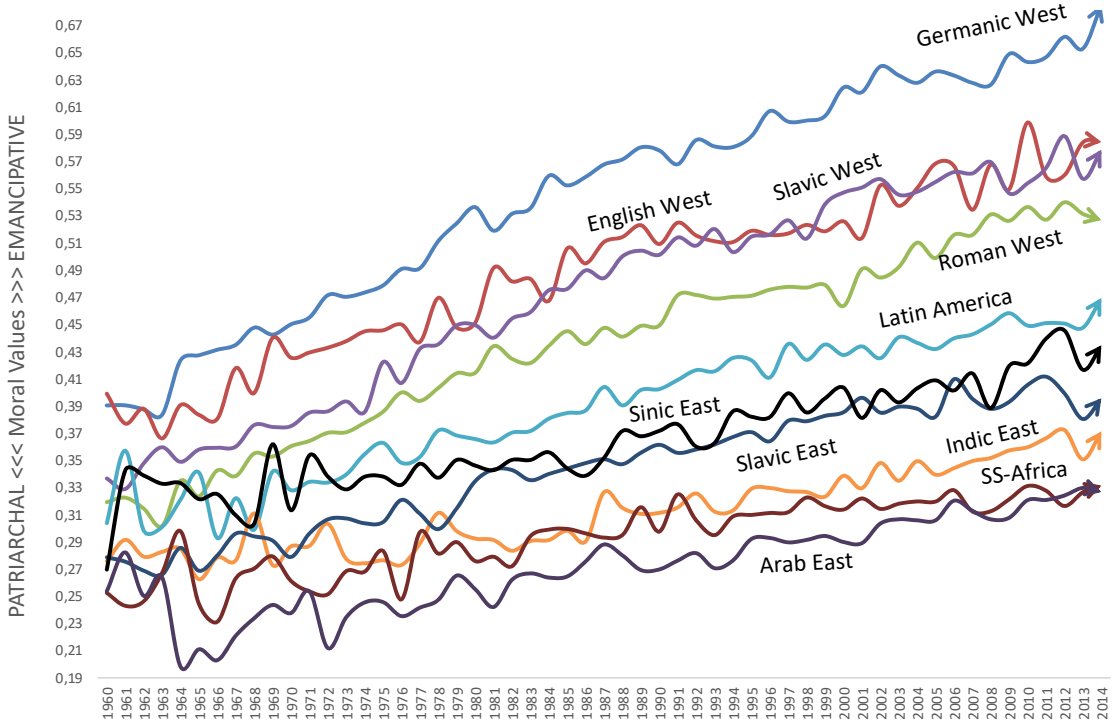
Note: CWC – Cool Water Condition.

Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

As governments introduce compulsory schooling for both girls and boys and as states build and expand their education systems, the skill level of the workforce begins to rise, which allows national economies to slowly climb the knowhow-ladder and to shift investments from providing low-end products and services to high-end ones. Climbing the knowhow ladder increases the demand for skilled labor, which turns education into the most important vehicle to acquire marketable skills and makes educational merit the prime driver of people's placement on the labor market and, eventually, in their society writ large. Especially for girls and women, educational expansion offers previously unavailable career options and life planning choices. Newly available choices mobilize girls' and women's career aspirations and elevate their expectations of what they want out of life. Consequently, humanity's demographic quantity-to-quality shift in lifetime investment is part and parcel of a pervasive process of cognitive mobilization, moral liberation and psychological awakening.

At the same time, better nutrition, hygiene, improving medical services and health care literally everywhere in the world are bringing down child and maternal mortalities while raising life expectancies. Worldwide, the mortality of newly born children not reaching the age of five years has dropped from 132 infants per 1,000 babies in 1960 to 21 in 2015 (West: from 32 to 4, East: from 156 to 21, South: from 133 to 35). In parallel, life expectancies have risen worldwide from

Figure 12-5. The Global Rise of Emancipative Values by Culture Zones (cohort-based estimations)



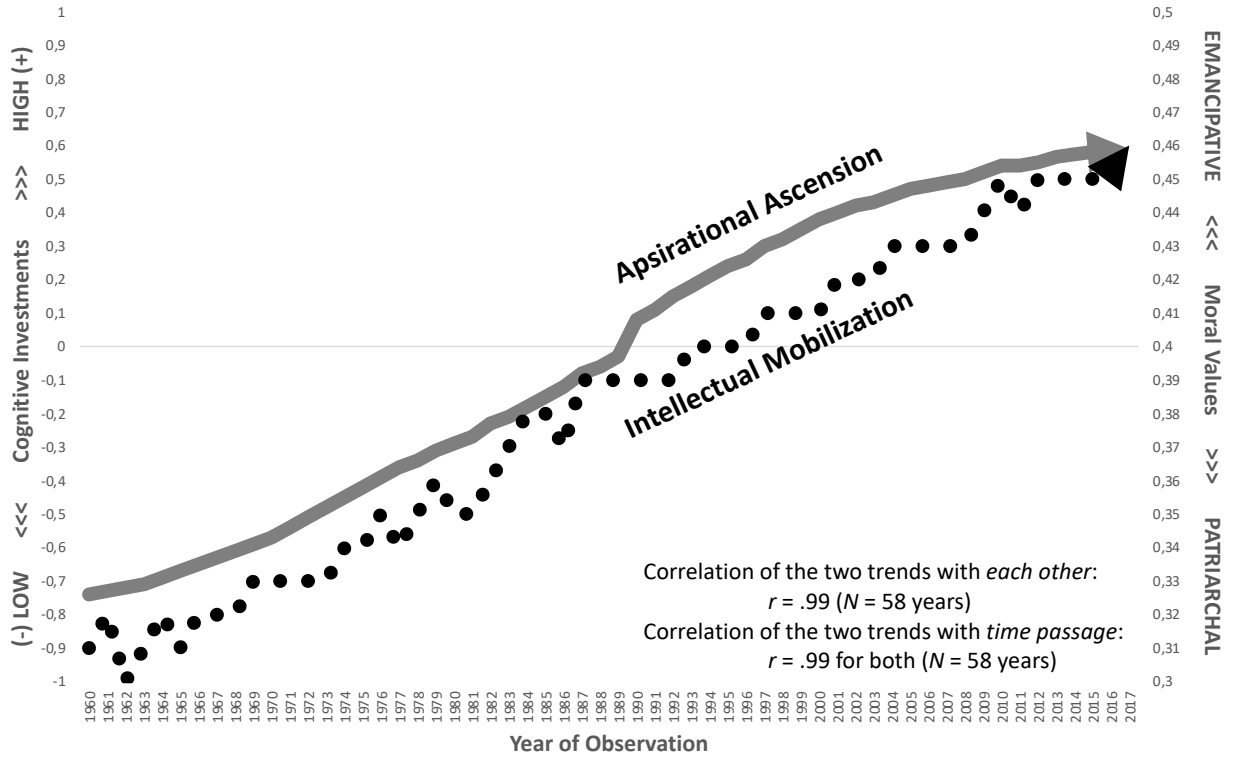
Notes: Emancipative values are backward estimations by transposing cohort differences in a recent survey into a time-series of annual observations, with trend and intercept adjustments, as explained in Section 3 of the Online Appendix. Trends displayed here are based on data from 79 nations, weighting national samples in proportion to the respective country's population size. Estimations are based on data are from the World Values Surveys (www.worldvaluessurvey.org) (Haerpfer, Inglehart, Moreno and Welzel et al., cited in endote 8).

49 years in 1960 to 74 in 2018 (West: from 70 to 81 years, East: from 63 to 74 years, South: from 51 to 70 years).[784] These dramatic improvements in longevity are turning "short" into "long" life histories, with the related expansion of time horizons further elevating people's life aspirations.

Another plausible driver of this aspirational elevation is the mass-scale informational stimulation related to intensifying cross-border communication flows[785], which makes ordinary people around the globe increasingly aware of the living conditions and life opportunities in the world's most thriving places. Awareness of better living conditions turns into expectations with which ordinary people confront their governments and toward which they orient their own life, including career and family planning.

Against the backdrop of this ubiquitous extension of human life histories, continuing the quantity breeding strategy to maximize the number of children becomes a massive waste of opportunities, especially for women. The reason is that maximizing biological reproduction forces females to drop out of education early and to sacrifice career ambition for the sake of marriage and raising a family. With sufficient education and employment opportunities in place, increasing numbers of girls stop sacrificing their life ambitions for family planning. Consequently, fertility rates start to drop and schooling rates to rise, thus further fueling the shift in reproductive investment from quantity breeding to quality building (i.e., "births"-to-"brains"). Figure 12-5 documents the quantity-to-quality shift in reproductive investment on a global scale and on a yearly basis from 1960

Figure 12-6. The Global Quality Shift in Reproducitve Investment and the Rise of Emancipative Values

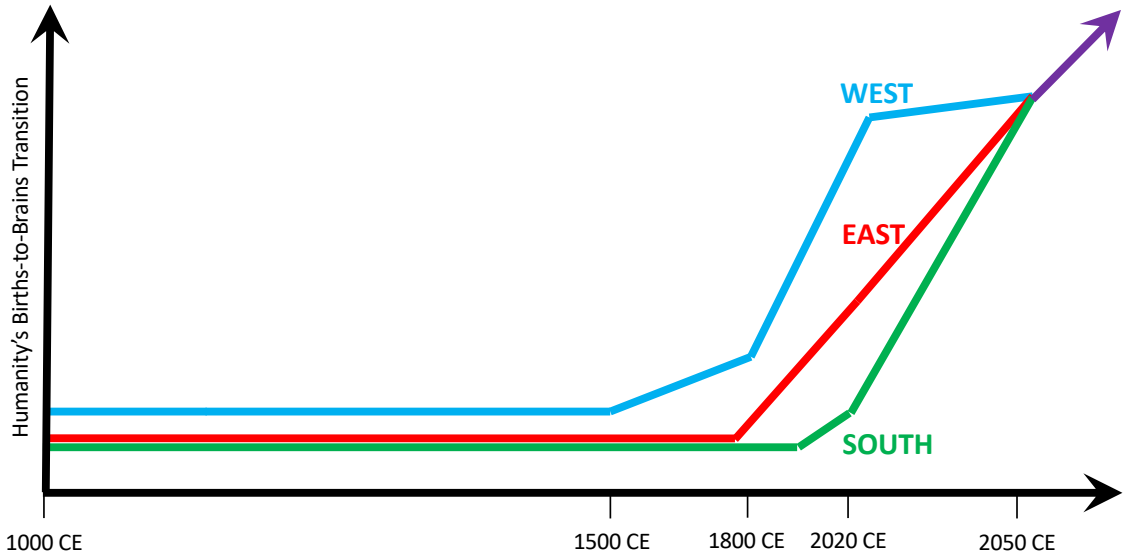


Note: Measurements are explained in the online *SOM* documentation at: www.coolwatereffect.com

to 2018. This dramatic shift explains the corresponding 58-year worldwide rise in the human empowerment index's three emancipatory outcomes—life resources, emancipative values and civic entitlements—at 97, 99 and 97 percent, respectively. And as the "brain" building strategy in reproductive investment becomes increasingly ubiquitous, its correlation with the CW-Condition drops in parallel. Indeed, the spread of the "brain" building strategy correlates with the simultaneous drop of its tie to the CW-Condition over the past 58 years at an astounding r = -.97.

The quantity-to-quality shift in ordinary people's reproductive investment erodes patriarchal family, fertility and sex norms, which are all about male control over female sexuality. The erosion of patriarchal norms and its pivotal pillar—religion—gives rise to emancipative values with their emphasis on sexual self-determination and gender equality. Indeed, the estimations in Figure 12-6 suggest a steady worldwide increase in emancipative values from the 1960s till today. And as Figure 12-7 illustrates, the worldwide quality shift in reproductive investment is a driving source of rising emancipative values. As the emancipatory spirit diffuses around the globe, its tie to geoclimatic conditions loosens. Since emphasis on gender equality and reproductive self-determination are essential elements of emancipative values, the spatial diffusion of these values is not only advancing the globalization of the world; it is also advancing its feminization. As the globalization and feminization of the world progress in unison, developmental outcomes with an emancipatory signature are getting decoupled from the CW-Condition. Human emancipation, in other words,

Figure 12-7. A Stylized Depiction of Humanity's Births-to-Brains Transition



becomes increasingly a feature of all humankind and is steadily ceasing to remain a Western singularity. In other words, the world as a whole is steadily becoming "WEIRDer," thus eroding the West's distinctness. Yet, this does not mean a Westernization of the world but the humanization of global civilization.

Clearly, countries can improve their health care infrastructure and expand their education systems more easily than they can improve their CW-Condition. Therefore, developmental achievements are becoming less a matter of destiny and more a matter of better policy choices. We believe that this evidence testifies to an evolutionary breakthrough of our species—a breakthrough in the sense that accelerating globalization unlocks our capacities to learn from other societies' achievements. As a consequence, successful recipes diffuse more easily and convergence becomes more likely. This interpretation is in line with a recent analysis by Stephen Barro who shows that developmental convergence is picking up speed over recent decades.[786]

Summary

The emancipatory impulse of the CW-Condition began to become visible, once Northwestern Europe developed mature forms of agriculture as the first of the world's CW-areas. Thereafter, the link of the CW-Condition to emancipatory outcomes turned increasingly strong from the Industrial

and Democratic Revolutions of the 19th century till the end of World War II. Since then, however, the CW-Condition's hold on emancipatory outcomes is significantly and steadily loosening. Indeed, emancipatory struggles—in particular women's fight for female empowerment—are spreading into the non-CW areas of the world at rapid speed. This is most visible in the emancipatory shift in reproductive investment from the quantity-breeding to the quality-building mode, which is connected with a massive erosion in patriarchal family, fertility and sex norms and crumbling male control over female sexuality—probably the most emancipatory outcome ever since our existence.

The CW-Condition gave Western civilization a better starting position to lead this emancipatory dynamic because the CW-Condition exempted the West from such a deep drop into patriarchy that the maturation of intensive agriculture enforces in the absence of the CW-Condition. Now, however, the world as a whole is on an ascending emancipatory trajectory and globalization carries the spirit of emancipation into all corners of the globe. The ubiquitous rise of emancipative values over the generations is a clear testimony to that.

Indeed, at the time of this writing, Iran witnesses massive grassroots protests against the Mullah-regime's patriarchal dress code and other manifestations of female discrimination. Clearly, these protests are inspired by emancipatory goals, as are the citizen protests against China's "zero-Covid" policy and the related harsh lockdowns. In other words, the emancipatory spirit and its inherent aspiration for freedom continue to spread. This does not doom the Mullahs, the Taliban and the CCP to fail any time soon in the enforcement of their patriarchal-dictatorial agenda. But these and other authoritarian forces around the world are confronted with more emancipation-inspired resistance than ever before from within their own societies. This does not mean that emancipatory triumphs are about to come in a sweeping success wave within a predictable timespan—hence, no end of history. Yet, the spirit of emancipation is now present everywhere and emancipatory struggles recur in undisrupted cycles of increasing frequency. Conflict over family, fertility and sex norms and reproductive investments is today a key battleground in these struggles, which ascribes women a pivotal role as change agents on our species emancipatory agenda.

Conclusion

Our contribution is to identify the CW-Condition as the *first difference* from which the Western emancipatory dynamic started to take shape, thus establishing a historic sequence extending from (*a*) initial geo-climatic features evident in the CW-Condition to (*b*) pre-industrial female autonomies to (*c*) industrial-era cognitive investments to (*d*) post-industrial emancipatory outcomes, most notably societies' overall degree of human empowerment today. This sequence unfolded within the framework condition of contractual institutions, which the CW-areas favor whenever state organization begins to mature. Importantly, however, we also show that emancipatory dynamics are slowly but steadily dissociating from the West's CW-Condition, driven by the worldwide fertility-to-schooling shift in people's lifetime investment and the subsequent emancipatory ascension in people's life aspirations.

Of course, there is no experimental control over history. Therefore, the three lurking threats to causal identification in non-experimental studies need to be addressed. These threats include reverse causality, omitted variable bias and unit mis-specification. Reverse causality, to begin with, is of no concern though in our setting. The simple reason is the strict temporal ordering of our variables along a far-reaching sequence of consecutive and clearly distinct historic epochs, extending over the (*a*)-to-(*d*) serial order just mentioned.

As concerns omitted variable bias, temporality is again key. To clarify the point, a brief formal consideration is helpful. In our (*a*)-to-(*d*) sequence, the CW-Condition is the temporally original treatment (*X*) and human empowerment its supposed contemporary outcome (*Y*)—a supposition preliminarily validated by *X*'s powerful direct effect on *Y* (i.e., 73% explained variance, Figure 3-3c). For our formal consideration, assume that only three variables exist (and each of them in perfect measurement precision): the treatment *X*, the outcome *Y* and an alternate treatment *Z*, which we have initially overlooked. With respect to omitted variable bias, the concern is that the overlooked *Z* might, upon inclusion, statistically absorb *X*'s effect on *Y*, in which case the *X*-*Y* effect would be a mere reflection of *X*'s correlation with *Z*. In causality terms, then, *X* would cause *Y* not by itself but only because of its relation to *Z*, which would be the true cause of *Y*. However, this interpretation is not unconditional but hinges again on temporality and that causes must precede their effects in time. Specifically, if *Z* is temporally located in between *X* and *Y* (in other words, after *X* and before *Y* in time), then *Z*'s absorption of *X*'s effect on *Y* does *not* render *X* causally irrelevant but reveal, instead, that *X* does indirectly affect *Y*, namely via its effect on *Z* in between—which would be evidence for *mediation* and not for the causal irrelevance of *X*.

This simple temporal principle of causality is of critical importance when evaluating the CW-Condition's emancipatory impulse in relation to all the alternate remote drivers of development

suggested in the deep roots literature. We looked at literally every possible remote driver and classified them by their inherent temporality, including populations' genetic distances, their migratory and agrarian histories, state traditions as well as pre-industrial religious and institutional legacies. As a result, none of these suggested remote drivers dates as far back in time as the CW-Condition. In other words, all suggested remote drivers are temporally located *in between* the CW-Condition and human empowerment as its supposed contemporary outcome. Consequently, any evidence for an absorption of the CW-Condition's emancipatory effect by a suggested remote driver must be interpreted as a mediation effect, not as proof of the CW-Condition's causal irrelevance.

However, we found hardly any evidence for such mediation. In fact, the CW-Condition turns out to be the connecting source of all the other suggested remote drivers. For the strength and direction of a remote driver's statistical impact on societies' progression in human empowerment today is a linear function of the strength and direction by which the respective remote driver is itself affected by the CW-Condition.

In terms of mediation, only two variables absorb the CW-Condition's direct effect on human empowerment today, namely pre-industrial female autonomies and industrial-era cognitive investments, thus establishing the historic sequence from (*a*) to (*d*) mentioned above. Insofar, we have identified the *first difference* from which the West's emancipatory dynamic took off and over which stations it evolved, although we have also discovered that globalization slowly but steadily dissociates emancipatory aspirations from their origination in the West's CW-Condition.

To address the issue of unit mis-specification, Manuel Santos Silva and his co-authors[787] use an "ancestry-adjusted" version of countries' CW-scores, based on the post-1500 "world migration matrix" by Louis Putterman and David Weil.[788] Doing so changes the unit of analysis in such fashion that populations obtain the CW-scores of their countries of origin, rather than their countries of residence. But this exercise fully reproduces all of our own results. Hence, it is safe to conclude that these results are not an artifact of mis-specification as concerns the unit of analysis.

Moreover, Santos Silva et al. show that, in the US at the turn of the twentieth century, female immigrants from countries of origin with higher CW-scores exhibit significantly lower marriage rates and higher marriage ages, long after their immigration. Because immigrants living in the US face the same institutional setting, this finding further alleviates the concern that omitted institutional factors might be driving the cross-country evidence. Besides, Chapter 10 presents plenty of evidence beyond countries, demonstrating that the emancipatory effects of the CW-Condition operate on various different levels of spatial aggregation and even within the narrower scope conditions of single countries.

To repeat it, our main contribution is to identify the CW-Condition as the *first* difference from which Northwestern Europe's nuclear family pattern with its greater degree of female reproductive autonomy began to take shape, visible in older female marriage ages and lower fertilities already in the pre-industril era. Against the CW-Condition, there are two alternative explanations for Northwestern Europe's nuclear family pattern. Nico Voigtländer and Hans-Joachim Voth[789] argue that the decimation of the workforce by the mid-fourteenth century Black Death caused a shift in agriculture from more labor-intense crop cultivation to less labor-intense animal husbandry. This

shift led to a shrinkage in labor demand, thus causing lower fertility pressures on women to sustain the workforce. As a response, women postponed marriage and child birth. Against this backdrop, the study by Santos Silva et al. shows that the CW-effect on late pre-industrial marriages is not simply capturing a Northwestern European idiosyncracy as the Black Death explanation posits (see SOM-Table S10-2). Instead, the CW-effect is robust to excluding Northwestern Europe as well controlling the salience of animal husbandry for pre-industrial subsistence.

The second explanation posits that the emergence of Northwestern Europe's marriage pattern was the consequence of the Catholic Church's family policy. John Goody, followed by Francis Fukuyama and Jan Luiten van Zanden, was the first to formulate this suggestion.[790] Recently, Jonathan Schulz and his co-authors as well as Joseph Henrich have repeated this claim and tried to defend it with a measure indicating the temporal length of countries' exposure to the Catholic church.[791] As we have seen, our findings are robust to the inclusion of the length of exposure to the Catholic church as measured by Schulz et al. In addition, Chapter 10 replicates the CW-effects across the oblasts of the Russian Empire where the Orthodox church did not pursue the Catholic marriage policy. More generally, Chapter 10 establishes that kinship-loose family and household structures characterized all of the world's CW-areas already at tribal times, in both the Old and the New World, long before any exposure to the Catholic family regime.

Our monograph relates to several strands of literature. A key consent is the growing recognition that pre-industrial female autonomies and industrial-era cognitive investments explain a whole bunch of beneficial societal outcomes today, from economic prosperity, to distributional justice, physical security, generalized trust, to impartial government, effective democracy and other aspects of general life quality, national wellbeing and human empowerment. A number of studies also stress the role of pre-industrial female autonomy for the initiation and speed of the industrial-era fertility decline and its subsequent projection into the cognitive investments that drove the industrial-democratic Double Revolution of the modern era.[792]

Looking at things more broadly, the CW-Theory aims to explain the origin of civilizational dynamics with an emancipatory signature—dynamics that sustain, expand and refine people's freedoms. From this point of view, the fact that *non*-CW areas in the Middle East, India and China developed intensive agriculture and erected mighty states long before the CW-areas did, is no paradox. On the contrary, since agriculture and state building usually deprive people of their original freedoms, the existential autonomies that the CW-Condition bestows on its inhabitants nurture resistance against an early transition to agrarian states, until outside demographic pressures enforce this step. Therefore, agriculture and statehood matured late in the CW-areas—but when they did, people channeled this development into a direction that transformed pre-state freedoms into their state-protected form of today.

From an emancipatory point of view, history did not undergo a "reversal of fortunes" in the sense that initially the world's *non*-CW areas drove human development towards the Neolithic Revolution and then the CW-areas took over in launching the Industrial Revolution. Even though this sequence is valid, the coercive state orders in the *non*-CW world were never ahead in human

development—at least not when we follow Amartya Sen in defining "human" development as the progressively firm enculturation of equal individual freedoms.[793] Like today's neo-totalitarian alternatives to liberal democracy, the coercive agrarian empires of Eurasia's and Mesoamerica's pristine civilizations specialized in suffocating freedoms, thus decoupling civilization from human development, properly understood. Because humans' agentic nature ties subjective wellbeing eventually to freedoms, we predict that the contractual orders of today's liberal democracy will prevail in competition with coercive challenges.

The CW-Theory does not advocate geographic determinism. An essential part of the story is the fading of the CW-Condition's determinative power over emancipatory outcomes. This fading tendency highlights the contagious delimitation of emancipatory struggles for indiscriminate human rights, entitlements and freedoms. Answering why emancipatory struggles are spreading across cultural boundaries involves some speculation but our data suggest that the worldwide demographic shift from fertility to education in people's lifetime investments drives an emancipatory ascension in life aspirations that turns increasing shares of humankind against deprivation, discrimination and oppression. As we have seen, there is solid evidence for this suggestion, visible in a steady ascension of emancipative values from the 1960s until today in literally all parts of the world. As the emancipatory spirit diffuses around the globe, its tie to geo-climatic conditions loosens.

Against this backdrop, the renewed geo-political confrontation between Western liberal democracies and their authoritarian alternatives outside the Western world raises a critical question: Is the decidedly *il*liberal version of modernity propagated by China, Russia and other autocratic powers viable? Put differently, can authoritarianism succeed in suffocating the emancipatory consequences of modernity otherwise known from the West? One thing is for sure in this context: Autocrats who are dedicated to raise their country's international influence and standing (and, hence, their support at home) know that they have to modernize their societies in order to generate economic growth, technological progress and military power. They know as well that in order to achieve these goals, they have to promote education on all fronts to elevate the entire population's skill level.

But the autocrats are also ironly determined to weaponize education as a tool to brainwash people, so as to turn them into docile followers of their leadership cults. Basically, the autocratic vision is to unwrap the Western modernization package and pick from it the economic productivity, technological progress and military capacity parts, while leaving aside their emancipatory consequences. And the autocrats (no matter where in the world they are located) have found a propaganda formula to make this illiberal version of modernity seem attractive: cultural destiny. Due to this formula, non-Western cultures do not share the Western pre-occupation with individualism, which makes them immune against the emancipatory consequences observed in the West.

To some extent, this recipe works. By fomenting leadership cults based on religiosity and nationalism, autocratic regimes are able to lower the translation rate by which formal education yields emancipative values. But the recipe only works to a degree and by far not as completely as

the stereotypical dictator would wish. Humanity's shared genetic endowment generates one human nature that does not allow cultural legacies to divide us into different species. Therefore, certain psychological meachnisms operate regardless of cultural boundaries. For humankind's future, the most important of these mechanisms capitalizes on individuals' emancipatory potential: Once a person has learnt to think for herself, she no longer wants to be told what to believe and to do. This is the inescapable spark of emancipation that emanates from any form education aiming at individuals' thinking capacity. Consequently, autocratic socialization can decrease the slope by which formal education translates into emancipative value; yet it cannot eliminate the slope's upward angle altogether. This observation (evidenced in Figure 3-4 in Chapter 3) testifies to a decisive evolutionary advantage of liberal over illiberal versions of modernity—in line with what Karl Popper reasoned long ago in *The Open Society and Its Enemies*.

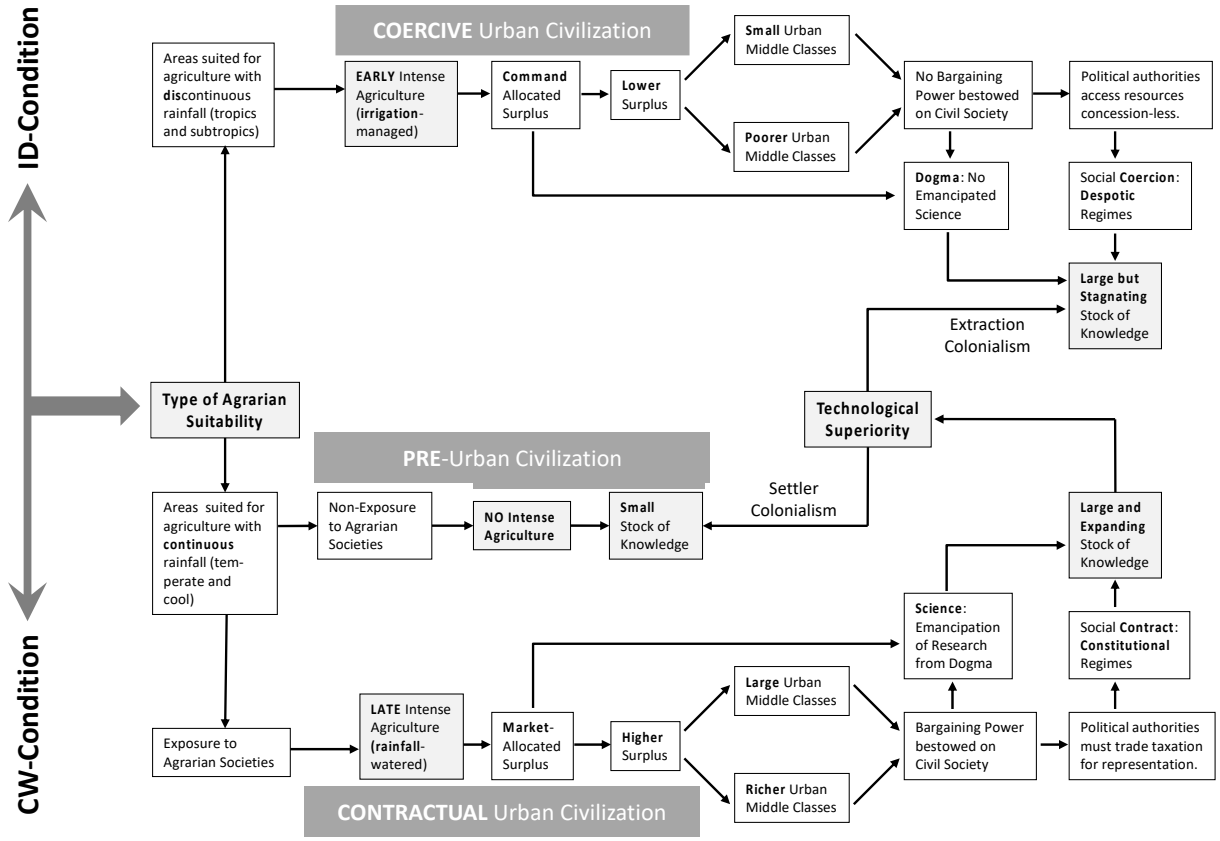
The interpretation of Western history oscillates between a congratulatory tendency to praise the West for its pioneering role in the Industrial Revolution and an accusatory tendency to condemn the West for reckless colonial exploitation. Both tendencies have in common that they hold accountable the supposedly innate characteristics of Western *people*, which are depicted as virtues in the congratulatory version of history and as vices in the accusatory case. In light of the CW-Theory, there is something fundamentally wrong with both narratives. Ultimately, it is not some innate mindset of the people under consideration but the inherent challenges and opportunities of given geo-climatic conditions that incentivize the enculturation of fitting mentality patterns, which then guide societal development. That was the driving logic of the colonial, industrial and post-industrial eras of human history. However, this force is about to undergo a sea change as globalization is evening out geo-climatically induced differences in human development.

The Enlightenment implanted the idea of an indiscriminate provision of the common good into Western thinking. But the idea is not the same as its realization. Sexism, racism and patriarchy continue to discriminate women, people of color and people outside heteronormativity. Likewise, materialism continues to pollute, exploit and destroy our planet, while cruelty causes unfathomable amounts of animal suffering. The *Occupy Wall Street*, *Me Too*, *Black Lives Matter* and *Fridays for Future* movements, plus ongoing and increasingly passionate activism against animal cruelty and environmental destruction, all testify to the continuation of this discrimination-exploitation syndrome. Still, these emancipatory movements also prove that the discrimination-exploitation symbiosis is under attack, and increasingly so. The idea that the common good is indiscriminate and that social recognition derives from merit, not ancestry, is irresistible under the reign of reason. Nativism, nationalism, fundamentalism, supremacist thought and climate change denial are all expressions of an anti-rational backlash against humanity's emancipatory progression. Yet, these anti-emancipatory movements are unlikely to prevail under the wave of generational value change, which has reason and kindness on its side.

Seeing things that way is no reason for complacency. Quite the contrary, it is a reason for action precisely because the case for emancipation is far from being lost. In a nutshell, human emancipation remains a struggle, but one that is worth fighting—for an indiscriminately

Figure C-1. The Course of Human Civilization I

Acronyms: **CW** – Cool Water
ID – Irrigation Dependence



benevolent future. Hans Rosling, Steven Pinker, Lene Andersen and Tomas Bjoerkman, and their close collaborators are among the most potent voices of our time to bring this vision to an explicit expression.[794] With all modesty, we hope our contribution provides valuable support for their case for human emancipation.

To close, we frame our insights from a broader evolutionary perspective, as stylized in Table C-1. Evolutionary thinking starts from the premise that all living systems—be they organisms or societies—create variation in the architecture of their entities. And the entities inherit their architecture to the next generation. This is commonly called reproduction, which—in the case of societies—happens through people's acculturation in the course of generational replacement. All living systems, including societies, develop under the evolutionary force of selection: the constant "die-or-live" reality check that filters out among the variety of architectures those with superior reality-coping qualities. In that sense, biological and social evolution work on the same principle: the constant failure-vs-success test under which everything that exists is operating. The permanency of this test setting works *upward* the ladder of reality control, not downward. Consequently, evolution—whether biological or social—follows an inbuilt direction: It invariably favors architectures with a greater capacity to handle reality.

In biology, brain evolution operated toward hominid intelligence because of the reality-controlling faculty that intelligence bestows on us. Coupled with the will to survive, an individual's ability to think, imagine, plan and direct action towards a desired outcome expands the behavioral repertory and brings a categorial gain in agency.

Every species' survival depends on its ability to coordinate the actions of its individual members, whether in mating, nourishing, parenting, defending or conquering. With unintelligent individuals—like ants, bees, termites and other social insects—evolution solves the coordination problem by genetically programming the individuals to fulfill their tasks for the collective without ever questioning the task at hand: The queen in a beehive and her drones never question their actions. With evolving intelligence, however, a new quality emerges that changes the nature of the social coordination problem in two fundamental ways:

(1) Intelligent individuals equipped with willpower can at any point in time decide to defect, oppose and rebel against their role in society. Hence, societies must find ways to acculturate their individuals in such fashion that most of them live in peace with their designated place in an already existing societal architecture.

(2) A mass of intelligent individuals embodies a collective learning potential of new dimensions, but to exploit this potential, societies must enculture the freedoms that enable an unhindered flow of communication, information and ideas, thus allowing the synergies of individual intelligence to cross-fertilize through an autonomous bottom-up flow of initiative and exchange. Without freedom of expression, thinking and ideas, the talent pool of human populations remains locked, thus leaving "swarm intelligence" under-developed.

Coercive orders (whether in the form of the agrarian empires of the past or neo-totalitarian systems of today) are able to meet the first challenge. They often succeed in making their individuals subservient subjects who act for the most time in full acceptance of their role in society. Coercive orders solve this task by shaping religion (or similar sanctity cults) as an acculturation tool that socializes people into acquiescence. Indeed, imperially controlled religion always nurtured people's anxiety to sacrifice their prospect of salvation in the afterlife for a misdemeanor in this life. Such indoctrination compensates the elites' inability to genetically program their subjects to fulfill their subservient role. Yet, in the absence of bottom-up mechanisms of free thought and preference aggregation, coercive orders fail to harvest the collective synergy hibernating among their people's individual intelligence. Today's coercive systems, most notably China's vision of a neo-totalitarian society, suffer from exactly the same problem, which is unsolvable under coercive orders.

Ironically, the inbuilt flaw of coercive orders did not become obvious until social evolution "discovered" a powerful variant of state architecture: the contractual order. For reasons outlined throughout this book, contractual states occurred for the first time on the territorial scope of countries in the world's CW-regions—initially in Northwestern Europe from where settler colonialism then transplanted the contractual state into the CW-areas of the New World. The contractual state includes a crucial innovation in institutional architecture: political representation by elected

assemblies that check executive power and tie government action to aggregate individual preferences. Hence, in contrast to the coercive architectures prevailing everywhere in the world where states emerged, the contractual order utilizes institutional tools to aggregate the preferences of its intelligent individual agents. The key instrument in the aggregation toolkit is competitive elections and polls, which require free information flows, uncensored debates, rational criticism and the freedom of opposition and dissent—in other words, freedom from dogma, doctrine and taboos in exchanging thoughts, ideas and insights. Instead of perfecting control, this is a system of organizing freedoms, which is by a gigantic margin better suited to harness "swarm intelligence" and "crowd wisdom" among a species composed of intelligent individuals. For this reason, a societal architecture programmed to enculture freedoms is superior in knowledge development and poised to gain and sustain technological and intellectual leadership among humankind.

In line with these ideas, Figures C-1 and C-2 provide an interpretation of civilizational evolution that illustrates how two opposite geo-climatic conditions (i.e., *irrigation dependence* versus *cool water*) shaped two opposite types of urban civilization (i.e., *coercive orders* versus *contractual orders*), and how the contractual orders' superiority in aggregating individual preferences and synergizing mass-scale individual intelligence into the common good enabled them to outcompete the world's coercive orders. The competitive advantage continues to be on the side of contractual orders as long as human societies consist of intelligent individuals. China's coercive model of how the most potent form of human society should look like, evident in the "social credit" system, is pursued in flagrant ignorance of this evolutionary principle and doomed to fail for this reason—as were the agrarian empires of the past. A society that consists of intelligent individuals but tries to organize their functioning under the principle of coercion, instead of freedom, will inevitably underexploit its human potential and eventually fail, in any instance of human history in which coercive and contractual models of society compete for intellectual creativity, technological leadership, economic productivity and genuine support among their individual members.

The ability of an intelligent agent to act on purpose involves higher degrees of freedom, which means greater reality control. Since evolution operates in favor of traits that grant its carrier greater reality control, the intimate link of reality control to the capacity to master freedoms drives evolution upward, instead of downward, on what Christian Welzel coined in *Freedom Rising* the "utility ladder of freedoms." This liberating tendency in evolution has driven brain evolution towards hominid intelligence because intelligence embodies the power to utilize freedoms in one's decisions, actions and planning—hence, equipping individuals with greater reality-shaping powers. For the same reason, civilizational evolution has worked towards the contractual state and its maturation into liberal democracy—the social architecture designed to unleash collective synergies and an indiscrimante common good from equal individual freedoms. Therefore, ever since they came into existence, liberal democracies exert greater reality control than all of their autocratic alternatives. This performative advantage of democracies over autocracies is visible in democracies' superior regulatory, fiscal, technological, organizational, mobilizational and military capacities—and actually in their superior performance on literally every policy field for which data exist. Indeed, liberal democracies score on top of their autocratic alternatives on all of the World Bank's

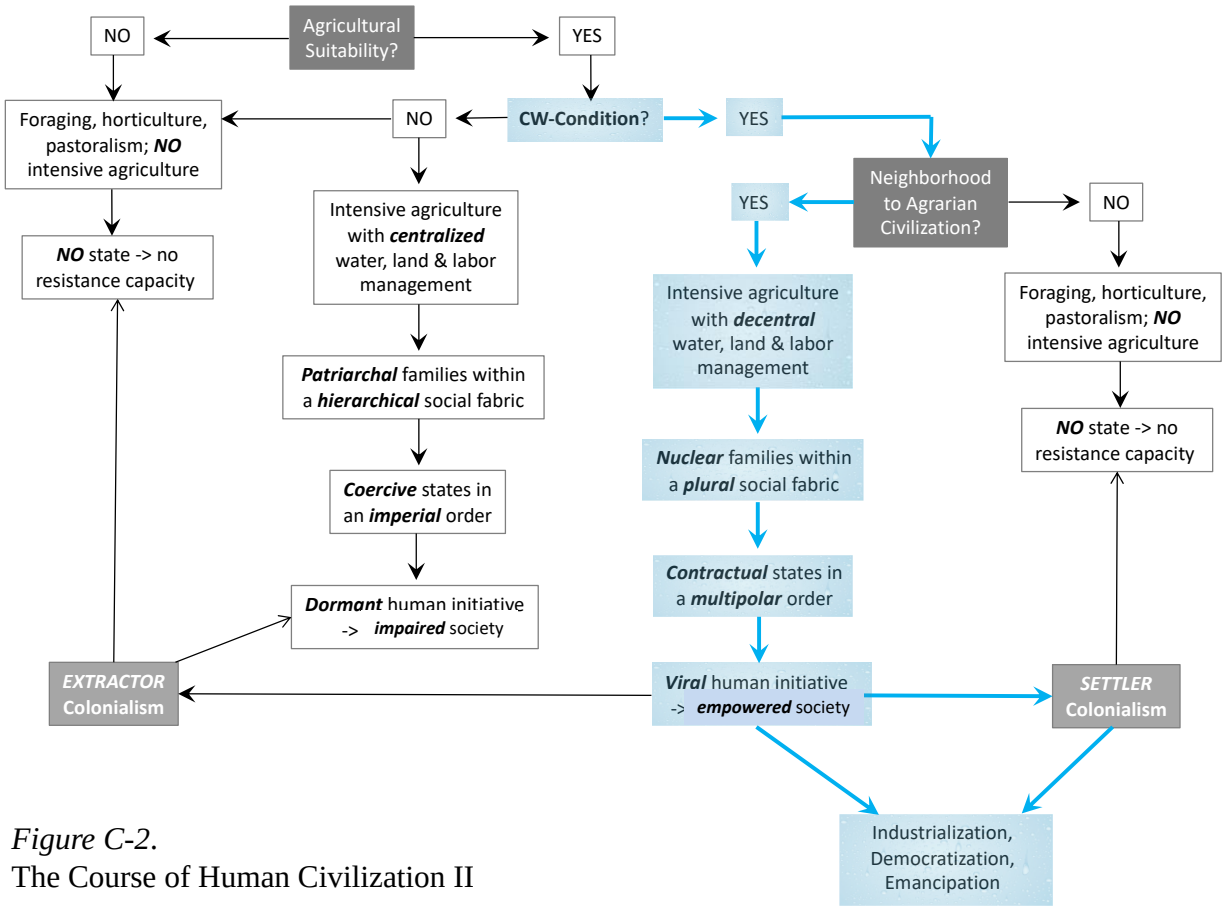


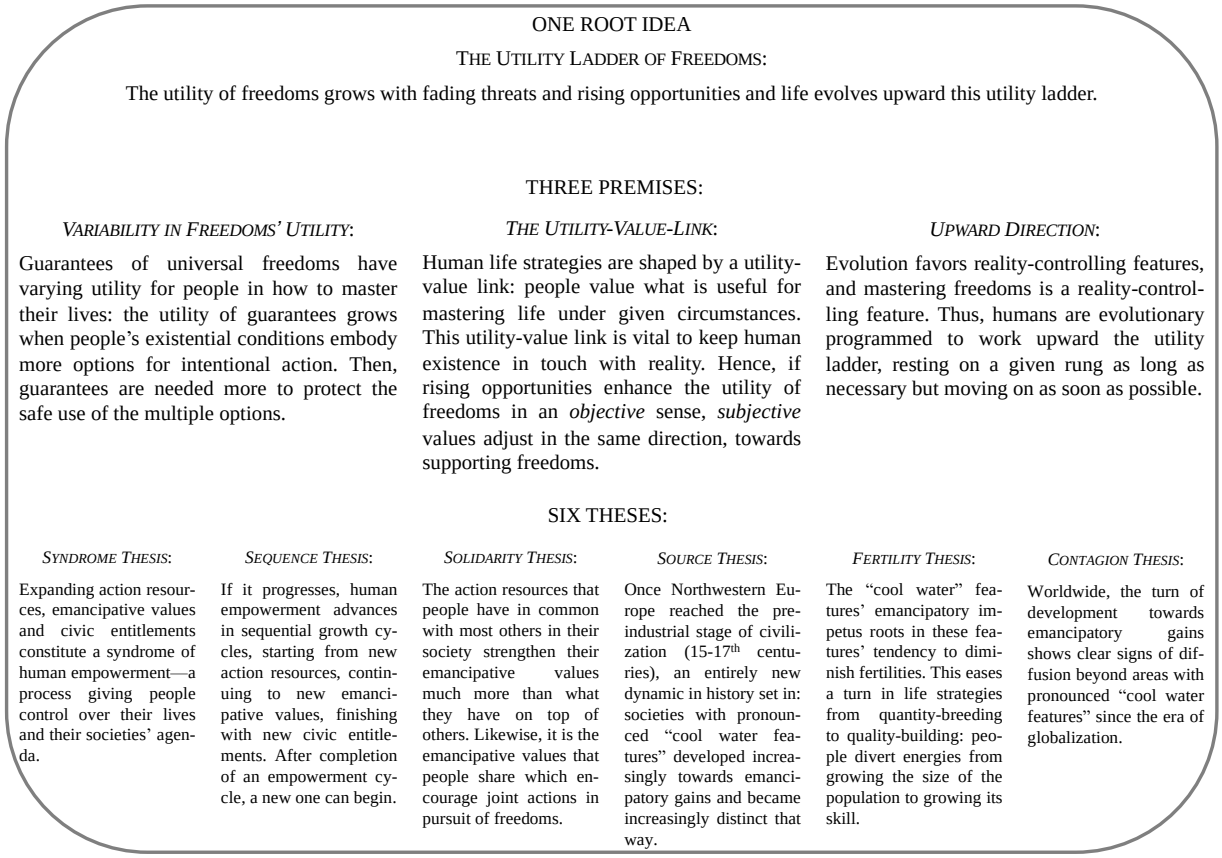
Figure C-2.
The Course of Human Civilization II

life quality and "good governance" indicators. Furthermore, liberal democracies outperform their autocratic alternatives in terms of crises management capacities and regime solidarity on the international stage. In the long run, this is—once more—bad news for China's neo-totalitarian model of a perfectly controlled society and bad news for autocratic state models more generally speaking.[795]

Social evolution's emancipatory turn is most significant in humanity's cognitive mobilization and the related mental awakening, mindset expansion and moral ascension, which began to show their first signs with Renaissance Humanism, the Reformation and above all with the Enlightenment. Indeed, ongoing cognitive mobilization is giving rise to emancipative values and this psychological liberation involves a self-transcending expansion of the human mind's bandwidth towards an increasingly indiscriminate sense of benevolence to others, life and the world. Yet, recognizing the emancipatory trend is no reason for complacency but should instead be taken as an encouragement to actively support the emancipatory agenda—in the continuing struggle against sexism, racism, authoritarianism, exploitation, injustice and ecocide.

By the sheer luck of its exceptional CW-Condition, Western civilization played a significant role in pioneering humanity's emancipatory struggle and it will continue to find its place in there. Yet, the baton in the emancipatory struggle is about to be handed over to those people who have previously been discriminated even in the West: women, people of color and people outside

Figure C-3. A Summary of Evolutionary Emancipation Theory (EET)



heteronormativity. As this happens, emancipation is wearing off its colonial privilege and about to humanize global civilization. This is an unscientific hope, for sure—but one inspired by the science evidenced in this book.

ENDNOTES (with references)

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14 Figure 4-1b in Chapter 4 provides a stylized depiction of this argument.

15 The upper half of Figure 6-1a in Chapter 6 displays the evidence.

16 The upper half of Figure 6-1a in Chapter 6 displays the evidence.

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[47] Jones (op. cit., endnote 1), Mokyr (op. cit., endnote 1), Landes (op. cit., endnote 1), Goldstone (op. cit., endnote 12).

[48] Finer (op. cit., endnote 30), Mann (op. cit., endnote 30). J.A Hall, 1989, "States and Societies," in J. Baechler, J.A. Hall and M. Mann (eds.), *Europe and the Rise of Capitalism*, Oxford: Basic Blackwell, 20-38.

[49] This is yet another indication where we think that the recently popularized claim about the Catholic church's positive impact on Western emancipatory dynamics is wrong. On the contrary, it was grassroots resistance against the church's doctrinal guidance that got the West on a path of continuous emancipatory rights struggles.

[50] Nolan and Lenski (op. cit., endnote 28). A. Maddison, 2007, *Contours of the World Economy 1-2030 AD: Essays in Macro-Economic History*, Oxford: Oxford University Press. I. Morris, 2011, *Why the West Rules – For Now: The Patterns of History and What They Reveal about the Future*, New York: Profile Books.

[51] T. Hobbes, 1996 [1651], *Leviathan*, Cambridge: Cambridge University Press.

[52] Jones (op. cit., endnote 1), Landes (op. cit., endnote 1), Fernandez-Armesto (op. cit., endnote 30).

[53] Jones (op. cit., endnote 1), Landes (op. cit., endnote 1), Poweslon (op. cit., endnote 1), Weber (op. cit., endnote 8). M. Bloch, 2014 [1932], *Feudal Society*, London: Routledge. F. Braudel, 1995 [1984], *A History of Civilizations*, London: Penguin.

[54] McNeill (op. cit., endnote 1), Jones (op. cit., endnote 1), Landes (op. cit., endnote 1), Mann (op. cit., endnote 30), Braudel (op. cit., endnote 53).

[55] Tilly (op. cit., endnote 34), Finer (op. cit., endnote 44), Hall (op. cit., endnote 48). B.M. Downing, 2020 [1992], *The Military Revolution and Political Change: Origins of Democracy and Autocracy in Early Modern Europe*, Princeton: Princeton University Press.

[56] Ibid.

[57] Jones (op. cit., endnote 1), Grayling (op. cit., endnote 10).

[58] E.S. Phelps, 2014, *Mass Flourishing: How Grassroots Innovation Created Jobs, Challenge and Change*, Princeton: Princeton University Press.

[59] Ibid. W.J. Bernstein, 2010, *The Birth of Plenty: How the Prosperity of the Modern World Was Created*, Seattle: McGraw Hill. A. Deaton, 2019, *The Great Escape: Health, Wealth and the Origins of Inequality*, Princeton: Princeton University Press.

[60] For a discussion, see Bairoch (op. cit., endnote 41, especially chapter 8 "The Balance Sheet of Colonialism," pp. 88-99).

[61] Mokyr (op. cit., endnote 1), Goldstone (op. cit., endnote 12), Galor (op. cit., endnote 26), Maddison (op. cit., endnote 50).

[62] Jones (op. cit., endnote 1), Powelson (op. cit., endnote 1), Weber (op. cit., endnote 8), Tilly (op. cit., endnote 34), Bloch (op. cit., endnote 53).

[63] J. Needham, 1954, *Science and Civilization in China*, Cambridge: Cambridge University Press. M. Elvin, 1973, *The Pattern of the Chinese Past*, Stanford: Stanford University Press. A. Tang, 1979, "China's Agricultural Legacy," *Economic Development and Cultural Change* 28, 1-22. J.Y. Lin, 1995, "The Needham Puzzle: Why the Industrial Revolution Did Not Originate in China," *Economimc Development and Cultural Change* 43, 269-292.

[64] J. Daly, 2014, *Historians Debate the Rise of the West*, London: Routledge.

[65] Mokyr (op. cit., endnote 1), Landes (op. cit., endnote 1), Goldstone (op. cit., endnote 12). R.C. Allen, 2000, "Economic Structure and Agricultural Productivity in Europe 1300-1800," *European Review of Economic History* 3, 1-25.

[66] Tilly (op. cit., endnote 34), Hall (op. cit., endnote 48), Downing (op. cit., endnote 55).

[67] Mann (op. cit., endnote 30), Finer (op. cit., endnote 44), Hall (op. cit., endnote 48).

[68] Weber (op. cit., endnote 8), Lal (op. cit., endnote 8).

[69] North (op. cit., endnote 1), Acemoglu et al. (op. cit., endnote 41).

[70] Ferguson (op. cit., endnote 7).

[71] Grayling (op. cit., endnote 10). S. Pinker, 2019, *Enlightenment Now: The Case for Reason, Science, Humanism and Progress*, New York: Penguin.

[72] McNeill (op. cit., endnote 1), Huntington (op. cit., endnote 3), Hall (op. cit., endnote 48), Braudel (op. cit., endnote 53).

[73] Grayling, op. cit. (endnote 10).

[74] Welzel (op. cit., endnote 17), Pinker (op. cit., endnote 71). L.R. Andersen and T. Bjoerkman, 2017, *The Nordic Secret: A European Story of Beauty and Freedom*, Stockholm: Fri tanke.

[75] North (op. cit., endnote 1), Acemoglu et al. (op. cit., endnote 41).

[76] The same limitation applies to Acemoglu and Robinson's work who praise "inclusive" institutions (another term for liberal institutions) as the main cause of Western developmental achievements, without specifying plausible geo-climatic origins of "inclusive" institutions. Quite the contrary, in the chapter *Theories That Don't Work*, the authors explicitly claim (p. 49): "*If the geography hypothesis cannot explain differences between the north and south of Nogales […] could it still be a useful theory to explain differences between North and South America? Between Europe and Africa? Simply, no*." See our discussion of their Nogales example in endnote 488. D. Acemoglu and J. A. Robinson, 2013, *Why Nations Fail: The Origins of Power, Prosperity and Poverty*, New York: Profile Books.

[77] Weber (op. cit., endnote 8), Schulz et al. (op. cit., endnote 26).

[78] Lal (op. cit., endnote 8).

[79] As with all institutional and ideological explanations, the same limitation applies to Henrich's thesis (op. cit., endnote 2) that the West's contemporary particularities originate in the Catholic church's Medieval marriage policies, which began in the 4th century CE to enforce a ban on cousin marriage to establish a kinship-loose social structure whose clearest manifestation is the West's particular nuclear family pattern, visible already at Medieval times, if not since much earlier (van Zanden et al., op. cit., endnote 8). This claim overlooks, however, that the hub of the nuclear family pattern was not Europe's warmer and drier Mediterrannean South, where exposure to the Catholic church was most intense and reaches back longest in time. Instead, the geographic center of the nuclear family pattern was Northwestern Europe's CW-area where the Germanic tribes adopted Catholicism rather late and actually repelled it through the Protestant Reformation in the 15th century CE. There is also no pre-/post-interventionist evidence for Northwestern Europe, which would show that the Germanic tribes of Northwestern Europe's CW-area exhibited a non-nuclear family pattern before intervention of the Catholic church's marriage policy, while transiting to the nuclear family pattern only after the intervention. Instead, the evidence suggests that the Germanic tribes lived in nuclear families already at pagan times, long before any church exposure (see citations in endnote 408). Furthermore, our analyses of the Ethnographic Atlas (SOM-Section S7) demonstrates that key elements of the nuclear family pattern (i.e., kinship-looseness) are generally typical for all of the world's CW-areas, including the CW-areas of North America where no exposure to the church's marriage policies existed. For further criticism of the church-thesis, see B.D. Shaw and R.P. Saller,

1984, "Close-Kin Marriage in Roman Society?" *Man* 19, 432-444 (https://doi.org/10.2307/2802181). S. Passmore and J. Watts, 2022, "WEIRD People and the Western Church: Who Made Whom?", *Religion, Brain & Behavior*, 25-31. For further discussion, see endnotes 407 and 408.

80 Strong and significant correlations between geo-climatic factors have been reported many times. Santos Silva et al. (op. cit., endnote 19), Gallup et al. (op. cit., endnote 22), Parker (op. cit., endnote 22), Midlarsky (op. cit., endnote 24), Haber (op. cit., endnote 24) and Solomon (op. cit., endnote 24). For an overview see S. Haber, R. Ellis and J. Horrillo, 2023, "The Ecological Origins of Economic and Political Systems," *Long-Run Prosperity Working Paper Series* #22001, 1 - 76 (Hoover Institution).

81 Nolan and Lenski (op. cit., endnote 28).

82 Ibid.

83 Pinker (op. cit., endnote 71).

84 Mann (op. cit., endnote 30).

85 Acemoglu et al. (op. cit., endnote 41). O. Olsson and C. Paik, 2016, "Long-Run Cultural Divergence: Evidence from the Neolithic Revolution," *Journal of Development Economics* 122, 197–213.

86 Sen (op. cit., endnote 11).

87 Acemoglu and Robinson (op. cit., endnote 76), among others, explicitly deny that geo-climatic differences could explain developmental differences. For proof, see the quote from their book in endnote 76.

88 T. Vanhanen and R. Lynn, 2002, *IQ and the Wealth of Nations*, Westport: Praeger.

89 Fernandez-Armesto (op. cit., endnote 30).

90 Diamond (op. cit., endnote 38).

91 For coldness: Parker (op. cit., endnote 22); for rain: Davis (op. cit., endnote 5), Midlarsky (op. cit., endnote 24), Haber (op. cit., endnote 24); for coastal proximity: Gallup et al. (op. cit., endnote 22), Gerring et al. (op. cit., endnote 25).

92 As Figures 9-8 and 9-9 in Chapter 9 demonstrate, correlations easily reach coefficients (so called Pearson's *r*) of .80 and higher when 1.0 (-1.0) would be the maximum for a perfectly positive (negative) relationship between two variables, that is, knowing the score in one of a pair of correlated variables predicts with certainty the score in the other.

93 Landes (op. cit., endnote 1), Sokoloff and Engerman (op. cit., endnote 41).

94 Acemoglu et al. (op. cit., endnote 41).

95 We take inspiration for this terminology from North, Wallis and Weingast who speak at length about "open access orders"—a concept largely sysnonymous with "inclusive institutions" by Acemoglu and Robinson (op. cit., endnote 76) as well as with our "contractual state orders." D.C. North, D.J. Wallis and B.R. Weingast, 2009, *Violence and Social Order: A Conceptual Framework for Interpreting Recorded Human History*, New York: Cambridge University Press.

96 Landes (op. cit., endnote 1), Sokoloff and Engerman (op. cit., endnote 41).

97 Ibid.

98 W. McNeill, 1976, *Plagues and Peoples*, New York: Anchor.

99 Evidence to this point is presented in Figures 7-2 to 7-4 in Chapter 7.

100 Landes (op. cit., endnote 1), Sokoloff and Engerman (op. cit., endnote 41).

101 Evidence to this point is presented in Figure 7-5 in Chapter 7.

102 Jones (op. cit., endnote 1), Tilly (op. cit., endnote 34).

103 Landes (op. cit., endnote 1), Sokoloff and Engerman (op. cit., endnote 41).

104 Weber (op. cit., endnote 8) famously defined the state by its "monopoly over the legitimate use of coercion."

[105] R. Inglehart and C. Welzel, 2005, *Modernization, Cultural Change and Democracy: The Human Development Sequence*, New York: Cambridge University Press. M. Minkov and G. Hofstede, 2014, "Nations versus Religions: Which Has a Stronger Effect on Societal Values?" *Management International Review* 54, 801-824.

[106] P. Akalyiski, M.H. Bond, M. Minkov and C. Welzel, 2021, "On Nationology: The Gravitational Field of National Culture," *Journal of Cross-Cultural Psychology*: forthcoming.

[107] A. Berger and M.F. Loutre, 2002, "Climate: An Exceptionally Long Interglacial Ahead?," *Science* 297, 128 - 1288. S. White, 2017, *A Cold Welcome: The Little Ice Age and Europe's Encounter with North America*, Boston: Harvard University Press. B. Fagan, 2019, *The Little Ice Age: How Climate Made History 1300-1850*, New York: Basic Books.

[108] On the concept of culture zones see Huntington (op. cit., endnote 3), Inglehart and Welzel (op. cit., endnote 105), Welzel (op. cit., endnote 17). At the beginning of Chapter 7, we lay out our notion of culture zones in all detail.

[109] On our 0-to-1 CW-index, Sidney and Melbourne's CW-score is by fully 0.32 scale points above the average CW-score of Australia's entire territory.

[110] Gallup et al. (op. cit., endnote 44), Parker (op. cit., endnote 44).

[111] The countries' territorial sizes in square kilometers correlate with the differences in CW-scores between capital cities and entire country-territories at $r = .29$, and at $r = .33$ when taking the logs of area size ($N = 180$; $p < .001$).

[112] The correlation between the average country CW-scores and the countries' territorial size is $r = -.16$ ($N = 180$; $p < .050$) and $r = -.45$ ($N = 180$; $p < .001$) when logging area size.

[113] Chapter 7 (Table 7-1) provides a more detailed description of our culture zone scheme.

[114] Brunkert et al. (op. cit., endnote 4).

[115] Huntington (op. cit., endnote 3), T.A. Graf, 2020, *Clash of Perceptions: Testing the "Clash of Civilizations" with Global Survey Data*, Berlin: Berliner Wissenschaftsverlag. P. Akalyiski and C. Welzel, 2020, "Clashing Values: Supranational Identities, Geopolitical Rivalry and Europe's Growing Cultural Divide," *Journal of Cross-Cultural Psychology* 51, 1-23.

[116] We begin with a comparison of neighboring Turkey and Greece. The main cities of the two countries (i.e., Istanbul and Athens) exhibit CW-scores that are not so distant (0.40 and 0.31, respectively). Yet, the two countries belong to two different ancestral population families with disparate contextual CW-scores: 0.10 for the "Turkic East" to which Turkey belongs and 0.41 for the "Romanic West" to which Greece belongs. This difference in contextual CW-Conditions manifests itself in a different developmental performance on the "human empowerment index." Accordingly, Turkey's developmental performance on the human empowerment index in 2018 (0.30 on a 0-to-1 scale) is closer to the average of its population family (0.20 for the "Turkic East") than to Greece's performance (0.64), which in turn is closer to the average performance of its population family (0.68 for the "Romanic West"). There are more examples. The capital cities of neighboring Belarus and Poland (i.e., Minsk and Warsaw) have similar CW-scores (0.42 and 0.45, respectively). Yet, the two countries belong to two different population families with disparate overall CW-scores: 0.41 for the "Slavic East" in the case of Belarus and 0.50 for the "Slavic West" in the case of Poland. Accordingly, Belarus' developmental performance on the human empowerment index (0.29) is closer to the average of its population family (0.31 for the "Slavic East") than to Poland's performance (0.58), which in turn is closer to the average performance of its population family (0.59 for the "Slavic West"). To add yet another example, the main cities of neighboring Tonga and Australia (i.e., Nuku'alofa and Sydney) exhibit CW-scores that are not so distant (0.38 and 0.48, respectively). Yet, the two countries belong to two different population families with disparate overall CW-scores: 0.27 for the "South Pacific" to which Tonga belongs and 0.61 for the "Anglo-Saxon West" to which Australia belongs. Accordingly, Tonga's developmental performance on the human empowerment index (0.34) is closer to the average of its population family (0.32 for the "South Pacific") than to Australia's performance (0.85), which in turn is closer to the average performance of its population families (0.82 for the "English West").

[117] Weber (op. cit., endnote 8), Lal (op. cit., endnote 8).

[118] R.A. Houston, 2002, *Literacy in Early Modern Europe: Culture and Education 1500-1800*, London: Routledge.

[119] We retrieved data from this website in July 2019. On August 5th, 2019, Climate-Data.org describes its data sources as follows: "All of our climate data comes from a climate model. The model has more than 220 million

data points and a resolution of 30 arc seconds. The model uses weather data from thousands of weather stations from all over the world. This weather data was collected between 1982 and 2012. This data will also be refreshed from time to time."

120 Berger and Loutre (op. cit., endnote 107), White (op. cit., endnote 107), Fagan (op. cit., endnote 107).

121 Ibid. J.A. Matthews and K.R. Briffa, 2005, "The 'Little Ice Age': Re-evaluation of an Evolving Concept." *Geografiska Annaler: Series A, Physical Geography* 87, 17-36.

122 J. Luterbacher, D. Dietrich, E. Xoplaki, M. Grosjean and H. Wanner, 2004, "European Seasonal and Annual Temperature Variability Trends and Extremes since 1500." *Science* 303, 1499-1503.

123 Latitude and winter temperature correlate at r = -.90 (N = 184; p < .001).

124 As with all variables, we standardize latitudinal degrees into a scale range from 0 for the lowest latitude (the equator at 0 degrees, e.g. Sao Tome & Principe) and 1.0 for the highest latitude (64 degrees: Iceland's Reykjavik).

125 The highest latitudes are 90 degrees at the poles. No capital city's location comes even close to that. In the Northern hemisphere, the highest latitude applies to Iceland whose capital city Reykjavik is located at about 64 degrees. In the Southern hemisphere, the highest latitude applies to New Zealand whose capital city Wellington is located at about 41 degrees.

126 The correlation amounts to r = -.54 (N = 184; p < .001). Besides, annual mean temperatures mask important differences in seasonality on a continental-vs-maritime climate continuum. Because of this deception, we do not consider annual mean temperatures in our measurement.

127 No question, even places on the same latitude show some longitudinal variation in winter cold, depending on whether or not the water current of the closest ocean is warm. Consider Rome and New York, which are located at about the same latitude (roughly 40 degrees North) but the average daily temperature over the year's coldest month (January) is about -0.6 degrees Celsius in New York compared to +7.7 degrees Celsius in Rome. The reason is that Rome's climate is influenced by the North Atlantic's warm Gulfstream and the westward winds blowing from there. These deviations from latitude's overall climatic influence do, however, not suffice to turn down latitude's predictive power over winter temperatures below 80% of an explained variance.

128 Indeed, the country-centroids' latitudes correlate with seasonality (winter-summer temperature difference) at r = .83 (N = 184; p < 0.001).

129 K.L. Ebi, A. Capon, P. Berry, C. Broderick, R. de Dear, G. Havenith and O. Jay, 2021, "Hot Weather and Heat Extremes: Health Risks." *The Lancet* 398 (10301), 698-708. E. Somanathan, R. Somanathan, A. Sudarshan and M. Tewari, 2021, "The Impact of Temperature on Productivity and Labor Supply: Evidence from Indian Manufacturing." *Journal of Political Economy* 129, 1797-1827.

130 SOM-Section S2 explains these measures in detail.

131 We measure the degree of seasonality by the difference between the average monthly temperature typical of the hottest month and that of the coldest month in capital cities. The lowest seasonality is a temperature difference between the hottest and coldest month of 0 degrees Celsius, which is found for instance on the Marshall Islands' capital Majuro. Most equatorial countries, like Congo or Malaysia, come close to such low seasonality in temperatures. The highest seasonality is found in Mongolia's capital city Ulan Bator with a 38 degrees Celsius temperature difference, closely followed by Kazakhstan's capital Astana (37 degrees). Interestingly, within Eurasia, seasonality increases on a West-East gradient along with longitude from Northwestern Europe to Northeast Asia. We standardize seasonality into a scale range from 0 for the lowest seasonality (corresponding with 0 degrees Celsius) to 1 for the highest seasonality (corresponding with 38 degrees Celsius).

132 Indeed, the part of seasonality that is tied to latitude correlates at r = .39, .32 and .26 with the country territories' pre-industrial, industrial and post-industrial emancipatory development, in the order just mentioned (N varies from 158 to 184 countries; all three correlations significant at p < .001). By contrast, the residual part of seasonality that is unexplained by latitude correlates with the same outcomes negatively, at r = -.40, -.56 and -.44 in the same order of variables (all significant at p < .001). This proves that seasonality is beneficial only to the extent to which latitude incorporates it but not in excess of it. In fact, excess seasonality is, developmentally speaking, detrimental.

[133] First, we regress the 0-to-1 standardized seasonality measure on the also 0-to-1 standardized latitude measure and save the residuals in seasonality (about 69% of the variation in seasonality is explained by latitude while 31% remains residual, unexplained variance: $N = 181$). We obtain residuals ranging from -0.17 in the case of Iceland's capital city Reykjavik (indicating a much lower seasonality than its high latitude suggests) to +0.17 in the case of Mongolia's capital city Ulan Bator (indicating much higher seasonality than its high latitude suggests). Then we subtract the residual seasonality from latitude, which turns into an addition in the case of negative residuals (subtracting a negative number equals to addition), thus rewarding countries with lower seasonality, albeit only within the same latitude. After this procedure, we standardize scores into a 0-to-1 range. At any rate, the refined measure indicates seasonality-minimized coolness.

[134] E. van de Vliert, 2008, *Climate, Affluence and Culture*, New York: Cambridge University Press.

[135] See the different correlations of the two seasonal extremes with developmental outcomes reported in endnote 132.

[136] Midlarsky (op. cit., endnote 24), Solomon (op. cit., endnote 24), Haber (op. cit., endnote 24).

[137] Davis (op. cit., endnote 31).

[138] Bentzen et al. (op. cit. endnote 23), Buggle (op. cit., endnote 31).

[139] North et al. (op. cit., endnote 95).

[140] Total annual rainfall and latitude correlate at $r = -.49$ ($N = 184$; $p < .001$).

[141] Before controlling latitude, average or total annual precipitation correlates (*a*) at $r = -.16$ ($N = 178$; $p = .14$, insignificant) with pre-industrial, (*b*) at $r = -.17$ ($N = 154$; $p = .06$, insignificant) with industrial and (*c*) at $r = -.04$ ($N = 183$; $p = .58$, insignificant) with post-industrial emancipatory development. After controlling latitude, each of these correlations switches direction from negative to positive, becomes significant and turns considerably stronger in magnitude: $r = .32$, .27 and .32 in the above order from (*a*) to (*c*), all significant at $p < .001$.

[142] Continuity-maximized rainfall correlates at $r = .48$ ($N = 184$; $p < .001$) with latitude. We obtain almost identical results when we calculate the ratio of minimum over maximum rainfall in a different way, using the number of rainy days in the driest month versus the number of rainy days in the wettest month.

[143] Gallup et al. (op. cit., endnote 22), Midlarsky (op. cit., endnote 24), Haber (op. cit., endnote 24), Davis (op. cit., endnote 31).

[144] Historic examples are abound: During the Spanish Inquisition, Jews from coastal cities such as Barcelona and Valencia fled to North Africa and the Ottoman Empire. The Hugenottes fled persecution by the French monarchy from the harbour city La Rochelle. Other religious dissidents, from the Nonconformists to the Purtitans, outmigrated overseas—a pattern that continues into today's refugee crisis. On a more theoretical note, Albert O . Hirschman's "exit, voice and loyalty" concept posits that when opposition ("voice") is not possible, "exit" is the only option to escape the enforcement of "loyalty." And sea access almost always means an exit option. See A. O. Hirschman, 1970, *Exit, Voice and Loyalty: Responses to Decline in Firms, Organizations and States*, Boston: Harvard University Press. Gerring et al. (op. cit., endnote 25).

[145] The differences in coastal proximity between capital cities and their respective countries' centroids correlate with country area sizes in square kilometers at $r = .78$ ($N = 158$; $p < .001$).

[146] When taking logs to correct the very skewed distribution of country area size, the correlations with our sequence of developmental outcomes turn negative but remain weak (below a magnitude of .20) and are barely significant.

[147] Recognizing that the spatial diffusion of norms and institutions advances within, rather than between, ancestral population families, it is important to note that we measure the countries' ancestral CW-Condition from the viewpoint of cultural ancestry rather than geographic vicinity. Although our population families do have geographical centers, they are not defined primarily by geographical but by ancestral closeness. The Anglo-Saxon West, for instance, covers two different continents with no geographical connection, namely North America and Australia/New Zealand. And while Israel belongs in our population family scheme to the Romanic West, it has no direct neighbor from this population family in its direct geographic vicinity.

[148] The factors are "varimax"-rotated to optimize dimensional orthogonality. For the number of dimensions to be extracted, we specified the "Kaiser"-criterion according to which only dimensions with an "Eigenvalue" above

1 are separated. This criterion is intuitively plausible because factor analysis is a data summary method: factors with Eigenvalues below 1 capture less variance than their highest loading single component, in which case the factor does not really summarize anything not obtained in a component.

149 Factor analysis transforms all specified variables in such a way that they are mean-centered on zero with scores forced into a range with a standard deviation of 1. Then for each dimension with an Eigenvalue above 1, an average across all components is calculated, using weights in proportion to the components' loadings on the respective dimension. The resulting dimensional variables exhibit so called "factor scores," which are again centered on a mean of 0 with the score range forced into a standard deviation of 1. For both of our dimensional variables, we normalized the factor scores to fit into a range between minimum 0 and maximum 1.

150 With our series of developmental outcomes from pre-industrial over industrial to post-industrial emancipatory development, cool-steady rain correlates (in the listed order) at r = .83, .85, and .78. Coastal proximity correlates with the same outcomes at r = .17, .24, and .35 (N = 178, 154, 183 in the listed order). All these correlations are positive and significant at $p < .001$.

151 Used simultaneously as predictors of our sequence of emancipatory developmental outcomes under mutual control, the partial correlations of cool-steady rain and coastal proximity with developmental outcomes are stronger than their bivariate correlations with these outcomes. For cool-steady rain, the comparison of the uncontrolled with the controlled correlation is .83 to .84 for pre-industrial development (N = 178), .85 to .87 for industrial development (N = 154), and .78 to .83 for post-industrial development (N = 183). For coastal proximity the same comparison (same N as for cold-steady rain) is .17 to .30, .24 to .42, and .35 to .55 for the same sequence of developmental outcomes ($p < .001$, in all instances).

152 We normalize the two factor-score variables each into a range from 0 (for the lowest observed cool-steady rain and coastal proximity scores) to 1 (for the highest observed scores), with decimal fractions of 1 indicating intermediate positions in proportion to their closeness to the lower and higher scale ends. Then we multiply the two variables to obtain the final CW-index.

153 M.C. Peel, B.L. Finlayson and T.A. McMahon, 2007, "Updated World Map of the Koeppen-Geiger Climate Classification," *Hydrological Earth System Science* 11, 1636-1645.

154 A country's CW-Condition correlates with its territorial share in the temperate-rainy climate zone (called "cf") at r = .68, with its territorial share in the cold-rainy zone (called "df") at r = .39 and with the territorial share in both at r = .78 (N = 156; $p < .001$ for all three correlations).

155 The world's roughly 200 countries constitute a 320th of the globe's 64,000 inhabited grid cells. A 320th of a 100% total CW-variance is 0.31%. Hence, if country spaces emerged from grid-cells in a pooling process that is random to the CW-variation among the grid cells, countries should account for 0.31% of the total CW-variation. In fact, however, countries account for more than 85% of the total CW-variation. This is about 274-times more than 0.31 percent.

156 Diamond (op. cit., endnote 38).

157 First, regressing countries' pre-industrial emancipatory development on their average CW-Condition and the within-country variation in this condition, the effect of the average CW-Condition only shrinks from a bivariate r of .82 to a partial r of .79. The partial r of the CW-Condition's within-country variation is at an insignificant .02 (N = 159). Second, regressing countries' industrial emancipatory development on their average CW-Condition and the within-country variation in this condition, the effect of the average CW-Condition only shrinks from a bivariate r of .81 to a partial r of .79. The partial r of the CW-Condition's within-country variation is at an insignificant .10 (N = 149). Third, regressing a countries' post-industrial emancipatory development on their average CW-Condition and the within-country variation in this condition, the effect of the average CW-Condition only shrinks from a bivariate r of .80 to a partial r of .79. The partial r of the CW-Condition's within-country variation is at a just slightly significant .18 (N = 160).

158 To arrive at these numbers, we calculate as follows: 12 population families constitute a fraction of a 17th of 200 countries. A 17th of 100% is roughly 6%. 95% is 16.8-times larger than 6%.

159 We define the "clustering power" of a spatial aggregation as (a) the proportional reduction in the number of units as one moves from the lower to the higher level of aggregation, multiplied by (b) the proportion of variance among the lower-level units captured by the higher-level units. To give an example, we assume that a total of

100 countries (i.e., the base level units) pool into 10 population families (i.e., the aggregate-level units) and that these families account for some 70% of the total cross-country variation in the CW-Condition. Since 10 aggregate-level units make 10% percent (or a proportion of 0.10) of 100 base level units, the proportional reduction in numbers of units as one moves from countries to their population families is 90%, or 0.90. Again, the variance captured by the higher-level units is 70% or 0.70. Now, multiplying 0.90 by 0.70 yields a value of 0.63, which is the "clustering power" of population families over the countries' CW-Conditions.

160 To arrive at these numbers, we calculate as follows: 12 population families constitute a fraction of a 5,333th of 64,000 grid cells. A 5,333th of 100% is 0.019%. 66% is 3,474-times larger than 0.019%.

161 Spolaore and Wacziarg (op. cit., endnote 26).

162 P. Lawrence and N. Nohria, 2002, *Driven: The Four Drives Underlying Our Human Nature*, New York: Jossey-Bass.

163 Wilson (op. cit., endnote 27). S. Bowles and H. Gintis, 2013, *A Cooperative Species: Human Reciprocity and Its Evolution*, Princeton: Princeton University Press.

164 R. Dawkins, *The Selfish Gene*, 2016 [1976], Oxford: Oxford University Press.

165 E.C. Banfield, 1967 [1958], *The Moral Basis of a Backward Society*, New York: Free Press. A. Maryanski and J.H. Turner, 1992, *The Social Cage: Human Nature and the Evolution of Society*, Stanford: Stanford University Press.

166 An example is the debate about Asian values: C. Welzel, 2011, "The Asian Values Thesis Revisited: Evidence from the World Values Surveys," *Japanese Journal of Political Science* 12: 1-31.

167 On social identity and group attribution as an empathy blockage, see H. Tajfel and J.C. Turner, 2004 [1986], "The Social Identity Theory of Intergroup Behavior," in J.T. Jost and J. Sidanius (eds.), *Key Readings in Social Psychology*, New York: Psychology Press, 276-293.

168 Survey data show that large majorities in most countries around the world say that they support democracy. However, recent evidence by Helen Kirsch and Christian Welzel demonstrates that, in non-Western countries, most people support a non-liberal distortion of democracy and redefine democracy in opposition to its original meaning. H. Kirsch and C. Welzel, 2018, "Democracy Misunderstood: Authoritarian Notions of Democracy around the World," *Social Forces* 91: 1-33.

169 Ibid.

170 SOM-Section S2 explains the measurements in Figure 3-5.

171 Correlations amount to $r = .73$ (t_0), .76 (t_{-10}), .78 (t_{-20}), .79 (t_{-30}) ($N = 6{,}000$; $p < .001$).

172 V. Leontovitsch, 2012, *The History of Liberalism in Russia*, Pittsburgh: University of Pittsburgh Press.

173 Gerrring et al. (op. cit, endnote 25).

174 K. Popper, 2011 [1954], *The Open Society and Its Enemies*, London: Routledge.

175 A.H. Maslow, 2017 [1943], *A Theory of Human Motivation*, London: bnpublishing. A. Inkeles and D. Smith, 1974, *Becoming Modern: Individual Change in Six Developing Countries*, London: Heinemann. R.M. Ryan and E.L. Deci, 2018, *Self-Determination Theory: Basic Psychological Needs in Motivation, Development and Wellness*, New York: Guilford.

176 Maryanski and Turner (op. cit., endnote 165), Pinker (op. cit., endnote 71). See also C. Birch and J.B. Cobb, 1981, *The Liberation of Life: From Cell to Community*, Cambridge: Cambridge University Press. D.E Brown, 2017 [1991], *Human Universals*, Seattle: McGraw Hill.

177 Sen (op. cit., endnote 11). M. Nussbaum, 2013, *Creating Capabilities: The Human Development Approach*, Boston: Harvard University Press.

178 Welzel 2013 (op. cit., endnote 17), C. Welzel, 2014, "Evolution, Empowerment and Emancipation: How Societies Climb the Freedom Ladder," *World Development* 64, 33-51.

179 Sen (op. cit., endnote 11), Welzel (op. cit., endnotes 17, 178), Pinker (op. cit., endnote 71).

[180] Nolan and Lenski (op. cit., endnote 28), Maryanski and Turner (op. cit., endnote 165).

[181] Jones (op. cit., endnote 1), Mann (op. cit., endnote 30), Tilly (op. cit., endnote 34). K. Marx, 2014 [1867], *Capital - Volume I: A Critique of Political Economy* [originally in German: "Das Kapital - Band 1: Kritik der Politischen Ökonomie"], London: Penguin Press.

[183] Hobbes (op. cit., endnote 51).

[184] Maddison (op. cit., endnote 50).

[185] M. Koyama and J. Rubin, 2022, *How the World Became Rich: The Historical Origins of Economic Growth*. New York: John Wiley & Sons.

[186] Ibid. See also R. Floud, W. Fogel, B. Harris and S.C. Hong, 2011, *The Changing Body: Health, Nutrition and Human Development in the Western World since 1700*, New York: Cambridge University Press.

[187] Banfield (op. cit., endnote 165).

[188] Tajfel and Turner (op. cit., endnote 167). A. Gat, 2012, *Nations: The Long History and Deep Roots of Political Ethnicity and Nationalism*, Cambridge: Cambridge University Press.

[189] Welzel (op. cit., endnote 17).

[190] Sen (op. cit., endnote 11).

[191] Maryanski and Turner (op. cit., endnote 165).

[192] For the fact that the transition from foraging to agriculture impaired ordinary people's lives in terms of health, living standards and freedoms see Galor (op. cit., (endnote 26), Scott (op. cit., endnote 35), Maddsion (op. cit., endnote 50).

[193] This is not to deny that religious beliefs originate in human nature. Already hunter-gatherers practiced religious rituals under animistic beliefs that attribute spiritual qualities to natural phenomena. The point is that once religion becomes an institution based on scripts, priesthoods and church-like organizations, it turns into a tool of elite control over people.

[194] R. Inglehart, 2018, *Cultural Evolution: People's Motivatins are Changing and Reshapng the World*. New York: Cambridge University Press.

[195] Nolan and Lenski (op. cit., endnote 28), Scott (op. cit., endnote 35), Turner and Maryanski (op. cit., endnote 165).

[196] On the issue of momentary-vs-glacial dynamics in authoritarian-vs-emancipative values, see C. Welzel, 2007, "Individual Modernity," in: R.J. Dalton and H.-D. Klingemann (eds.), *Oxford Handbook of Political Behavior*, New York: Oxford University Press, 185-295. R. Inlgehart, 2008, "Changing Values among Western Publics, 1970-2006," *West European Politics* 31, 130-146.

[197] Maslow (op. cit., endnote 175). R. Kegan, 1982, *The Evolving Self: Problem and Process in Human Development*, Boston: Harvard University Press. L. Kohlberg, C. Levine and A. Hewer (eds.), 1983, *Moral Stages: A Current Formulation and a Response to Critics*, New York: Karger. S.H. Schwartz, 2006, "A Theory of Cultural Value Orientations," *Comparative Sociology* 5, 137-182.

[200] Brunkert et al. (op. cit., endnote 4).

[201] The quote cites a famous item from the *World Values Survey* (www.worldvaluessurvey.org), which finds widespread support, especially among the citizenries of deficient democracies as well as electoral and pure autocracies. See Kirsch and Welzel (op. cit., endnote 168).

[202] After the downfall of Soviet-type communism, the elites of many countries in Eastern Europe re-modelled institutions towards a level of democracy higher than most of the populations' rather weak emancipative values support. Russia, Romania and Hungary are cases in point. These are also the cases in which de-liberalizing institutional reforms followed, like cutting back checks on executive power through restrictions of judicial independence and electoral reforms that uneven the playing field. The respective reforms lowered democracy towards a level more in line with the respective populations' relatively weak emancipative values. These cases of "democratic backsliding" imply a "regression to the mean" that resolves regime-society misfits.

[203] D. Ruck, L.J. Matthews, T. Kyritsis, Q.D. Atkinson and R.A. Bentley, 2020, "The Cultural Foundations of Modern Democracies," *Nature - Human Behavior* 4, 265-269. C. Welzel, 2020, "A Cultural Theory of Regimes," *Nature - Human Behavior* 4: 231-232.

[204] R. Inglehart, R. Foa, C. Peterson and C. Welzel, 2008, "Development, Freedom and Rising Happiness: A Global Perspective 1981-2006," *Perspectives on Psychological Science* 3, 264-285. R. Fischer and D. Boer, 2011, "What is More Important for National Wellbeing: Money or Autonomy? A Meta-Analysis of Wellbeing, Burnout and Anxiety across 63 Societies," *Journal of Personality and Social Psychology* 101, 164-184.

[205] R. Inglehart, B. Puranen and C. Welzel, 2015, "People's Declining Willingness to Fight in Wars: The Individual-level Basis of the Long Peace," *Journal of Peace Research* 51, 418-435.

[206] Pinker (op. cit., endnote 71).

[207] Welzel 2013 (op. cit., endnote 17).

[208] C. Welzel and R. Inglehart, 2019, "Political Culture, Mass Beliefs and Value Change," in C. Haerpfer, P. Bernhagen, R. Inglehart and C. Welzel (eds.), *Democratization*. Oxford: Oxford University Press, 134-157.

[209] Landes (op. cit., endnote 1), Galor (op. cit., endnote 26).

[210] Maddison (op. cit., endnote 50).

[211] Galor (op. cit., endnote 26).

[212] Ibid.

[213] Pinker (op. cit., endnote 71). H. Roesling, O. Roesling and A. Roesling-Roennlund, 2018, *Factfulness: Ten Reasons We're Wrong about the World and Why Things are Better than You Think*, London: Spectre. A. McAffee, 2020, *More from Less: The Surprising Story of How we Learned to Prosper Using Fewer Resources - and What Happens Next*, New York: Simon & Schuster.

[214] Welzel (op. cit., endnote 17).

[215] M.A. Woodley, 2011, "A Life History Model of the Lynn-Flynn Effect," *Personality and Individual Differences* 72, 1-5. M. Minkov and M.H. Bond, 2015, "Genetic Polymorphisms Predict National Differences in Life History Strategy and Time Orientation," *Personality and Individual Differences* 76, 204-215.

[216] Inglehart et al. (op. cit., endnote 205).

[217] Welzel (op. cit., endnote 17).

[218] Brunkert et al. (op. cit., endnote 75).

[219] Inglehart et al. (op. cit., endnote 204). R. Veenhoven, 2010, "Life is Getting Better: Societal Evolution and Fit with Human Nature," *Social Indicators Research* 97, 105 - 122.

[220] P. Norris and R. Inglehart, 2003, *Rising Tide: Gender Equality and Cultural Change around the World*, New York: Cambridge University Press.

[221] A.C. Alexander and C. Welzel, 2010, "Empowering Women: The Role of Emancipative Values," *European Sociological Review* 27, 364-384. A.C. Alexander and C. Welzel, 2011, "Islam and Patriarchy: How Robust is Muslim Support for Patriarchal Values?" *International Sociological Review* 21, 249-275.

[222] The website "woman stats" (www.womanstats.org) provides plenty of documentation evidencing women's continuing disadvantage even in the most emancipatory countries.

[223] M. Caprioli, C.F. Emmett, B. Ballif-Spanvill and V.M. Hudson, 2012, *Sex and World Peace*, New York: Columbia University Press.

[224] Evidence for this statement is available from the United Nations' Development Program's (2011) Gender Development Index (GDI) and the Gender Empowerment Measure (GEM), which document continuous improvement in the living conditions and power share of women in all but a handful of societies worldwide. For further evidence and discussion, see the following works: Norris and Inglehart (op. cit., endnote 220), Alexander and Welzel 2010 (op. cit., endnote 221). See also A.C. Alexander and C. Welzel, 2014, "Eroding Patriarchy: The Co-Evolution of Women's Rights and Emancipative Values," *International Sociological Review* 25, 144-165. A.C Alexander, R. Inglehart and C. Welzel, 2015, "Emancipating Sexuality: Breakthroughs into a Bulwark of Tradition," *Social Indicators Research* 102, 1-27.

[225] Alexander and Welzel (op. cit., endnotes 221 and 224), Alexander, Inglehart and Welzel (op. cit., endnote 224).

[226] Pinker (op. cit., endnote 71), Welzel and Inglehart (op. cit., endnote 208).

[227] Welzel (op cit., endnotes 17 and 178).

[228] Alexander, Inglehart and Welzel (op. cit., endnote 224).

[229] Welzel (op. cit., endnotes 17 and 178).

[230] For the causal connection among the three components of human empowerment, see Brunkert et al. (op. cit., endnote 4), Welzel (op. cit., endnote 17, chapters 4 and 5).

[231] Brunkert et al. (op. cit., endnote 4), Ruck et al. (op. cit., endnote 203). C. Welzel, R. Inglehart and S. Kruse, 2015, "Pitfalls in the Study of Democratization: Testing the Emancipatory Theory of Democracy," *British Journal of Political Science* 46, 1-10.

[232] Welzel (op. cit., endnotes 17 and 178).

[233] Against undue criticism, Christian Welzel, Lennart Brunkert, Ronald Inglehart and Stefan Kruse defend the concept of emancipative values as a most valid measure of cross-national cultural differences. C. Welzel and R. Inglehart, 2016, "Misconceptions of Measurement Equivalence: Time for a Paradigm Shift," *Comparative Political Studies* 49, 1068-1094. C. Welzel, L. Brunkert, R. Inglehart and S. Kruse, 2021, "Non-Invariance? An Overstated Problem with Misconceived Causes," *Sociological Methods and Research* 50, 1-25.

[234] S. Lindberg, M. Coppedge and J. Gerring et al. (eds.), 2021, *V-Dem Dataset*, Gothenburg University: V-Dem Institute (www.vdem-net.org).

[235] Factor loadings for the three empowerments range from .91 to .95.

[236] To avoid losing countries, we combine the three component measures of human empowerment such that whenever a component is missing, information of the available components is used to calculate the overall index, using a "regression match procedure." Thus, for 106 of 168 countries, the human empowerment index is based on information of all three components. For 62 countries, the index is based on two components.

[237] This is visible in a high reliability statistic: the Cronbach's alpha for the three constituent measures is .93.

[238] P. Kennedy, 1987, *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000*, New York: Vintage.

[239] See Figure 1, p. 4 in Welzel (op. cit., endnote 17).

[240] Galor (op. cit., endnote 26).

[241] Mokyr (op. cit., endnote 1), Landes (op. cit., endnote 1), Jones (op. cit., endnote 1), Lal (op. cit., endnote 8).

[242] "Individualism" is usually juxtaposed to "collectivism." Unfortunately, this terminological juxtaposition is inherently misleading because it insinuates that individualistic societies lack collective cohesion. But all societies have some form of collective cohesion; otherwise they would fall apart and cease to be societies. Consequently, the question is not whether societies do or do not have collective cohesion but which form of collective cohesion

prevails. In highly individualistic societies, people coalesce and join forces voluntarily by consent and group loyalty is a matter of choice. In the absence of individualism, kinship ties force people into group loyalties that they have not chosen and which they are not free to quit. Consequently, the opposite to individualism is actually not collectivism but familism, tribalism, favoritism or conformism—or whatever other term one wants to use to express the framing of social identity and solidarity within the confines of extended kinship and joint ancestry. Chapter 6 digs deeper into this issue.

243 Minkov and Bond (op. cit., endnote 215). F. Murtin, 2013, "The Long-Term Determinants of the Demographic Transition, 1870-2000," *The Review of Economics and Statistics* 95, 617-631.

244 The argument that the economic value of the human individual lays the basis of its ethical values has been made forcefully by Jones (op. cit., endnote 1).

245 McNeill (op. cit., endnote 1), Ferguson (op. cit., endnote 7), Morris (op. cit., endnote 50).

246 Norris and Inlgehart (op. cit., endnote 220).

247 Welzel (op. cit., endnote 17, p. 162).

248 With respect to Renaissance Humanism, the definition of Northwestern Europe includes Northern Italy.

249 W. Plumpe, 2020, *Das Kalte Herz – Kapitalismus: Die Geschichte einer andauernden Revolution* [The Cold Heart - Capitalism: The History of an Ongoing Revolution], Berlin: Rohwolt.

250 Nolan and Lenski (op. cit., endnote 28), Scott (op. cit., endnote 142).

251 Maryanski and Turner (op. cit., endnote 165).

252 Diamond (op. cit., endnote 38), Scott (op. cit., endnote 141), Veenhoven (op. cit., endnote 219). S. Mithen, 2003, *After the Ice: A Global Human History, 20000 BC – 5000 BC*, New York: Norton.

253 Jones (op. cit., endnote 1), Landes (op. cit., endnote 1), Fernando-Armesto (op. cit., endnote 30). D. Chirot, 1994, *How Societies Change*, Thousand Oaks: Pine Forge.

254 Nolan and Lenski (op. cit., endnote 28).

255 Diamond (op. cit., endnote 38) calls them "kleptocracies," while Tilly (op. cit., endnote 34) uses the term "tribute-taking empires." Jones (op. cit., endnote 1) in turn speaks of "plundering machines." Their despotic character lies in the fact that tribute is taken from people and power exercised over them without their consent. No matter whether we call them autocracies or authoritarian regimes, all dictatorial systems are despotic in this sense. From time to time, the people in despotic systems had the luck of being governed by a benevolent despot who had an eye for the common good and showed a commitment to develop the country as a whole. But usually the temptation to abuse the power monopoly to pursue the sole benefit of the despot and the small ruling class was too irresistible.

256 Nolan and Lenski (op. cit., endnote 28), Maryansky and Turner (op. cit., endnote 125).

257 We present the evidence further below in Chapter 10, section 1.

258 Diamond (op. cit., endnote 38), Scott (op. cit., endnote 141), Mithen (op. cit., endnote 252).

259 Wilson (op. cit., endnote 27). S. Oppenheimer, 2004, *Out of Eden: The Peopling of the World*, New York: Robinson.

260 This position is strongly supported by Ryan and Deci's (op. cit., endnote 175) "self-determination theory" and by the work of Maryanski and Turner (op. cit., endnote 126). Lawrence and Nohria's (op. cit., endnote 162) "four-drives theory" also supports this statement: In combination, the drives to learn, to acquire and to defend embody a quest for autonomy and its sustenance.

261 Olsson and Paik (op. cit., endnote 85).

262 Using for each country the latest survey from the WVS (variable years from 2010 till 2020), the CW-Condition correlates with the societies' obedience-vs-autonomy emphasis at $r = .75$ ($N = 101$, $p < .001$), while the earliness of adopting agriculture correlates with the same variable at $r = -.10$ ($N = 97$, $p = .35$)—before mutual control.

After mutual control, the CW-Condition's partial correlation with obedience-vs-autonomy emphasis is $r_{partial}$ = .76 (N = 97, p < .001), while that of the earliness of agriculture is $r_{partial}$ = -.22 (N = 97, p = .03).

263 McNeill (op. cit., endnote 1), Diamond (op. cit., endnote 38).

264 Diamond (op. cit., endnote 38).

265 Olsson and Paik (op. cit., endnote 85).

266 For measurement details of this and all other variables, see SOM-Section S2.

267 Our approach to measure the CW-Condition is described in more detail in Chapter 3. Technical measurement issues are documented in SOM-Section S2.

268 L. Putterman, 2008, "Agriculture, Diffusion and Development: Ripple Effects of the Neolithic Revolution," *Economica* 75, 729-748.

269 Ibid.

270 On the difference between horticulture and agriculture, see Nolan and Lenski (op. cit., endnote 28).

271 We are aware of the fact that some native Indian tribes in North America practiced agriculture long before European contact. Agriculture was most prevalent in the North American Southwest (contemporary New Mexico and Arizona) as well as in the so-called Eastern Agricultural Complex, centering on Southern parts of Illinois and Indiana as well as Kentucky and Tennessee. But these are relatively warm and dry areas and not the ones on the North American continent with the most pronounced CW-Condition. The latter center on the US's Northeast and Canada's Southeast coast on the Eastern flank as well as the US's Northwest and Canada's Southwest coast on the Western flank. In these areas, native Americans lived primarily as hunter-gatherers and some of them pursued horticulture, yet not intense agriculture. B.D. Smith and R.A. Yarnell, 2009, "Initial Formation of an Indigenous Crop Complex in Eastern North America," *PNAS* 106, 6561-6566.

272 Oppenheimer (op. cit., endnote 259).

273 An exception is the work of Galor (op. cit., endnote 26) who does consider this point.

274 Diamond (op. cit., endnote 38), Putterman (op. cit., endnote 268).

275 Ibid.

276 Ibid.

277 Wilson (op. cit., endnote 27), Oppenheimer (op. cit., endnote 259).

278 SOM-Section S2 documents how we measure migratory distances.

279 In total, our regression explains 67% of the variation in how early country-territories adopted agriculture. Of these 67%, the agrarian pioneer potential alone captures 32%, indicating that country-territories with a greater pioneering potential indeed adopted agriculture earlier. The Eurasian dummy also exhibits a significantly positive effect, evidencing that country-territories in Eurasia did have an advantage with respect to early adoption. Nevertheless, the CW-Condition retains a significantly negative effect under these controls, including the timing of settlement—which actually turns insignificant.

280 Landes (op. cit., endnote 1).

281 Ibid. Chirot (op. cit., endnote 253).

282 For the effect of seasonality on economic development, see H. Zuleta, 2012, "Seasonal Fluctuations and Economic Growth," *Journal of Economic Development* 37, 1-27.

283 For the effect of patience and long-term time orientations on economic development, see A. Haldane, 2010, "Patience and Finance: Looking at Patience in Financial Decision Making," *Bank of England Papers*, London: Bank of England.

284 For the positive effects of temporary frost on soil yields, see W.A. Masters and K.D. Wiebe, 2000, *Climate and Agricultural Productivity*, Center for International Development, Cambridge, MA: Harvard University. For the negative effects of heat and drought on agrarian and economic productivity, see M. Dell, B.F. Jones and B.A.

Olken, 2011, "Temperature Shocks and Economic Growth," *NBER Working Paper* 14132, Cambridge, MA: National Bureau of Economic Research.

285 For the effect of temperature on time allocation and work motivation, see J.G. Zivin and M. Neidell, 2014, "Temperature and the Allocation of Time: Implications for Climate Change," *Journal of Labor Economics* 32, 1-26. J.J. Lee, F. Gino and B.R. Staats, 2014, "Why Bad Weather Makes Good Productivity," *Journal of Applied Psychology* 99, 504-513.

286 Parker (op. cit., endnote 22). E. van de Vliert, C. Welzel, A. Sherback, R. Fischer and A.C. Alexander, 2018, "Got Milk? How Freedoms Evolved from Dairying Climates," *Journal of Cross-Cultural Psychology* 49, 1048-1065.

287 Montesquieu (op. cit., endnote 21).

288 For the "lucky latitudes" theory, see Landes (op. cit., endnote 1), Parker (op. cit., endnote 22), Gallup et al. (op. cit., endnote 22), Morris (op. cit., endnote 50).

289 Ibid.

290 S. Sahu, M. Sett and T. Kjellstrom, 2013, "Heat Exposure, Cardiovascular Stress and Work Productivity in Rice Harvesters in India: Implications for a Climate Change Future." *Industrial Health* 51, 424-431. M. C. Morrissey, G. J. Brewer, W. J. Williams, T. Quinn and D. J. Casa, 2021, "The Impact of Occupational Heat Stress on Worker Productivity and Economic Cost." *American Journal of Industrial Medicine*, 64, 981-988. S. Yu, J. Xia, Z. Yan, A. Zhang,Y. Xia, D. Guan and Y. Liu et al., 2019, "Loss of Work Productivity in a Warming World: Differences between Developed and Developing Countries." *Journal of Cleaner Production* 208, 1219-1225.

291 L. Y. Belkin and M. Kouchaki, 2017, "Too Hot to Help! Exploring the Impact of Ambient Temperature on Helping." *European Journal of Social Psychology* 47, 525-538.

292 D. D. Choi, M. Poertner and N. Sambanis, 2023, "Temperature and Outgroup Discrimination." *Political Science Research and Methods* 11, 198-206.

293 As we emphasized before, once institutionalized within the framework of a coercive state, religion has mostly served as a tool of top-down elite control over people. Within the decentral-pluralistic setting of Northwestern Europe, however, many bottom-up religious movements occurred in deliberate resistance against established church hierarchies. Therefore, the religious history of Northwestern Europe is largely a history of religious dissentism, from the Hussites to the Nonconformists to the Protestant Refomation. See Grayling (op. cit., endnote 10). R.M. Frye, 1989, "The Dissidence of Dissent and the Origins of Religious Freedom in America." *Proceedings of the American Philosophical Society* 133, 475-488.

294 McNeill (op. cit., endnote 1), Jones (op. cit., endnote 1), Powelson (op. cit., endnote 1), Landes (op. cit., endnote 1).

295 Powelson (op. cit., endnote 1), Bairoch (op. cit, endnote 41), Maddison (op. cit., endnote 50).

296 As for the "Needham Puzzle" (i.e., China's inability to launch the Industrial Revolution despite its early arrival at the threshold level), see Needham (op. cit., endnote 63), Elvin (op. cit., endnote 63), Tang (op. cit., endnote 63) as well as Lin (op. cit., endnote 63).

297 This premise is widely shared among economic historians, including—among others—Jones (op. cit, endnote 1), Landes (op. cit., endnote 1), Mokyr (op. cit., endnote 1) and Goldstone (op. cit., endnote 12).

298 Wittfogel (op. cit., endnote 23).

299 Ibid.

300 Bentzen et al. (op. cit., endnote 23), Buggle (op. cit., endnote 31).

301 Ibid.

302 A country's scoring on the coolness component of the CW-Condition correlates at r = -.64 (N = 172) with the natural prevalence of seven communicable diseases and at r = -.83 (N = 140) with the prevalence of nine such diseases, including malaria, yellow fever, dengue fever, and bilharzia, among others. These correlations remain highly significant and negative, even if we control for a country's per capita Gross Domestic Product, no matter

from which time point we take it. For instance, controlling for the per capita Gross Domestic Product in 1800 (logged), the partial correlation between the coolness component and the 7-diseases index is r = -.52 and r = -.73 for the 9-diseases index (all significant at $p < .001$). The per capita Gross Domestic Product also significantly reduces disease prevalence ($r_{partial}$ = -.26 for the 7-diseases index and -.35 for the 9-diseases index) but much less so than does the coolness component of the CW-Condition. Disease data are historic, relating to the time around 1800-50 CE, and are taken from D.R. Murray and M. Schaller, 2010, "Historic Prevalence of Infectious Diseases with 230 Geopolitical Regions," *Journal of Cross-Cultural Psychology* 41, 99-108.

303 As a qualifying remark, we attribute the CW-Condition a naturally disease-reducing effect relative to the absence of the CW-Condition, not a disease-reducing effect in any absolute sense of the term. Even the CW-areas of Northwestern Europe were at times hit by pandemics, of which the Black Death in 1348 CE was most devastating in decimating up to fifty percent of the population. Yet, these pandemics were not exclusive to the CW-Condition and the CW-Condition still lacks many of the diseases additionally present in hotter climates. See L.R. Poos, 1991, *A Rural Society After the Black Death: Essex 1350-1525*, Cambridge: Cambridge University Press.

304 This result is unaffected by the point in time from which we take the per capita income measure, be it from 1800 or 2010 or any other year in between.

305 This point as well has been elaborated most clearly by Jones (op. cit., endnote 1) and Elvin (op. cit., endnote 63).

306 C. Justin Cook collected historic lactose tolerance data on a country-level basis. Using these data, one discovers that a countries' CW-Conditions correlate at r = .61 (N = 131; $p < .001$) with the country-population's lactose tolerance. The correlation is conditional, however: it depends on a country-territory's initial endowment with domesticable animals, which can vary at similarly strong CW-Conditions (e.g., CW-areas in the New World generally had fewer domesticable animals than those in the Old World). Specifically, among the 50 countries in the upper half of domesticable animal endowments, the correlation between the CW-Condition and lactose tolerance is r = .82 ($p < .001$). But among the 29 countries in the lower half of domesticable animal endowments, the correlation is r = -.09, which is insignificant (p = .63). These findings make sense. They reflect the fact that lactose tolerance offers an advantage only to the extent that domesticable animals are available from which one can consume dairy products. Under this premise, the advantage of lactose tolerance increases further with a stronger CW-Condition because then the calcium included in dairy products offers a compensation for the vitamin D_3 deficit incurred by lower sun exposure under cloudy skies and low sunray intensity. See C.J. Cook, 2014, "The Role of Lactase Persistence in Precolonial Development," *Journal of Economic Growth* 19, 369-406.

307 N. Koepke and J. Baten, 2008, "Agricultural Specialization and Height in Ancient and Medieval Europe," *Explorations in Economic History* 45, 127–146. L.M. Buckwalter and J. Baten, 2019, "Valkyries: Was Gender Equality high in the Scandinavian Periphery since Viking Times? Evidence from Enamel Hypoplasia and Height Ratios." *Economics and Human Biology* 34, 181-193.

308 M. Mitterauer, 2016, *Why Europe? The Medieval Origins of Its Special Path*, Chicago: University of Chicago Press.

309 For the distinction between "coercive" and "contractual" feudalism, see Powelson (op. cit., endnote 1).

310 Jones (op. cit., endnote 1), Landes (op. cit., endnote 1), Bloch (op. cit., endnote 53) and Braudel (op. cit., endnote 53) also emphasize the exit options in European as well as Japanese feudalism.

311 Poos (op. cit., endnote 303). N Voigtländer and H.J. Voth, 2013, "How the West Invented Fertility Restriction," *American Economic Review* 103, 2227-2264.

312 McNeill (op. cit., endnote 1), Landes (op. cit., endnote 1), Powelson (op. cit., endnote 1), Ferguson (op. cit., endnote 7), Grayling (op. cit., endnote 10), Bloch (op. cit., endnote 53), Braudel (op. cit., endnote 53), Mitterauer (op. cit., endnote 308) and other comparative historians flag out the orientation towards rights struggles as a signature feature of the West's emancipatory legacy.

313 Chapter 6 comments this evidence in greater detail.

314 For European-Japanese parallels, see McNeill (op. cit., endnote 1), Powelson (op. cit., endnote 1), Jones (op. cit., endnote 1), Landes (op. cit., endnote 1), Bloch (op. cit., endnote 53) and Braudel (op. cit., endnote 53).

315 Finer (op. cit., endnote 44), p. 1078.

316 Landes (op. cit., endnote 1).

317 We have collected data from Gapminder (www.gapminder.org) estimating for 1800 CE the number of children per 1,000 inhabitants not reaching the age of five. The year 1800 is a time that lies before the Industrial Revolution for every country, except England and perhaps Belgium. Thus, if there is an effect of coolness on child mortality already at this time, it cannot be an artifact of industrialization. Such an effect indeed exists: A country's score on the coolness component of the CW-Condition correlates at r = -.54 with its child mortality in 1800 (N = 173; p < .001). Controlling for a country's per capita Gross Domestic Product (logged) at the same time, the partial correlation remains highly significant and strongly negative ($r_{partial}$ = -.44; N = 173; p < .001). By contrast, the effect of the per capita Gross Domestic Product itself is barely significant ($r_{partial}$ = -.14; N = 173; p = .060).

318 Gapminder (op. cit., endnote 317) collected these data from various different sources for about 173 countries.

319 For the numbers, see endnote 317.

320 J.P. Rushton, 1996, "Race, Genetics and Human Reproductive Strategies," *Genetic, Social, and General Psychology Monographs* 122, 21–53.

321 Z. Clay and F.B.M. de Waal, 2013, "Development of Socio-Emotional Competence among Bonobos," *PNAS* 110, 18121-18126.

322 This statement might contradict the stereotype that East Asian countries like Singapore, South Korea, Taiwan and Japan have low fertilities and long education, and the latter on a high quality level (as evident by PISA and TIMSS results), while sustaining a so called "collectivist" culture with traditional ("Confucian") family values. But this objection misses our point, which is actually about *change* over time and its *direction*: Where fertility drops and education expands—including East Asia—familism is giving way to increasing individualism. The fact that East Asian societies entered this process on a lower level of individualism does not exempt them from the subsequent rise of individualism. For evidence, see Welzel (op. cit., endnote 17). S. Beugelsdijk and C. Welzel, 2018, "Dimensions and Dynamics of National Culture: Synthesizing Hofstede with Inglehart," *Journal of Cross-Cultural Psychology* 49: 1-25.

323 The data source is Gapminder (op. cit., endnote 317).

324 Minkov and Bond (op. cit., endnote 215).

325 Cook (op. cit., endnote 306).

326 Across 108 countries for which lactose tolerance data are available, the correlation with the CW-Condition amounts to r = .57 (p < .001).

327 This is an important qualification because—under modern levels of calorie intake—heavy meat consumption is a vice rather than a virtue for health.

328 C.W. Hansen, P.S. Jensen and C.V. Skovsgaard, 2015, "Modern Gender Roles and Agricultural History: The Neolithic Inheritance," *Journal of Economic Growth* 20, 365-404. V. Fouka and A. Schlaepfer, 2020, "Agricultural Returns to Labor and the Origins of Work Ethics," *The Economic Journal* 130, 1081-1113.

329 Jones (op. cit., endnote 1), Voigtländer and Voth (op. cit., endnote 311).

330 We substantiate and evidence this point in more detail in Chapter 5, around Figure 5-3.

331 Some might suspect that these numbers are deceptive because some statistics indicate that women in Northwestern Europe still bore many children after marriage, so the low average might be caused by much lower births among unmarried women. But even if so, our point still remains valid because Northwestern Europe was unique in tolerating large proportions of unmarried women. This toleration resulted from the fact that marriage was tied to much stricter conditions, namely the ability to found, sustain and feed an own family household. Together with relatively high female ages at first marriage, the self-sustanence condition of nuclear family households confirms that Northwestern Europe's marriage rules were *by no means* tailored to maximize female fertility throughout women's fertile lifespan. Hence, our point remains unchallenged that CW-climates operated under considerably lower fertility pressures at the agrarian stage of development. At the hunter-gatherer stage, this was the case anyways because the mobility of hunter-gatherer tribes puts a natural limit on the number of children not able to move as well as on the number of women being largely immobile because of pregnancy.

332 SOM-Section S4 documents the regression results.

333 Woodley (op. cit., endnote 215).

[334] Minkov and Bond 2015 (op. cit., endnote 215).

[335] Looking at business practices reveals an intimate connection between long-time orientations and trust. Companies with a long-term interest in staying in business usually take great care of their reputation, for which reason they will de-prioritize immediate profit maximization on behalf of gaining and cultivating their customers' trust. The most efficient way to do so is indeed to offer reliable complimentary services, which eventually builds trust—not despite but because it signals an obvious sacrifice of immediate benefit for the moment. See Weber (op. cit., endnote 8).

[336] Murtin (op. cit., endnote 26).

[337] Using historic schooling data collected by Murtin (op. cit., endnote 26) and fertility data by Gapminder (op. cit., endnote 317), the cross-country correlation between school attendance and female fertility is r = -.91 in 1900 (N = 48; p < .001). Using more recent data on fertility and schooling from Lindberg et al (op. cit., endnote 234) the fertility-education correlation amounts to r = -.80 (N = 91) in 1960, r = -.86 (N = 93) in 1970, r = -.79 (N = 97) in 1980, r = -.82 (N = 98) in 1990, r = -.85 (N = 136) in 2000, r = -.81 (N = 136) in 2010 and r = -.78 (N = 136) in 2017 (all significant at p < .001)—documenting a more or less constant overlap of about 66% between low fertility rates and high schooling rates.

[338] The number of observations amounts to N = 7,395 country-years, with the annual time series starting in 1960.

[339] The factor loadings are -.97 for female fertility and +.97 for school attendance.

[340] For these calculations, we use the Gross Domestic Product per capita in constant prices.

[341] The correlation amounts to r = -.72 (p < .001, N = 8,260 country-years).

[342] The correlation amounts to r = +.83 (p < .001, N = 11,449 country-years).

[343] We calculate the correlations calculated with logged numbers of the per capita Gross Domestic Product.

[344] Murtin (op. cit., endnote 26).

[345] Welzel (op. cit., endnote 178).

[346] Murtin (op. cit., endnote 26).

[347] M.S. Hartman, 2004, *The Household and the Making of History: A Subversive View of the Western Past*, Cambridge: Cambridge University Press.

[348] van Zanden et al. (op. cit., endnote 8).

[349] World Bank (ed.), various years, *Social Development Indicators Series* (www.worldbank.org).

[350] Regression results in SOM-Section S4 document this observation.

[351] Murtin (op. cit., endnote 26).

[352] T.W. Guinnane, 2011, "The Historical Fertility Transition: A Guide for Economists," *Journal of Economic Literature* 49, 589-614.

[353] Zuleta (op. cit., endnote 282).

[354] McNeill, (op. cit., endnote 1), Jones (op. cit., endnote 1), Landes (op. cit., endnote 1), Mokyr (op. cit., endnote 1), Goldstone (op. cit., endnote 12).

[355] See Mitterauer (op. cit., endnote 308) on water power and mill technology.

[356] W. Abel, 1978, *Agrarkrisen und Agrarkonjunktur: Eine Geschichte der Land- und Ernaehrungswirtschaft Mitteleuropas seit dem fruehen Mittelalter* [Agrarian Crises and Agrarian Booms: A History of the Land- and Nutrition Economy since the Early Medieval Age], Tuebingen: Parey. U. Wesel, 2006, *Geschichte des Rechts: Von den Fruehformen bis zur Gegenwart* [History of Law: From Early Forms til Today], Muenchen: Beck.

[357] Turner and Maryanski (op. cit., endnote 165), Ryan and Deci (op. cit., endnote 175), Birch and Cobb (op. cit., endnote 176).

[358] Mann (op. cit., endnote 30), Tilly (op. cit., endnote 34), Finer (op. cit., endnote 44), Hall (op. cit., endnote 48).

[359] Grayling (op. cit., endnote 10).

[360] For example, during the reign of Pharaoh Ramses III (1186-1155 BCE), tomb builders in Ancient Egypt staged a strike to protest delayed rations. In ancient Rome, The Conflict of the Orders (circa 500-287 BCE) was a struggle in which "plebeians" (i.e., the lower class) sought political representation to protect themselves from the arbitrary power of the "patricians" (i.e., the upper class). In Mesoamerica, revolts against rulers broke loose in various occasions. Yet, these resistance episodes cannot hide over the fact that emancipatory struggles outside the West's CW-areas did not reach the level of grassroots coordination, temporal continuity and programmatic determination known from the West's uninterrupted chain of emancipatory movements from late Medieval times until today.

[361] Mann (op. cit., endnote 30), Finer (op. cit., endnote 44).

[362] Our portrayal follows the distinctions of two authors. For one, Powelson (op. cit., endnote 1) distinguishes "contractual" and "coercive" versions of feudalism, assigning the former only to Northwestern Europe and Japan and the latter to all other agrarian civilizations. Similarly, Tilly (op. cit., endnote 34) distinguishes "capital-intensive" and "coercion-intensive" modes of state formation. Tilly sees the "capital [contract]-intensive" mode of state formation most clearly exemplified by England and the Netherlands and the "coercion-intensive mode" by Prussia and Russia—which is a distinction in terms of the CW-Condition (more pronounced to the West, less pronounced to the East). Accordingly, Europe's historic East-West division is captured by this logic. In Tilly's view, the capital-intensive mode of state formation is unique in that private corporations—such as merchant guilds, the Hanseatic League or the Dutch and British East India Companies—generated their own organizing capacities. Rulers intending to build state apparatuses with fiscal and regulatory power needed to negotiate with the capitalist forces in society, which lay the ground for the principle of "no taxation without representation."

[363] Acemoglu et al. (op. cit., endnote 41).

[364] Statehood data measure the number of years of continued statehood in a given fifty-year period from 50 CE to 1950, accumulating the years over the sequence of these 50-year intervals. These data are from V. Bockstette, A. Chanda and L. Putterman, 2002, "States and Markets," *Journal of Economic Growth* 7, 347-369.

[365] Data are taken from Bentzen et al. (op. cit., endnote 23).

[366] Selecting this period as the starting point is not our arbitrary choice but is due to the fact that the Bockstette et al. (op. cit., endnote 364) data begin at this point.

[367] See Jones (op. cit., endnote 1), Spolaore and Wacziarg (op. cit., endnote 26), Bairoch (op. cit., endnote 41), Maddison (op. cit., endnote 50) for Europe's catch-up at around 1500 CE.

[368] This thesis goes back to Wittfogel (op. cit., endnote 23) who argued that agriculture based on centralized irrigation management (what he labeled "hydraulic societies") breeds coercive states. A long time ridiculed for its simplicity, Wittfogle's irrigation thesis has recently been powerfully confirmed by Bentzen et al. (op. cit., endnote 23), showing with systematic data that agrarian crop yield obtained from irrigation positively predicts autocracy at various time points until today.

[369] Bairoch (op. cit., endnote 41).

[370] North (op. cit., endnote 1).

[371] Putterman et al. (op. cit., endnote 268) date the adoption of agriculture 10,000 years back for Iraq (representing the Middle East), 9,000 years back for China, 8,500 years back for India, 6,050 years back for Italy (representing the Mediterranean), 5,500 years back for the Netherlands (representing Northwestern Europe) and 4,200 years back for Japan. Relating these estimates to 900 CE as the approximate date of arrival at the mature pre-industrial stage of development for the Middle East (Caliphate era), 1050 CE for China (Song era), 1650 CE for India (Mughal era), 50 CE for the Mediterranean (emperor Augustus), 1500 CE for Northwestern Europe (eve of the colonial era) and 1700 CE for Japan (Tokugawa era), we obtain 8,900 years of maturation time for the Middle East, 8,050 years for China, 8,150 years for India, 6,050 years for the Mediterranean, 5,500 years for Northwestern Europe and 4,200 years for Japan.

[372] K. Pomeranz, 2012, *The Great Divergence: China, Europe and the Making of the Modern World Economy*, Princeton: Princeton University Press.

[373] On historic per capita income estimates, see Maddison (op. cit., endnote 50).

[374] Nolan and Lenski (op. cit., endnote 28). C.R. Ember and M. Ember, 1998, "Cross-Cultural Research," in H.R. Bernard (ed.), *Handbook of Methods in Cultural Anthropology*, Walnut Creek: Altamira, 647-687.

[375] K. Klein Goldewijk, A. Beusen, M. de Vos and G. van Drecht, 2011, "The HYDE 3.1 spatially explicit database of human induced land use change over the past 12,000 years." *Global Ecology and Biogeography* 20 (1): 73-86.

[376] For the "Needham Puzzle" (i.e., China's—and the other old civilizations'—incapacity to launch an industrial take off long before this happened in the much younger CW-civilization of Northwestern Europe) see Needham, Elvin, Tang, Lin (op. cit., endnote 68).

[377] The sample size is 120 country-territories of Eurasia and Africa. The areas of the New World (i.e., the Americas, Australia, New Zealand and the South Pacific) were populated later, were remote and unconnected with each other and thus not in an evolutionary race in the same way as were the older and mutually competing Eurasian civilizations.

[378] For the low labor demands of cereal cultivation, see Jones (op. cit., endnote 1), Landes (op. cit., endnote 1), Mitterauer (op. cit., endnote 308).

[379] Jones (op. cit., endnote 1).

[380] Maddison (op. cit., endnote 50).

[381] The correlation amounts to $r = -.51$ ($N = 32$; $p < .001$). Here and subsequently, the per capita income estimates are logged, which is standard practice to correct a skewed distribution.

[382] The correlation amounts to $r = .48$ ($N = 32$; $p < .001$).

[383] Note that the scores on the vertical axes in Figure 5-12 do not show directly these proportions because they are logged. But a logged per capita income of 6.4 in the case of Iraq in the year 1000 CE corresponds with a raw income level of approximately 610 Dollars (to the base *e*, $2.76^{6.4} \sim 610$).

[384] International dollars in constant prices of the year 2000.

[385] The historic income data cited here are from Maddison (op. cit., endnote 50). The data for 2016 are from the World Bank's Development Indicators Series, retrieved at the time of this writing. See World Bank (ed.), 2022, *World Development Indicators Series*, Washington DC (available online at www.worldbank.org).

[386] Jones (op. cit., endnote 1), Landes (op. cit., endnote 1), Mitterauer (op. cit., endnote 308).

[387] The Black Death in the middle of the 14th century was a demographic disaster that killed half of the population and more in some areas of Europe. Some scholars, however, suggest that the labor shortages caused by this event contributed to rising per capita incomes. At any rate, by 1500 the demographic setback was largely overcome and population was back to previous levels in most areas. See Poos (op. cit., endnote 303), Voigtländer and Voth (op. cit., endnote 311).

[388] For Japan's Tokugawa era florescence, see Jones (op. cit., endnote 1), Powelson (op. cit., endnote 1), Landes (op. cit., endnote 1).

[389] The word "quickly" is to be understood relatively: It took England about 150 years to finalize the first phase of the Industrial Revolution. Other countries, like Germany or Japan, needed less time. At any rate, on the time scale of the ancient civilizations, these are periods as short as glimpses of an eye.

[390] Galor (op. cit., endnote 26).

[391] For the lower labor demands of cereal cultivation compared to rice, sugar cane, tobacco, cotton and tropical crops, see Jones (op. cit., endnote 1), Mitterauer (op. cit., endnote 308), Fouka and Schlaepfer (op. cit., endnote 328).

[392] The Black Death in the middle of the 14th century reinforced this effect. See Poos (op. cit., endnote 303), Voigtländer and Voth (op. cit., endnote 311).

[393] J. Henrich, S.J. Heine and A. Norenzayan, 2010, "Most People are Not WEIRD," *Nature* 466.

[394] Schulz et al. (op. cit., endnote 26).

395 A. Macfarlane, 1979, *The Origins of English Individualism*, Oxford: Blackwell. J. Hajnal, 1982, "Two Kinds of Preindustrial Household Formation Systems," *Population and Development Review* 8, 449–494. P. Laslett, 1989, "The European Family and Early Industrialization," in J. Baechler, J.A. Hall and M. Mann (eds.), *Europe and the Rise of Capitalism*, Oxford: Blackwell, 234-242. E. Todd, 1987, *The Causes of Progress: Culture, Authority and Change*, Oxford: Blackwell.

396 van Zanden et al. (op. cit., endnote 8), Hartman (op. cit., endnote 347).

397 For Japan, see L.L. Cornell, 1987, "Hajnal and the Household in Asia: A Comparativist History of the Family in Preindustrial Japan, 1600-1870," *Journal of Family History* 12, 143 - 162. H. Kiyoshi, 1999, "Marriage Patterns and the Demographic System of Late Tokugawa Japan," *Japan Review* 11, 129-144.

398 S. Dilli, 2015, "Family Systems and the Historical Roots of Global Gaps in Democracy," *Economic History of Developing Regions*, 1-53.

399 Todd (op. cit., endnote 395).

400 Dilli (op. cit., endnote 398) situates her data in about 1850 CE. Except for England and Belgium, for the entire rest of the world this is still a point in time before the Industrial Revolution came in full swing.

401 Using data for some 150 countries, Dilli (op. cit., endnote 398) assigns each country to the one family system that has been the dominant one in pre-industrial times. Taking this as our point of departure, we ask which type of family system is more emancipatory in its long-term consequences. To answer this question, we map the seven family types on the human empowerment index in 2018 (SOM-Section S2). Doing so, the following ordering appears in terms of country-group averages on human empowerment (standard deviations and number of countries in parentheses): "Polygamous Endogamy" 0.46 (SD 0.09, $N = 36$), "Patrilocal Endogamy" 0.47 (SD 0.08, $N = 31$), "Anomic Endogamy" 0.56 (SD 0.10, $N = 21$), "Patrilocal Exogamy" 0.63 (SD 0.12, $N = 24$), "Nuclear, Type C" 0.73 (SD 0.13, N = 13), "Nuclear, Type B" 0.83 (SD 0.14, $N = 13$), "Nuclear, Type A" 0.91 (SD 0.03, $N = 7$). We re-order Dilli's categories along this sequence of human empowerment outcomes. This seven-type family system classification accounts for a significant 66% of the total cross-national variation in human empowerment today. For a detailed description of the family types and further measurement details, see SOM-Section S2.

402 Ferguson (op. cit., endnote 7), Goldstone (op. cit., endnote 12).

403 We describe this measure in more detail in SOM-Section S2.

404 van Zanden et al. (op. cit., endnote 8), Schulz et al. (op. cit., endnote 26). J. Goody, 1983, *The Development of the Family and Marriage in Europe*, New York: Cambridge University Press). F. Fukuyama, 2011, *The Origins of Political Order – From Prehuman Times to the French Revolution*, New York: Farrar, Strauss and Giroux, pp. 229-244.

405 Although Henrich (op. cit., endnote 2) and Schulz et al. (op. cit., endnote 26) do not present their claims with explicit reference to the nuclear family pattern and female reproductive autonomy, their proposition that the Western church's marriage policy created Europe's kinship-loose family system clearly implies a causal role of the church in the West's nuclear family pattern.

406 Tacitus, 2019 [98], *Germania*, London: Wentworth Press, quoted in D. Herlihy, 1985, *Medieval Households*, Cambridge: Harvard University Press, p. 73. For a review of the historical evidence, see Hartman (op. cit., endnote 347). For a review of the English evidence, see T. Edwards and S. Ogilvie, 2014, "Does the European Marriage Pattern Explain Economic Growth?" *The Journal of Economic History* 74, 651–693. The following works evidence that the Germanic tribes inhabiting Northwestern Europe's CW-area pursued exogamous marriages, entertained rather loose kinship ties and treated women relatively equally already in pagan times, long before any exposure to the Western church: J.O. McNamara and S. Wemple, 1988, "The Power of Women through the Family in Medieval Europe, 500-1100," in M. Erler and M. Kowaleski (eds.), *Women and Power in the Middle Ages*, Atlanta: University of Georgia Press, 83-101. J. Jochens, 2004, "Norse Women," in K.M. Wilson and N. Margolis (eds.), *Women in the Middle Ages: An Encyclopedia*, London: Greenwood Press, 730-736. M. Todd, 2004, *The Early Germans*, London: Blackwell, 730-736. K. Hinds, 2010, *Early Germans*, London: Marshall Cavendish. S. MacDowall, 2010, *Germanic Warriors 236-568 AD*, Bloomsbury: Osprey Publishing. T.K. Derry, 2012, *A History of Scandinavia: Norway, Sweden, Denmark, Finland, Iceland*, Minneapolis:

University of Minnesota Press. See also Koepke and Baten (op. cit., endnote 307), Buckwalter and Baten (op. cit., endnote 307).

407 Shaw and Saller (op. cit., endnote 79), Passmore and Watts (op. cit., endnote 79). See also the discussion in endnote 79.

408 Before mutual control, duration of exposure to the Western church (N = 155) explains a highly significant 52% of the global variation in the gradual absence-vs-presence of the nuclear family configuration. The CW-Condition, for its part, explains 74% of this variation (N = 178). Under mutual control, duration of exposure to the Western church explains 2% of the global variation in the gradual absence-vs-presence of the nuclear family configuration, while the CW-Condition explains 46%. The difference between, on one hand, the sum of the two partial explained variances (46% + 2 % = 48%) and, on the other hand, the total explained variance (74%) amounts to 26%. These 26% reflect the inseparable overlap in variance between the CW-Condition and exposure to the Western church that is not clearly attributable to either of these two variables. Indeed, duration of exposure to the Western church and the CW-Condition share an overlapping variance of 66% (N = 155). Since the CW-Condition is temporally prior to the Western church and its Medieval marriage policy, this overlapping variance allows for only one causal interpretation: The CW-Condition incentivized the selection of a marriage doctrine that normed the marriage practices to which the CW-Condition had already predisposed its inhabitants.

409 On our 0-to-1 CW-index, Japan scores at 0.35, which compares to 0.75 for Northwestern Europe at the high end and 0.02 for Central Africa and Central Asia at the low end. Russia, for example, scores at 0.38.

410 It is different with settlement autonomy. Because of the island's extremely rugged territory, arable land is much more limited than, for instance, on the mostly plain British Islands. Thus, Japan faces much less of an open-frontier situation than most of Northwestern Europe. In other words, land value is more territorially fixed in Japan than in Northwestern Europe, which reduces settlement autonomy.

411 Cornell (op. cit., endnote 397), Kiyoshi (op. cit., endnote 397).

412 Jones (op. cit., endnote 1), Powelson (op. cit., endnote 1), Landes (op. cit., endnote 1), Bloch (op. cit., endnote 53), Braudel (op. cit., endnote 53).

413 Ibid.

414 In fact, after Portuguese attempts to install Catholicism in Japan, the Tokugawa Shogunate banned Catholicism and persecuted its followers in the 17th century. Afterwards, the Dutch were the only Western power allowed to have a trade post in Japan, namely in the port of Nagasaki. Whatever one concludes from these facts, exposure to the marriage policy of the Catholic church has been a negligible influence on the Japanese nuclear family pattern. See E. Beauchamp and A. Iriye, 1990, *Foreign Employees in Nineteenth-century Japan*. Boulder: Westview Press, 1990.

415 On our 0-to-1 CW-index, Italy scores at 0.38.

416 The CW-score of China's Northeast is as high as that of neighboring North Korea: 0.27, which compares to an average for all of China of 0.25. The CW-score of Russia's Northwest is close to that of neighboring Estonia: 0.58, which compares to an average of 0.38 for the whole of Russia.

417 Leontovitsch (op. cit., endnote 172).

418 We measure coercive-vs-contractual statehood using the "liberal democracy index" from the V-Dem project (Lindberg et al., op. cit., endnote 234). The index covers checks of executive power by elected assemblies and rule of law, thus measuring power checks in combination with an indiscriminate common good orientation, which is our definition of contractual statehood. We refrain from using the term "democracy" before the establishment of universal male and female suffrage, which did not become a democratic standard before the end of World War I. For measurement details, see SOM-Section S2.

419 The correlation amount to at r = .71 (p < .001; N = 168).

420 The CW-Condition's effect on coercive-vs-contractual statehood in 2016 amounts to an $r_{partial}$ of .62 (N = 155; p < .001). By contrast, the effect of the per capita GDP (logged) drops from r = .47 in the bivariate case to $r_{partial}$ = -.10 (p = .904, insignificant) under control of the CW-Condition.

421 D. Acemoglu and J.A. Robinson, 2006, *Economic Origins of Democracy and Dictatorship*, New York: Cambridge University Press.

422 S.M. Lipset, 1959, "Some Social Requisites of Democracy: Economic Development and Political Legitimacy," *American Political Science Review* 53, 69-105.

423 As before, we measure coercive-vs-contractual statehood using the "liberal democracy index" from the V-Dem project (see Lindberg et al., op. cit., endnote 234).

424 Indeed, in 1893 New Zealand is the first country in the world to introduce universal female and male suffrage.

425 The correlation amounts to $r = .84$ ($p < .001$; $N = 102$). As before, the impact of the CW-Condition withstands controls for the per capita GDP: Using the logged (base 10) per capita GDP measure for 1900 from V-Dem (Lindberg et al., op. cit., endnote 234), which is available for 37 countries, the controlled effect of the CW-Condition on contractual statehood amounts to $r_{partial} = .37$ ($p = .028$). The controlled effect of per capita GDP amounts to an $r_{partial} = .47$ ($p = .004$).

426 M. Ross, 1998, "Does Oil Hinder Democracy?," *World Politics* 53, 325-361. B. Rosenfeld, 2020, *The Autocratic Middle Class: How State Dependency Reduces the Demand for Democracy*, Princeton: Princeton University Press.

427 Goldstone (op. cit., endnote 12), Braudel (op. cit., endnote 53).

428 Ibid.

429 Triandis (op. cit., endnote 9).

430 Powelson (op. cit., endnote 1), Lal (op. cit., endnote 8).

431 Wilson (op. cit., endnote 27), Banfield (op. cit., endnote 165), Bowles and Gintis (op. cit., endnote 163), Maryanski and Turner (op. cit., endnote 165).

432 F. Toennies, 1955 [1887], *Community and Association*, London: Routledge. É. Durkheim, 2013 [1893], *The Division of Labor in Society*, London: Digireads. G. Simmel, 1972 [1908], *On Individuality and Social Norms*, Chicago: University of Chicago Press.

433 The term "social cage" is borrowed from Maryanski and Turner (op. cit., endnote 165).

434 On the pro-social nature of individualism, see Welzel (op. cit., endnote 17, chapter 6). C. Welzel and J. Delhey, 2015, "Generalizing Trust: The Benign Force of Emancipation," *Journal of Cross-Cultural Psychology* 47, 875-896.

435 Triandis (op. cit., endnote 9), C. Kagitcibasi, 2005, "Autonomy and Relatedness in Cultural Context: Implications for Self and Family," *Journal of Cross-Cultural Psychology* 36, 403-422.

436 Henrich et al. (op. cit., endnote 393).

437 Schulz et al. (op. cit., endnote 26).

438 R. Putnam, 2000, *Bowling Alone: The Collapse and Revival of American Community*, New York: Simon & Schuster. B. Schwartz, 2004, "The Tyranny of Choice," *Scientific American*, 71-75.

439 Ibid. But see B. Wellman, 1979, "The Community Question: The Intimate Networks of East Yorkers," *American Journal of Sociology* 84, 1201-1231. R. Florida, 2003, *The Rise Creative Class: And How It's Transforming Work, Community, Leisure and Everyday Life*, New York: Basic Books.

440 The question of whether the transition from tradtional rural life (with its familism) to modern urban life (with its individualism) is harmful or beneficial for people's community ties and psychological well-being pre-occupies sociologists since the beginning of industrialization. The debate started from Durkheim (op. cit., endnote 432), Toennies (op. cit., endnote 432) and Simmel (op. cit., endnote 432) and continues till today, with an excellent summary by Wellman (op. cit., endnote 439). And the pendulum continues swinging between dystopian and utopian views of modern life. The latest rehearsal of this debate is reflected in the works of Putnam (op. cit., endnote 438) on the dystopian side, versus Florida (op. cit., endnote 439) on the utopian side, alongside Wellman's question of whether modern individualism means "community lost" or "community liberated." But apart from the ideological inspiration of this debate, the empirical evidence clearly indicates that more individualistic

societies outperform others on practically all accounts relevant for human well-being: including physical security, material prosperity, biological health, educational opportunities, human rights, democratic voice, civil society strength, social movement activity, outgroup trust, diversity tolerance, environmental performance and—yes—life satisfaction. For evidence, see the reference in the next endnote.

441 Emancipative values are a first-rate indicator of cultural individualism and correlate with all these features in the described manner: see Welzel (op. cit., endnote 17, p. 89).

442 Wilson (op. cit., endnote 27).

443 Bowles and Gintis (op. cit., endnote 163).

444 S. Gaechter, B. Herrmann and C. Thoeni, 2010, "Culture and Cooperation," *Proceedings of the Royal Society B - Biological Sciences* 365, 2651-2661.

445 Welzel (op. cit., endnote 17, chapter 6).

446 Toennies (op. cit., endnote 432), Simmel (op. cit., endnote 432), Florida (op. cit., endnote 439).

447 Schulz et al. (op. cit., endnote 26) call this "impersonal pro-sociality."

448 Uslaner (op. cit., endnote 26).

449 Welzel (op. cit., endnote 17).

450 D. Ziblatt, 2006, "How Did Europe Democratize?," *World Politics* 58, 311-338.

451 B. Rothstein, 1998, *Just Institutions Matter: The Moral and Political Logic of the Universal Welfare State*, New York: Cambridge University Press. C. Dahlström and V. Lapuente, 2017, *Organizing Leviathan: Politicians, Bureaucrats and the Making of Good Government*, New York: Cambridge University Press.

452 We measure cultural individualism, using data from M. Minkov, M. Schachner and C. Welzel, 2019, "Rising Individualism Rewires Happiness from Religion to Freedom," *Journal of Happiness Studies* 21, 2873-2888. For trust in strangers, we take data from the European Values Study and World Values Survey (www.worldvaluessurvey.org) in the way described by Welzel and Delhey (op. cit., endnote 434), replicating their "out-group trust" index. Voluntary engagement in grassroots social movements measures people's anticipated and active participation (with an emphasis on the latter) in such peaceful collective actions as demonstrations, boycotts and petitions, as described by Welzel (op. cit., endnote 17, chapter 7). Emancipative values are also taken from the European Values Study and World Values Survey, as described by Welzel (op. cit., endnote 17, chapter 2). Number of countries covered are 56 for cultural individualism, 96 for trust in strangers, 101 for voluntary engagement, 106 for emancipative values and 96 for the civicness factor, which summarizes the strongly inter-correlated trust in strangers, voluntary engagement and emancipative values in a single variable. All correlations reported in the main text are significant at the 1%-level. For the World Values Survey data, see C. Haerpfer, R. Inglehart, A. Moreno and C. Welzel et al. (eds.), *The World Values Survey Dataset: Time Series 1981-2020* (release version 1.1). Madrid: JD Systems (WVS data archive, online at http://www.worldvaluessurvey.org/WVSContents.jsp).

453 Country-level factor loadings on the common civicness dimension are .88 for trust in strangers and .90 for both voluntary engagement and emancipative values. The Cronbach's alpha for the three components is .81.

454 However, over time the CW-effect on rule of law became weaker: in 2018, it explains 33% of the cross-national variance ($r = .57$, $p < .001$, $N = 168$), although the effect is still significant. We study the details of the weakening of the CW-Condition's benign effects in Chapter 12.

455 The measure is taken from United Nations Development Program (ed.), 2019, *Human Development Report 2018*, New York: United Nations Development Program (www.undp.org).

456 Lindberg et al. (op. cit., endnote 234).

457 This conclusion resonates with the criticism of the Western Church thesis by Passmore and Watts (op. cit., endnote 79).

458 For the particularities of the Western state, see Jones (op. cit., endnote 1), Ferguson (op. cit., endnote 7), Mann (op. cit., endnote 30), Tilly (op. cit., endnote 34), Finer (op. cit., endnote 44).

459 See T. Parsons, 1964, "Evolutionary Universals in Society," *American Sociological Review* 29, 339-357.

460 Colonial settlers escaped feudal obligations and entered lands presenting themselves even more as open frontiers than their homelands ever were, at least if one decimated and marginalized the relatively small foraging, pastoralist or horticultural native populations.

461 After colonization, an advantage of the CW-areas of the New World over those in the Old World was that they did not have to get rid of the privileges of a nobility and feudal obligations.

462 For the thin population density of the New World's CW-areas, see Fernandez-Armesto (op. cit., endnote 30).

463 On the role of diseases, see Diamond (op. cit., endnote 38) and McNeill (op. cit., endnote 98). Europeans, for their part, did not die upon contact with American diseases because Europeans' geographical origin exposed them to a bigger disease pool based on the contiguous landmass of Eurasia and Africa, in comparison to which the Americas are small and isolated.

464 Chapter 12 explores why and how this is changing since recently.

465 J.E. Stockard, 2001, *Marriage in Culture: Practice and Meaning across Diverse Societies*, New York: Cengage Learning. Chapter 10-1 uses evidence from the Standard Cross-Cultural Sample and Ethnographic Atlas to demonstrate that pre-industrial tribal societies in the New World's CW-areas lived in nuclear family arrangements and under relatively egalitarian and decentral decision making structures with local autonomies.

466 R.J. Estes, 2010, "The World Social Situation," *Social Indicators Research* 98, 363-402. B. Rothstein and S. Holmberg, 2020, "The Good Society Index," *Quality of Government Institute*, University of Gothenburg. Roesling et al. (op. cit., endnote 215), Pinker (op. cit., endnote 71). H. Rindermann, 2018, *Cognitive Capitalism: Human Capital and the Wellbeing of Nations*, New York: Cambridge university Press.

467 Indeed, many authors note the link between latitude and development (the "lucky latitude" effect): see Landes (op. cit., endnote 1), Parker (op. cit. endnote 22), Gallup et al. (op. cit., endnote 22).

468 Welzel (op. cit., endnote 17, pp. 25-33).

469 Although Iran is not Arab but Persian, it shares so many cultural similarities with its neighbors, that we group Iran to the Arab East.

470 We group the Philippines into the Indic East, despite the fact that it is neither Hindu nor Muslim but Catholic in its majority.

471 Gallup et al. (op. cit., endnote 22), Diamond (op. cit., endnote 38).

472 Huntington (op. cit., endnote 3), Graf (op. cit., endnote 115).

473 On anti-democratic scripts of modernity, see C. Welzel, 2021, "Democratic Horizons: What Value Change Reveals about the Future of Democracy," *Democratization* 26, forthcoming.

474 The "Asian Values" debate is paradigmatic here: see Welzel (op. cit., endnote 166).

475 Graf (op. cit., endnote 115) provides clear evidence for this claim.

476 The seven-point linguistic categorization distinguishes in ascending coding order (mean human empowerment score in parentheses): 1 African (0.15), 2 Semitic (0.16), 3 South Asian (0.24), 4 East Slavic (0.27), 5 Micronesian (0.33), 6 East Asian (0.34), 7 Romanic (0.47), 8 West Slavic (0.62), 9 Germanic languages (0.87). These mean differences are highly significant and capture 67% of the entire cross-national variation in human empowerment across 184 countries.

477 The eight-point religious categorization distinguishes in ascending coding order of human empowerment: 1 Animism, 2 Buddhism, 3 Islam, 4 Hinduism, 5 Orthodox Christianity, 6 Confucianism, 7 Catholicism, and 8 Protestantism.

478 The seven-point legal categorization distinguishes in ascending coding order of human empowerment: 1 Islamic, 2 Colonial, 3 Byzantine, 4 Confucian, 5 Roman, 6 Anglo-Saxon, and 7 Germanic law.

479 Country scores on the human empowerment index correlate with historic developmental outcomes as follows: with female fertility in 1800 at r = -.63 (N = 172), with female fertility in 1900 at r = -.84 (N = 129), with child mortality in 1800 at r = -.63 (N = 144), with child mortality in 1900 at r = -.76 (N = 154), with the Gross Domestic Product per capita (logged) in 1800 at r = .69 (N = 177), with the Gross Domestic Product per capita (logged) in

1900 at $r = .78$ ($N = 70$), with schooling rates in 1870 at $r = .86$ ($N = 77$), with schooling rates in 1900 at $r = .89$ ($N = 76$), with rule of law in 1900 at $r = .76$ ($N = 102$), with liberal democracy in 1900 at $r = .82$ ($N = 95$), with our summary indicator of the nuclear family pattern in 1800 at $r = .82$ ($N = 179$) and with our summary indicator of human capital formation in 1900 at $r = .88$ ($N = 154$). All these correlations are significant at $p < .001$. Data sources include Gapminder (op. cit., endnote 317) for historic GDP, mortality and fertility data, Murtin (op. cit., endnote 26) for schooling rates and Lindberg et al. (op. cit., endnote 234) for democracy and rule of law.

480 On religious traditions, the categories show the following mean scores on the Human Empowerment Index (mean score in parentheses): Animism (0.16), Buddhism (0.19), Islam (0.19), Hinduism (0.24), Orthodox Christianity (0.39), Confucianism (0.44), Catholicism (0.48), Protestantism (0.83). These mean differences are highly significant and capture 67% of the entire cross-national variation in human empowerment across 184 countries. On legal traditions, the categories show the following mean scores: Islamic Law (0.19), Colonial Law (0.26), Byzantine Law (0.27), Confucian Law (0.34), Roman Law (0.65), Anglo-Saxon Law (0.82), Germanic Law (0.91). Again, these mean differences are highly significant and account for 64% of the entire cross-national variation in human empowerment across 184 countries.

481 Factor loadings are .96 for linguistic, .91 for religious and .83 for legal traditions. The Cronbach's alpha for the three variables is .88, indicating a very high reliability.

482 This statement is true as long as we talk about language families, not individual languages. For even linguistically fractionalized countries are usually still homogenous from a language family point of view, although mass migration from poorer to richer countries is about to change that.

483 As the number of clusters grows, the proportion of cross-country variation absorbed by these clusters increases merely as a function of the clusters' growth in numbers. Note that our formula to calculate a cluster scheme's clustering power recognizes that and reduces the clustering power in proportion to the number of clusters in the cluster scheme. Hence, when a scheme of two clusters absorbs the same percentage of variance among base level units as does a scheme of three clusters, the scheme of two clusters receives a higher score in our clustering power calculation.

484 For the calculation of these group averages, countries are weighted in proportion to their surface area's size in square kilometers. The weights are adjusted so that the overall *N* of 184 is kept constant.

485 Acemoglu et al. (op. cit., endnote 41).

486 Even though GPT4 tells otherwise, Acemoglu and Robinson (op. cit., endnote 76) are explicit in their denial of a significant developmental role of geography. In the chapter *Theories That Don't Work*, the authors claim (p. 49): "*If the geography hypothesis cannot explain differences between the north and south of Nogales […] could it still be a useful theory to explain differences between North and South America? Between Europe and Africa? Simply, no*." In the cited chapter, Acemoglu and Robinson refer repeatedly to the city of Nogales as a quasi-experimental exemplicifcation that institutions, not geography (or climate), cause developmental differences. The US-American part of Nogales is prosperous and developed, while the Mexican part of the same location is much poorer and less developed. Since the two parts of the city are at adjacent locations with the same climate, geo-climatic differences cannot explain their developmental difference. Instead, according to the authors, it must be the different institutions of their nations in which they are embedded: the US with its legacy of inclusive institutions and Mexico with its legacy of extractive institutions. But this arguments overlooks that the two different institutional legacies evolved under very different CW-Conditions of the respective countries' historic population centers: the New England states with their strong CW-Condition in case of the US, versus Mexico City with its weak CW-Condition in the case of Mexico. Hence, the US-American part of Nogales is developed because it belongs to a country whose institutional legacies evolved under strong CW-Condition of its historic population center around Boston and New York. The principle behind this pattern is that the developmental achievements evolve first and foremost under the CW-Condition of a country's historic population center and then diffuse throughout the entire country, including locations with a different CW-Condition. Consequently, locations in Australia's Outback are more developed than locations with a similar climate in Africa's Sahel zone, as much as locations in the US's Alaska are more developed than locations with the same climate in Russia's Siberia.

487 We retrieved data from the website "http://en.wikepedia.org/wiki/Serfdom" in April 2021.

488 For the history of the liberation of peasants, see Mitterauer (op. cit., endnote 308).

489 We took the proportion of people with European descent from Bentzen et al. (op. cit., endnote 23).

[490] Spolaore and Wacziarg (op. cit., endnote 26).

[491] Before mutual control, the CW-Condition and the percentage of Western European descendants correlate with human empowerment in 2018 at $r = .86$ and $r = .49$, respectively ($N = 153$; $p < .001$ for both correlations). After mutual control, the CW-Condition and the percentage of Western European descendants correlate with human empowerment in 2018 at $r_{partial} = .81$ ($p < .001$) and $r_{partial} = .18$ ($p = .027$) ($N = 153$). Likewise, before mutual control, the CW-Condition and the populations' genetic distance to Northwestern Europeans (i.e., the British) correlate with human empowerment in 2018 at $r = .85$ and $r = -.39$, respectively (N = 142; $p < .001$ for both correlations). After mutual control, the CW-Condition and the populations' genetic distance to Northwestern Europeans correlate with human empowerment in 2018 at $r_{partial} = .82$ ($p < .001$) and $r_{partial} = .03$ ($p = .685$, insignificant) ($N = 142$). In the latter regression, we use the genetic distance variable relating to the pre-colonial times. Using the post-colonial measure instead, does not change this result.

[492] Montesquieu (op. cit., endnote 21).

[493] H. Spencer, 2012 [1851], *Social Statistics*, London: Chapman. E. Huntington, 2014 [1915], *Climate and Civilization*, New York: Literary Licensing.

[494] F. Boas, 2011 [1911], *The Mind of Primitive Man*, London: Macmillan. M. Mead, 2014 [1928], *Coming of Age in Samoa: A Psychological Study of Primitive Youth for Western Civilization*, New York: Morrow. M. Foucault, 1994 [1966], *The Order of Things: An Archeology of Human Sciences*, London: Vintage.

[495] S. Pinker, 2003, *The Blank Slate: The Modern Denial of Human Nature*, London: Penguin. J. Goldthorpe, 2005, *On Sociology: Numbers, Narratives, and the Integration of Research and Theory*, Oxford: Oxford University Press. N.A. Chagnon, 2014, *Noble Savages: My Life among Two Dangerous Tribes - The Yanomamo and Anthropologists*, New York: Simon & Schuster.

[496] An example is Acemoglu and Robinson (op. cit., endnote 76), especially the chapter *Theories that Don't Work*.

[497] Diamond (op. cit., endnote 38), P.J. Rentfrow, 2014, "Introduction," in P.J. Rentfrow (ed.), *Geographical Psychology: Exploring the Interaction of Environment and Behavior*, York: Maple Press, 3-13.

[498] Ibid.

[499] This chapter provides a condensed review of environmental effects, limited to those factors relevant under the CW-perspective only. For a comprehensive overview of environmental effects, see the introductory chapter (especially endnote 26) of this book as well as Gerring et al. (op. cit., endnote 25, chapter 12), Spolaore and Wacziarg (op. cit., endnote 26) and Haber et al. (op. cit., endnote 80).

[500] Landes (op. cit., endnote 1), Parker (op. cit., endnote 22), Gallup et al. (op. cit., endnote 22).

[501] Ibid.

[502] Masters and Wiebe (op. cit., endnote 284).

[503] Zuleta (op. cit., endnote 282).

[504] van de Vliert (op. cit., endnote 134).

[505] Experiments show that higher temperature reduce productivity as well as invention and innovation: Zivin and Neidell (op. cit., endnote 231), Lee, Gino and Staats (op. cit., endnote 231), Dell, Jones and Olken (op. cit., endnote 236). R. Niemelä, M. Hannula, S. Rautio, K. Reijula J. and Railio, 2002, "The Effect of Air Temperature on Labour Productivity in Call Centres," *Energy and Buildings* 24, 759-764. O. Seppanen, W.J. Fisk, and D. Faulkner, 2003, *Cost Benefit Analysis of the Night-time Ventilative Cooling in Office Building*, Oakland: Lawrence Berkeley National Laboratory (available at https://escholarship.org/uc/item/3j82f642). P. Wargocki and D. Wyon, 2007, "The Effects of Moderately Raised Classroom Temperatures and Classroom Ventilation Rate on the Performance of Schoolwork by Children," *HVAC&R Research* 13, 193-22. D.R. Murray, 2013, "Cultural Adaptations to the Differential Threats Posed by Hot versus Cold Climates," *Behavioral and Brain Sciences* 36, 497-498. T. Deryugina and S.M. Hsiang, 2014, "Does the Environment Still Matter? Daily Temperature and Income in the United States," *NBER Working Paper* 20750, Cambridge, MA: National Bureau of Economic Research. J.G. Zivin, S.M. Hsiang and M. Neidell, 2018, "Temperature and Human Capital in the Short and Long Run," *Journal of the Association of Environmental and Resource Economists* 5, 77-105.

[506] Aggressive motives and crime rates have a strong relationship with higher temperature. Accordingly, the risk of civil conflict is higher during extreme weather events, especially heat waves, droughts and floods: C.A. Anderson, 2001, "Heat and Violence," *Current Directions in Psychological Science* 10, 33-38. M.B. Burke, E. Miguel, S. Satyanath, J.A. Dykema and D.B. Lobell, 2009, "Warming Increases the Risk of Civil War in Africa," *PNAS* 106, 20670-20674. H. Fjelde and N. von Uexkull, 2012, "Climate Triggers: Rainfall Anomalies, Vulnerability and Communal Conflict in Sub-Saharan Africa," *Political Geography* 31, 444-453. P.A.M. van Lange, M.I. Rinderu and B.J. Bushman, 2017, "Aggression and Violence around the World: A Model of Climate, Aggression, and Self-control in Humans (CLASH)," *Behavioral and Brain Sciences* 40, 1-12. P. Butke and S.C. Sheridan, 2010, "An Analysis of the Relationship between Weather and Aggressive Crime in Cleveland," *American Meteorological Society* 2, 127-139. M. Ranson, 2014, "Crime, Weather and Climate Change," *Journal of Environmental Economics and Management* 67, 274-302. M. Maystadt and O. Ecker, 2014, "Extreme Weather and Civil War: Does Drought Fuel Conflict in Somalia through Livestock Price Shocks?" *American Journal of Agricultural Economics* 96, 1157-1182. N. von Uexkull, 2014, "Sustained Drought, Vulnerability and Civil Conflict in Sub-Saharan Africa," *Political Geography* 43, 16-26.

[507] McNeill (op. cit., endnote 1), Sokoloff and Engerman (op. cit., endnote 41), Acemoglu et al. (op. cit., endnote 41).

[508] Mitterauer (op. cit., endnote 308).

[509] We show evidence for this in Chapter 10 (section 10-1) from the *Standard Cross-Cultural* sample, focusing on neo-local household formation. See also W. Easterly and R. Levine, 2003, "Tropics, Germs and Crops: How Endowments Influence Economic Development," *Journal of Monetary Economics* 50, 3-39.

[510] Deryugina and Hsiang (op. cit., endnote 505).

[511] For an excellent summary of all the advantages, see Solomon (op. cit., endnote 24).

[512] For navigable waterways, see Gallup et al. (op. cit., endnote 22).

[513] Midlarsky (op. cit., endnote 24), Haber (op. cit., endnote 24), Davis (op. cit., endnote 31).

[514] Gerring et al. (op. cit., endnote 25) find that areas with natural harbors and access to the sea are more likely to be democratic than areas located far away.

[515] For sea borders and democracy, see Midlarsky (op. cit., endnote 24).

[516] Gerring et al. (op. cit., endnote 25).

[517] Welzel (op. cit., endnote 17, pp. 338-344).

[518] Exemplary overviews are included in Santos Silva et al. (op. cit., endnote 19), Gerring et al. (op. cit., endnote 25), Spolaore and Wacziarg (op. cit., endnote 26).

[519] Diamond (op. cit., endnote 38).

[520] Putterman et al. (op. cit., endnote 268).

[521] O. Olsson and D. Hibbs, 2005, "Bio-Geography and Long-Run Economic Development," *European Economic Review* 49, 909-938.

[522] Bockstette et al. (op. cit., endnote 364).

[523] R. Foa, 2016, *Ancient Polities, Modern States, Doctoral Dissertation*, Harvard University: Graduate School of Arts and Sciences.

[524] J.G. Hariri, 2012, "The Autocratic Legacy of Early Statehood," *American Political Science Review* 106, 471-494.

[525] Bentzen et al. (op. cit., endnote 23), Buggle (op. cit., endnote 31).

[526] Wittfogel (op. cit., endnote 23).

[527] Buggle (op. cit., endnote 31).

528 For the role of inquiry and ingenuity and their oppression under despotism, see Jones (op. cit., endnote 1), Landes (op. cit., endnote 1), Mokyr (op. cit., endnote 1), Goldstone (op. cit., endnote 12).

529 Olsson and Paik (op. cit., endnote 85).

530 These authors follow Morris's (op. cit., endnote 50) division of East and West, which is implausible, putting the two regions with the biggest cultural rift in today's world—Western Europe and the Arab world—into the same category.

531 There is more evidence on the link between historic rice farming, early statehood formation and psychological consequences today. Scholars advocate a "rice theory" due to which historic rice farming bred collectivism and early state formation. The reason for the collectivist tendency of rice cultivation is the high labor demand (Fouka and Schlaepfer, op. cit., endnote 328) and the irrigation needs of rice farming. Rice farming also shaped the language in depriving it of individualistic features, such as personal pronouns. See T. Talhelm, X. Zhang, S. Oishi, C. Shimin, D. Duan, X. Lan and S. Kitayama, 2014, "Large-Scale Psychological Differences Within China Explained by Rice Versus Wheat Agriculture," *Science* 344, 603-608.

532 We use the term "mature stage of pre-industrial civilization" here and throughout this book to characterize the highest level of civilizational achievement before industrialization, that is, the threshold level from which the leap into industrialization is possible. The mature stage is characterized by the development of agrarian productivity to a level that surpasses mere subsistence. This means producing food surpluses large enough to feed sizeable urban populations. The mature stage of pre-industrial civilization regularly involved elaborate commercial networks, money, writing, fine arts, laws and bureaucratic organization.

533 There is an important qualification for Japan. The prevalence of rice agriculture involves irrigation dependence despite steady rain. But because of steady rain, Japan's irrigated rice agriculture has been locally managed, thus supporting a decentralized power structure comparable to that of Northwestern Europe.

534 The non-parametric correlation amounts to a Spearman's rho of -.36 ($N = 153$; $p < .001$). In a sense, the relationship is deterministic: Irrigation reaches its maximum score of 1.0 only when the score of the CW-Condition is below 0.20 and never when it is above 0.20. Above a CW-score of 0.20, the score for irrigation dependence is always below 0.50. Hence, the CW-Condition is sufficient (albeit not necessary) to keep a territory's irrigation dependence low.

535 D.R. Murray, M. Schaller and P. Suedfeld, 2013, "Pathogens and Prevalence: Further Evidence that Parasite Prevalence Predicts Authoritarianism," *PLOS ONE* 8, 1-8.

536 Fincher et al. (op. cit., endnote 26).

537 Small group experiments indicate that exposure to diseases triggers xenophobic reactions to foreign people. See J. Faulkner, M. Schaller, J.H. Park and L.A. Duncan, 2004, "Evolved Disease-Avoidance Mechanisms and Contemporary Xenophobic Attitudes," *Group Processes & Intergroup Relations* 7, 333-353. C.D. Navarrete and D.M.T. Fessler, 2006, "Disease Avoidance and Ethnocentrism: The Effects of Disease Vulnerability and Disgust Sensitivity on Intergroup Attitudes," *Evolution and Human Behavior* 27, 270 – 282.

538 The correlation amounts to $r = .80$ ($N = 179$; $p < .001$).

539 Acemoglu et al. (op. cit., endnote 41).

540 Sokoloff and Engerman (op. cit., endnote 41).

541 Against the common prejudice that education, schooling, literacy and numeracy reached into broader population segments only in the 19th and 20th centuries, it needs to be noted that city-run boarding schools, elementary schools and vocational schools were a common feature throughout the towns of Northwestern Europe's Hanseatic League and East India Companies already in late Meideval times. Crafts and trades had a demand for a workforce equipped with literacy and numeracy, especially for tasks including engineering, construction, navigation, bookkeeping, cheque issuing, letter writing and the like. And that Northwestern Europe's Protestant Reformation released a further push to mass-scale education is also clear. Martin Luther's pamphlet *To the Councillors of all Towns in German Countries* (in German: "An die Ratsherren aller Städte deutschen Landes") from 1524 demanded the introduction of compulsory schooling, so as to enable every single person to read the Bible by herself. From thereon, the territorial sequence of edicts stipulating compulsory schooling (first for boys, then for both boys and girls) maps clearly on the geographical density of Guttenberg's printing press (invented around 1440),

which in turn reflects the geography of Protestantism and the CW-Condition in its background. Indeed, as Robert A. Houston (op. cit., endnote 118, p. 46) points out, in the Protestant parts of Europe "*schooling became a normal provision of apprentice contracts*" early in the 18th century and it was expected expected that "*parents would normally send their children to school for up to five years*." See also Uslaner (op. cit., endnote 26). Likewise, Tyrel C. Eskelson points out that, although Medieval-era literacy rates were low by today's standards, Northwestern Europe was the exception where the Netherlands and England, for instance, "had achieved literacy rates above fifty percent of their populations by the mid-seventeenth century" (p. 109). T. C. Eskelson, 2021, "States, Institutions and Literacy Rates in Early-Modern Western Europe," *Journal of Education and Learning* 10, 109-123.

542 Uslaner (op. cit., endnote 26).

543 Vanhanen and Lynn (op. cit., endnote 88).

544 The countries' mean annual temperatures and the respective populations' aggregate IQs correlate at $r = -.66$ ($N = 168$; $p < .001$), using the data provided by Vanhanen and Lynn (op. cit., endnote 88). Even though we believe that tis correlation is real, in opposition to Vanhanen and Lynn we interpret differences in aggregate population IQs as an indication of differences in cognitive *training*, not cognitive *ability*. Chapter 11 addresses this issue heads on.

545 C. Chen, M. Burton, E. Greenberger and J. Dimitrieva, 1999, "Population Migration and the Variation of Dopamine D4 Receptor (DRD4) Allele Frequencies around the Globe," *Evolution and Human Behavior* 20, 309-324. L.J. Matthews and P.M. Butler, 2011, "Novelty-Seeking DRD4 Polymorphisms are Associated with Human Migration Distance Out-of-Africa After Controlling for Neutral Population Gene Structure," *American Journal of Physical Anthropology* 145, 382-389.

546 Evidence for this argument is supposedly provided by differential demographic frequencies of a version of the DRD4 receptor gene that seems to account for novelty seeking. The respective gene is more frequent among populations in larger migratory distance from the human origin. However, so far this evidence is based on a total of only 35 ethnic groups worldwide. Also, a meta-analysis finds no significant link between DRD4 and novelty seeking. See M. R. Munafo, B. Yalcin, S. A. Willis-Owen and J. Flint, 2008, "Association of the Dopamine D4 Receptor (DRD4) Gene and Approach-Related Personality Traits: MetaAnalysis and New Data," *Biologicial Psychiatry* 15, 197-206.

547 The correlation amounts to $r = .50$ ($N = 156$; $p < .001$).

548 For the alleged genetic basis of long-term life orientations, see Minkov and Bond (op. cit., endnote 215).

549 The combination includes a polymorphism of the androgen receptor gene AR, the dopamine receptor gene DRD4, and the 5-HTTLPR VNTR polymorphism of the serotonin transporter gene.

550 The correlation amounts to $r = .76$ ($N = 56$; $p < .001$). Given the small number of countries covered by this evidence, caution is due before accepting this as valid evidence for a true genetic effect on intelligence. This is not to deny that individual differences in intelligence incorporate a genetic component. But it is an entirely different thing to relate average population differences in intelligence to genes. Caution in this respect is all the more due when there is no supporting individual-level evidence, showing that individuals with a certain gene are more intelligent than those without it. The DRD4 evidence cited in endnote 454 is inflicted by exactly this problem.

551 For genetic distance data, see Spolaore and Wacziarg (op. cit., endnote 26).

552 The correlation amounts to $r = -.65$ ($r = -.67$ when using contemporary instead of colonial-time genetic distances: $N = 144$; $p < .001$). Large as this correlation appears, caution against a genetic interpretation of intelligence is due here as well: One of the most striking findings in ethnic intelligence studies is the high performance of East Asians. This evidence contradicts the idea that average population intelligence drops with a population's genetic distance from English Caucasians because, for instance, Han Chinese are genetically very distant but on average score higher in IQ-tests. For a more detailed discussion, see Chapter 11.

553 The work of Lynn and Vanhanen (op. cit., endnote 88) and many other scholars' interpretation of ethnic differences in aggregate IQ-scores clearly communicates this implication.

554 Spolaore and Wacziarg (op. cit., endnote 26).

555 Cook (op. cit., endnote 306).

556 Koepke and Baten (op. cit., endnote 307), Buckwalter and Baten (op. cit., endnote 307).

557 Ibid.

558 Using Cook's (op. cit., endnote 306) data, a country-population's average lactose tolerance correlates at $r = .59$ ($N = 48$; $p < .001$) with familism-vs-individualism.

559 Lactose tolerance is connected with a more important role of animal husbandry in the agrarian sector. In turn, there is more female employment in agriculture when animal husbandry is more prevalent. The Black Death in 1348-50 CE further increased female employment, simply because of the sudden shrinkage of the labor force caused by the pandemic. Finally, broader female employment increases women's marriage ages and lowers their birth rate. That, again, is a precursor of the demographic transition from a "quantity-breeding" to a "quality-building" strategy of lifetime investment: from high fertility/low education to low fertility/high education. Long-term economic productivity growth depends on that strategy change. And although some authors argue that the use of the plough in agriculture diminished female labor force participation and, hence, undermined gender-egalitarian norms, this effect is conditional on the absence of the CW-Condition: Women were excluded from fieldwork only where male physical strength was necessary to operate the plow; but the heavy iron plow of Northwestern Europe's CW-areas was pulled by draft animals (a pair of horses or oxen) that also women could guide. Hence, the use of the heavy iron plough under Northwestern Europe's CW-Condition did not reduce female employment. See van Zanden et al. (op. cit., endnote 8), Santos Silva (op. cit., endnote 19), Poos (op. cit., endnote 305), Voigtländer and Voth (op. cit., endnote 311). D. Vollrath, 2011, "The Agricultural Basis of Comparative Development," *Journal of Economic Growth* 16, 343 – 370. A. Alesina, P. Giuliano and N. Nunn, 2013, "The Origin of Gender Roles: Women and the Plough," The *Quarterly Journal of Economics* 128, 469-530.

560 A.N. Licht, C. Goldschmidt and S.H. Schwartz, 2007, "Culture Rules: The Foundations of the Rule of Law and Other Norms of Governance," *Journal of Comparative Economics* 35, 659-688. M. Meyer-Schwarzenberger, 2014, *Inherited Individualism: Evidence from Language Structures* (Dissertation, University of St. Gallen).

561 On the individualism inherent in Protestantism, see Lal (op. cit., endnote 8).

562 T. Kuran, 2010, *The Long Divergence: How Islamic Law Held Back the Middle East*, Princeton: Princeton University Press.

563 Alexander, Inglehart and Welzel (op. cit., endnote 224).

564 Caprioli et al. (op. cit., endnote 223).

565 Indeed, our indicator of female reproductive autonomy in about 1800 correlates with the CW-Condition at $r = .85$ ($N = 179$; $p < .001$).

566 Henrich et al. (op. cit., endnote 393).

567 Nolan and Lenski (op. cit., endote 28), E. Boserup, 2007 [1970], *Women's Role in Economic Development*, London: Routledge. R.L. Blumberg, 2015, "'Dry' versus 'Wet' Development and Women in Three World Regions," *Sociology and Development* 1, 91-122.

568 Hajnal (op, cit., endnote 395), Lasslett (op. cit., endnote 395).

569 Cornell (op. cit., endnote 340), Koyishi (op. cit., endnote 340), Hartman (op. cit., endnote 347).

570 Dilli (op. cit., endnote 498).

571 Todd (op. cit., endnote 395).

572 An analysis of variance shows that 72% of the entire cross-national variation in family types is due to differences in the CW-Condition ($N = 149$; $p < .001$).

573 The countries' different family types in 1800-50 explain 66% of the entire cross-national variance in human empowerment today ($N = 147$; $p < .001$).

574 M. Woodley and E. Bell, 2013, "Consanguinity as a Major Predictor of Levels of Democracy: A Study of 70 Nations," *Journal of Cross-Cultural Psychology* 44, 263-280.

575 Fincher et al. (op. cit., endnote 26).

576 Banfield (op. cit., endnote 165), Hartman (op. cit., endnote 347).

577 Using Woodley and Bell's (op. cit., endnote 215) measure of cousin marriage, we find that the prevalence of this pattern in a country correlates at r = -.41 (N = 45; p ‹ .001) with a population's mean score in generalized trust, using Welzel's (op. cit., endnote 17, chapter 6) measure from the World Values Surveys. This means that cousin marriage increases and its inverse—consensual marriage—decreases the gap between ingroup and outgroup trust. Further supporting this evidence, our encompassing indicator of female reproducitve autonomy in 1800 correlates at r = .55 (N = 70; p < .001) with a population's generalized trust today.

578 Schulz et al. (op. cit., endnote 26).

579 Passmore and Watts (op. cit., endnote 79).

580 Finer (op. cit., endnote 44).

581 This historical relationship holds until this day: States whose revenues primarily and heavily depend on general income taxation, tend to have representative democracy. Vice versa, states that deviate from the otherwise robust relationship between prosperity and democracy in that they are rich but not democratic have access to sources of revenue other than income taxation. Examples are oil in the Gulf monarchies and foreign direct investment and harbor tariffs in Singapore. See C.R. Conrad and J. DeMerritt, 2013, "Constrained by the Bank and the Ballot: Unearned Revenue, Democracy and State Incentives to Repress," *Journal of Peace Research* 50, 106-119. R.H. Bates, D. Lien and Da-Hsiang, 1985, "A Note on Taxation, Development, and Representative Government." *Politics & Society* 14: 53–70. D. Stasavage, 2016, "Representation and Consent: Why They Arose in Europe and Not Elsewhere." *Annual Review of Political Science* 19: 145–162.

582 Galor (op. cit., endnote 26). G. S. Becker, 1981, *A Treatise on the Family*, Boston: Harvard University Press. G.S. Becker and R.J. Barro, 1988, "A Reformulation of the Economic Theory of Fertility," *Quarterly Journal of Economics* 103, 1-25.

583 The countries' CW-Conditions correlate with our data for the earliness of the adoption of agriculture in that territory at r = .27 (N = 152; p ‹ .005). But after controlling a country's agrarian potential, the relationship turns strongly negative: $r_{partial}$ = -.57 (N = 152; p ‹ .001). The countries' CW-Conditions also correlate negatively with our data for disease vulnerability (r = -.81; N = 161; p ‹ .001), colonial exploitation risk (r = -.81; N = 114; p ‹ .001), the prevalence of authoritarian personalities (r = -.70; N = 30; p ‹ .001), consanguine marriages (r = -.70; N = 70; p ‹ .001) and irrigation potential (r = -.40; N = 157; p ‹ .001). For a documentation of our data and their sources, see SOM-Section S2.

584 The countries' CW-Condition correlates with our data for the respective territory's migratory distance from the human origin at r = .48 (N = 158; p ‹ .001). But this moderately positive correlation turns strongly positive once we control for the diversion of the human migration path in the Americas (where the path led southward and, thus, towards a less pronounced CW-Condition). Controlling for this fact, the correlation between the CW-Condition and migratory distance is $r_{partial}$ = .60. The countries' CW-Condition also correlate positively with our data for lactose tolerance (r = .61; N = 131; p ‹ .001), linguistic agency (r = .49; N = 184; p ‹ .001), encultured individualism (r = .89; N = 184; p ‹ .001), contractual states in 1900 (r = .76; N = 95; p ‹ .001), female reproductive autonomy in 1800 CE (r = .85; N = 179; p ‹ .001), cognitive investments in 1900 (r = .85; N = 76; p ‹ .001), early industrialization (r = .61; N = 70; p ‹ .001) and consensual marriage, the inverse of consanguinity (r = .73; N = 71; p ‹ .001). For a documentation of our data and their sources, see the data description section in SOM-Section S2.

585 Talhelm et al. (op. cit., endnote 531).

586 K.A. Clarke, 2005, "The Phantom Menace: Omitted Variable Bias in Econometric Research," *Conflict Management and Peace Science* 22, 341-352. K.A. Clarke, 2009, "Return of the Phantom Menace: Omitted Variable Bias in Political Research," *Conflict Management and Peace Science* 26, 46-66.

587 Jones (op. cit., endnote 1), Landes (op. cit., endnote 1), Nolan and Lenski (op. cit., endnote 28), Mann (op cit., endnote 30), Ember and Ember (op. cit., endnote 374).

588 Diamond (op. cit., endnote 10).

589 Olson and Paik (op. cit., endnote 85).

590 Putterman (op. cit., endnote 268).

591 Cook (op. cit., endnote 306).

592 We experimented with alternative indications of genetic population differences, with no promising results.

593 Bentzen et al. (op. cit., endnote 23), Buggle (op. cit., endnote 31).

594 S. Pinker, 2007 [1994], *The Language Instinct: How the Mind Creates Language*, New York: Harper Collins.

595 D. Lightfood, 1999, *The Development of Language: Acquisition, Change and Evolution*, New York: Wiley-Blackwell.

596 Licht et al. (op. cit., endnote 560). N. Chomsky, 2007 [1968], *Language and Mind*, New York: Cambridge University Press.

597 E.S. Kashima and Y. Kashima, 1998, "Culture and Language: The Case of Cultural Dimensions and Personal Pronoun Use," *Journal of Cross-Cultural Psychology* 29, 461-486. Y. Kashima and E.S. Kashima, 2003, "Individualism, GNP, Climate and Pronoun Drop: Is Individualism Determined by Affluence and Climate, or Does Language Use Play a Role?" *Journal of Cross-Cultural Psychology* 34, 125-134.

598 On misunderstandings of individualism and its confusion with egoism, see Welzel (op. cit., endnote 17, chapter 6).

599 M. Haspelmath, 1997, *Indefinite Pronouns*, Oxford: Oxford University Press. B. Comrie, S. Matthews and M. Polinsky, 2003, *The Atlas of Languages: The Origin and Development of Languages throughout the World*, London: Facts on File Inc. M. Haspelmath, M. Dryer, D. Gil and B. Comrie, 2005, *The World Atlas of Language Structures*, Oxford: Oxford University Press.

600 E.L. Keenan and M.S. Dryer, 1981, "Passive in the World's Languages," in *Linguistic Agency* (University of Trier).

601 Kashima and Kashima (op. cit., endnote 597).

602 Meyer-Schwarzenberger (op. cit., endnote 560).

603 Besides, the idea that grammatical individualism shapes people's perception of situations finds support from experimental evidence among people who are equally fluent in two languages at opposite ends of grammatical individualism, like Mandarin and English. When confronted with the same situation framed separately in the two different languages, the same speakers feel to be less in control of the situation when thinking through it in Mandarin instead of in English. The evidence is cited in Meyer-Schwarzenberger (op. cit., endnote 560).

604 Haspelmath et al. (op. cit., endnote 599).

605 J. Gerring, P. Bond, W.T. Barndt and C. Moreno, 2005, "Democracy and Economic Growth: A Historical Perspective," *World Politics* 57, 323-364.

606 Gerring et al. (op. cit., endnote 605) summarize the annual democracy ratings from the Polity project (see: www.systemicpeace.org). Countries obtain a higher democracy in a given year (*a*) when there are more constraints on executive power, (*b*) when public office is more contested in elections and (*c*) when the electorate is more inclusive and citizens have more rights to participate. To countries that were not independent in a given year of the past but are independent today, Gerring et al. assign for that year the democracy rating of the bigger territorial unit to which a country belonged at that time. For instance, all Soviet successor states obtain the Soviet Union's democracy rating for each year they were part of the Soviet Union.

607 As we do with all continuous measures, we standardize the scoring on the "democracy stock" index into a scale range from minimum 0 for an entirely absent democratic tradition to 1.0 for its fullest presence.

608 For the definition of democracy, see Welzel (op. cit., endnote 17, chapter 8). R.A. Dahl, 1977 [1971], *Polyarchy: Participation and Opposition*, New Haven: Yale University Press. D. Held, 2006, *Models of Democracy*, Oxford: Oxford University Press.

609 The correlation amounts to $r = .71$ ($N = 56$; $p < .001$).

610 The correlation amounts to $r = .69$ ($N = 101$; $p < .001$).

611 The country coverage of the different language families looks as follows: East Slavic languages 18 countries, Semitic languages 26 countries, West Slavic languages 10 countries, African languages 40 countries, East Asian languages 11 countries, South Asian languages 15 countries, Pacific island languages 9 countries, Romance languages 42 countries, and Germanic languages 17 countries. To inspect which country we assigned to which language family, see SOM-Section S2.

612 When we summarize the five different measures of (electoral, participatory, liberal, deliberative and egalitarian) democracy provided by the V-Dem project into a single measure for the year 1900 (which is justified given the strong uni-dimensionality of these measures), our distinction of language families accounts even for 68% of the entire cross-national variance in 1900 democracy ($N = 96$; $p < .001$).

613 Technically speaking, this is the same as assigning each country the score in democratic traditions predicted by the mean of its linguistic country-group.

614 Whenever phenomena emerge alongside a "from-potential-to-manifestation logic," it is accurate to infer the potential backward from its manifestation.

615 To do so, we use a two-step matching procedure. In the first step, we standardize the two scales into so called z-scores and assign every country the arithmetic mean of the two z-scores. This procedure is limited to those 119 countries for which both z-scores are available. In the second step, we focus on the 68 countries for which only one z-score is available and use this available z-score as a predictor in linear regression to estimate the combined z-score. Thus, for those countries for which the combined z-score is not available, its predicted value is used instead. Given that the predictive power of one z-score over the average of both is fully 85%, this is a defensible procedure to maximize country coverage. Nevertheless, we recognize that the combined z-score incorporates twice as much information when it is calculated as the average of the two constituent scores than when it is predicted from just one constituent score. Accordingly, we devise a weighting scheme that assigns countries a weight of 1.0 when both constituent scores are available and a weight of 0.5 when only one is available. Then we re-examine all of our evidence using this scheme in weighted least squares regressions to see if our results hold under this condition. This was always the case. For convenience reasons, the countries' final z-scores are standardized to range from minimum 0 for the least linguistic agency to maximum 1.0 for the most linguistic agency, with fractions of 1.0 indicating intermediate positions.

616 Our final index of linguistic agency accounts for 75% of the entire cross-national variance in democratic traditions ($N = 178$; $p < .001$). When we summarize the five different measures of (electoral, participatory, liberal, deliberative and egalitarian) democracy provided by the V-Dem project into a single measure for the year 1900 (which is justified given the strong mono-dimensionality of these measures), the index of linguistic agency accounts even for 86% of the entire cross-national variance in 1900 democracy ($N = 96$; $p < .001$).

617 As for the "manpower" advantage of agrarian over foraging societies, see Nolan and Lenski (op. cit., endnote 28), Diamond (op. cit., endnote 38).

618 With the Industrial Revolution, population density ceases to be an indicator of more advanced societal development because this transition is linked with a dramatic reversal in reproductive strategies. As Welzel (op. cit., endnote 17, chapter 11) points out, we see a massive reversal from a "quantity breeding" strategy (producing many children with little investment in skills) to a "quality building" strategy (producing few children with large investment in skills). This also means a transition from extensive growth (growing the number of individuals without increasing their incomes) towards intensive growth (growing the individuals' incomes while keeping their numbers in check). See also Galor (op. cit., endnote 26).

619 Ibid.

620 It is inherently logical that high population densities, as in Korea and Japan, prevented European settlement colonialism in CW-climates outside Europe.

621 Klein Goldewijk et al. (op. cit., endnote 375).

622 For the link between collectively coordinated irrigation and coercive statehood, see Wittfogel (op. cit., endnote 23), Bentzen et al. (op. cit., endnote 23), Midlarsky (op. cit., endnote 24), Buggle (op. cit., endnote 31).

623 For statehood as the essence of civilization, see Finer (op. cit., endnote 30), E.R. Service, 1975, *Origins of the State and Civilizations: The Process of Cultural Evolution*, New York: W.W. Norton. R. Carneiro, 2003, *Evolutionism in Cultural Anthropology: A Critical History*, Routledge: London. Fukuyama (op. cit., endnote 406).

624 For the role of state antiquity in societal development, see Bockstette et al. (op. cit., endnote 364).

625 On Indian state traditions, see Foa (op. cit., endnote 466).

626 Data on state antiquity are from Bockstette et al. (op. cit., endnote 364).

627 Meyer-Schwarzenberger (op. cit., endnote 560).

628 Ibid.

629 The correlation amounts to $r = .75$ ($N = 101$; $p < .001$).

630 For fertility levels in foraging societies, see Nolan and Lenski (op. cit., endnote 28), Ember and Ember (op. cit., endnote 374), Blumberg (op. cit., endnote 567).

631 Ibid.

632 On women's reduction to reproduction in most agrarian societies, see Boserup (op. cit., endnote 502), Blumberg (op. cit., endnote 567).

633 For evolutionary normality in agrarian society's fertility, family and sex norms, see Caprioli et al. (op. cit., endnote 223).

634 On the prevalence of patriarchy in most agrarian societies, see Boserup (op. cit., endnote 502) and Blumberg (op. cit., endnote 567).

635 For fertility differences among agrarian societies, see Welzel (op. cit., endnote 178).

636 The countries' CW-Conditions correlate at $r = -.80$ ($N = 179$; $p < .001$) with the pre-industrial pathogen load in the given country-territory, due to historic pathogen data collected by Murray and Schaller (op. cit., endnote 302).

637 Child mortality estimates in 1800 CE are from Gapminder (op. cit., endnote 317).

638 Indeed, when predicting cross-country differences in child mortalities in 1800, using the country populations' per capita income in 1800 CE (logged), lactose tolerance and the CW-Condition as predictors, we explain a highly significant 36% of the variation ($N = 124$). Among the three predictors, only the CW-Condition is significant, showing a pronouncedly negative effect on child mortality ($r_{partial} = -.39$; $p < .001$).

639 On time allocation trade-offs when deciding to focus on fertility versus education, see Galor (op. cit., endnote 26), Becker (op. cit., endnote 522), Becker and Barro (op. cit., endnote 522).

640 The innate human drive to learn, as pointed out by Lawrence and Nohria (op. cit., endnote 117), predisposes humans to prefer, as much as external circumstances allow, a "quality building" over a "quantity breeding" strategy of reproduction. In biological terms, humans are indeed a "*K*"-strategy rather than an "*r*"-strategy species and tend to move as much to the "*K*"-side ("quality building") as external circumstances allow. See H. Kaplan, K. Hill, J. Lancaster and A.M. Hurtado, 2000, "A Theory of Human Life History Evolution: Diet, Intelligence, and Longevity," *Evolutionary Anthropology* 9, 156–185. A.I. Houston, P.A. Stephens, I.L. Boyd, K.C. Harding and J.M. McNamara, 2007, "Capital or Income Breeding? A Theoretical Model of Female Reproductive Strategies," *Behavioral Ecology* 18, 241–250. V. Vitzthum, 2008, "Evolutionary Models of Women's Reproductive Functioning," *Annual Review of Anthropology* 37, 53-73. S. Sinding, 2009, "Population, Poverty and Economic Development," *Proceedings of the Royal Society B - Biological Sciences* 364, 3023–30. T. Flatt and A. Heyland (eds.), 2011, *Mechanisms of Life History Evolution: The Genetics and Physiology of Life History Traits and Trade-Offs*, Oxford, Oxford University Press. T. Ahlström, 2011, "Life-history Theory, Past Human Populations and Climatic Perturbations," *International Journal of Osteoarchaeology* 21, 407-419. C. Mittal, V. Griskevicius, J. Simpson and K. Kawakami, 2014, "Sense of Control under Uncertainty depends on People's Childhood Environment: A Life History Theory Approach," *Journal of Personality and Social Psychology* 107, 621-637. D. Schmitt and P. Rhode, 2013, "The Human Polygyny Index and Its Ecological Correlates: Testing Sexual Selection and Life History Theory at the Cross-national Level," *Social Science Quarterly* 94, 1159-1184. Y. Kim and J. J. Lee, 2019, "The Genetics of Human Fertility," *Current Opinion in Psychology* 27, 41-45.

641 Fertility estimates for 1800 CE are from Gapminder (op. cit., endnote 317).

642 For the labor demands of different kinds of crops, see Fouka and Schlaepfer (op. cit., endnote 328).

643 The countries' CW-Conditions correlate at $r = -.52$ ($N = 172$; $p < .001$) with the country-populations' average female fertilities in 1800.

644 For fertility control practices before the invention of modern contraceptives, see J. Bongaarts and S.C. Watkins, 1996, "Social Interactions and Contemporary Fertility Transitions," *Population and Development Review* 22, 639-682.

645 The correlation amounts to $r = .90$ ($N = 17$; $p < .00$).

646 Furthermore, the correlation between the CW-Condition and female marriage ages reaches even into more recent times: until today, the CW-Condition correlates with average female marriage ages at $r = .65$ ($N = 156$; $p < .001$).

647 Dilli (op. cit., endnote 398).

648 Factor loadings are .87 for the closeness to the nuclear household type, .82 for the lowness of the pathogen load, .74 for the lowness of child mortality and .68 for the lowness of the female fertility in a given country-population in about 1800. The Kaiser-Meyer-Olkin measure for the factor analysis is .73, indicating a factor solution of high statistical quality. The variance that the extracted factor explains over all of its four constituent variables is 61%. The Cronbach's alpha for the four constituent variables is .73, indicating a high degree of reliability for the overall measure as concerns its summary function.

649 In evolutionary psychology, the same juxtaposition is described as "fast" versus "slow" or "short" versus "long" life histories, with fast life histories corresponding with conditions at the vicious end and slow life histories with those at the virtuous end (for the literature, see endnote 544).

650 SOM-Section S2 documents measurement details.

651 North (op. cit., endnote 1), Ferguson (op. cit., endnote 7), Goldstone (op. cit., endnote 12).

652 On the role of Protestantism, see Weber (op. cit., endnote 8), Lal (op. cit., endnote 8).

653 On the positive role of Anglo-Saxon customary law, see North (op. cit., endnote 1) and R. La Porta, F. Lopez-de-Silanes and A. Shleifer, 2008, "The Economic Consequences of Legal Origins." *Journal of Economic Literature* 46, 285-332.

654 The idea goes back to Weber (op. cit., endnote 8) who specifically addressed the initiative-unleashing role of the Calvinist doctrine of predestination. The notion that God's already made choice of whether one will go to heaven or hell in after-life will be visible in one's this-worldly achievements, supposedly generated a strong achievement motivation. Other scholars, like Lal (op. cit., endnote 8), refer to the individualism and egalitarianism inherent in Protestantism more generally. For instance, the Protestant idea that every single person can directly and independently relate to God, without the need to repent and being dispensed by the authority of a priest, had a strongly individualizing and egalitarian impulse. To allow every individual to build her own relationship to God, Martin Luther translated the Bible from Latin into German, which created an incentive for ordinary people to become literate. This is visible from the fact that the spread of Johan Gutenberg's printing press (invented ca. 1440) accelerated after Luther's Bible translation, which he finalized in 1534 (the New Testament was translated already in 1522).

655 On the centrality of religion, see Nolan and Lenski (op. cit., endnote 28), Ember and Ember (op. cit., endnote 376). C. Quigley, 1979, *The Evolution of Civilizations: An Introduction to Historical Analysis*, Indianapolis: Liberty Press.

656 Weber (op. cit., endnote 8).

657 Dumont (op. cit., endnote 8), Lal (op. cit., endnote 8).

658 Schulz et al. (op. cit., endnote 26).

659 Bentzen et al. (op. cit., endnote 23), Buggle (op. cit., endnote 31).

660 Huntington (op. cit., endnote 3), Kuran (op. cit., endnote 562).

661 For the role religious doctrines, see Weber (op. cit., endnote 8), Lal (op. cit., endnote 8), Schulz et al. (op. cit., endnote 26). For the role of institutional structures, see North (op. cit., endnote 1), Acemoglu et al. (op. cit., endnote 41).

662 Observations amount to $N = 184$ ($p < .001$).

663 We find no significant difference between Buddhist countries depending on whether they mostly belong to Theravada or Mahayana Buddhism.

664 We find no significant difference between Muslim countries depending on whether they mostly belong to Sunni or Shia Islam.

665 We are aware of the fact that Confucianism is strictly speaking not a religion but a philosophy or cosmology. In shaping moral codes and ethical norms, Confucianism is however a functional equivalent of religion.

666 Animism denotes belief systems that project a soul into objects of nature, like trees, mountains or rivers. Animism is very common among tribal societies at the pre-state stage of development. Because most of sub-Saharan Africa and Poly-/Mela-/Micronesia was at that stage of development before colonization, we classify countries in these areas as belonging to the religious tradition of Animism.

667 Only India and Sri Lanka are categorized as mostly Hindu majority countries.

668 Israel is treated as the only Jewish majority country.

669 Contradicting widespread stereotypes, Inglehart and Norris (op. cit., endnote 220) point out that Buddhism performs worse on matters of gender equality and sexual liberation than Islam. We find the same with democratic traditions.

670 Our coverage of 188 countries includes 10 Buddhist, 41 Islamic, 12 Christian Orthodox, 5 Confucian, 50 animist, 48 Catholic, 2 Hindu, 19 Protestant countries, and 1 Jewish country, which of course is Israel.

671 Technically speaking, this is the same as assigning each country the score in democratic traditions predicted by the mean of its religious country-group.

672 On the significance of law traditions, see La Porta, Lopez-de-Silanes and Shleifer (op. cit., endnote 563).

673 Finer (op. cit., endnote 44).

674 Our coverage of 188 countries includes 18 Byzantine law tradition countries (which were core parts of the Byzantine and Russian empires), 40 Islamic law tradition countries (which were core parts of the Arab/Persian Caliphates or the Ottoman Sultanate), 11 Confucian law tradition countries (which were parts of the Chinese empires), 84 colonial law tradition countries (in Sub-Saharan Africa, Latin America and Oceania), 21 Roman law tradition countries (in Southern and Central Europe), 8 Germanic law tradition countries (in Central and Northern Europe), and 6 Anglo-Saxon law tradition countries (Australia, Canada, New Zealand, Ireland, UK, US). We do not assign former plantation and mining colonies to the law tradition of their former colonial power because we believe that it makes a big difference if a given law tradition has been implanted through colonial exploitation. Thus, we created an own category of "colonial law" to indicate foreign imposed law traditions. As our data show, this conceptual decision is empirically justified as the colonial category looks distinct on matters of democratic traditions (as well as other indications of emancipatory tendencies).

675 Observations amount to $N = 179$ ($p < .001$).

676 The correlation amounts to $r = .94$ ($N = 188$; $p < .001$).

677 Technically speaking, we calculate for each country its arithmetic mean of religiously and legally encoded emancipation. This Western legacy index captures 68% of the entire cross-national variance in democratic traditions, which compares to 46% for its religious legacy component and 55% for its legal tradition component ($N = 178$; $p < .001$). The summary of the two components, thus, brings a noteworthy increase in explanatory power. When we summarize the five different measures of (electoral, participatory, liberal, deliberative and egalitarian) democracy provided by the V-Dem project into a single measure for the year 1900 (which is justified given the strong mono-dimensionality of these measures), our Western legacy index captures even 78% of the entire cross-national variance in 1900 democracy ($N = 96$; $p < .001$), which in this case compares to 68% for its religious legacy component and 69% for its legal tradition component.

678 The correlation amounts to $r = .71$ ($N = 156$, $p < .001$).

679 Observations amount to $N = 156$ (compared to 184 countries).

680 Schulz et al.'s (op. cit., endnote 26) Western Church exposure correlates at $r = .62$ with democratic traditions ($N = 155$; $p < .001$), while our Western legacy correlates at $r = .75$ with democratic traditions ($N = 179$; $p < .001$).

681 Other authors stressing the role of the church as the source of the West's nuclear family pattern include van Zanden et al. (op. cit., endnote 8), Goody (op. cit., endnote 404), Fukuyama (op. cit., endnote 404).

682 For the role of the "white settler mortality," see Acemoglu et al. (op. cit., endnote 41).

683 For the genetic distance data, see Spolaore and Wacziarg (op. cit., endnote 26).

684 To be precise, Spolaore and Wacziarg (op. cit., endnote 26) measure genetic distance from the English but this is literally the same as saying genetic distance from Northwestern Europeans.

685 It is a natural human tendency to group-stereotype others. This tendency turns more easily into de-humanizing others if those others are perceived as genetically distant, given visual markers, above all skin color. See Tajfel and Turner (op. cit., endnote 167), Gat (op. cit., endnote 188).

686 On the "reversal of fortunes," see Acemoglu et al. (op. cit., endnote 41), Olsson and Paik (op. cit., endnote 85).

687 Per capita income estimates for 1800 CE are from Gapminder (op. cit., endnote 317).

688 Uslaner (op. cit., endnote 26).

689 The date source is Murtin (op. cit., endnote 26).

690 The data source is Lindberg et al. (op. cit., endnote 234).

691 On state order and bureaucracy, see North et al. (op. cit., endnote 1), Weber (op. cit., endnote 8), Mann (op. cit., endnote 30), Finer (op. cit., endnotes 30 and 44), Fukuyama (op. cit., endnote 404), Parsons (op. cit., endnote 459).

692 The data source is Lindberg et al. (op. cit., endnote 234).

693 A.G. Frank, 1978, *Dependent Accumulation and Underdevelopment*, London: Macmillan. I. Wallerstein, 1992, "The West, Capitalism and the Modern World-System." *Review* 15, 561-619. C.K. Chase-Dunn and P. Grimes, 1995, "World-Systems Analysis." *Annual Review of Sociology* 21, 387-417.

694 S.M. Lipset, 1960, *Political Man: The Social Bases of Politics*, Garden City: Doubleday. Dahl (op. cit., endnote 520).

695 Spain, by then, has lost almost all of its former colonial possessions and is, hence, not classified as a colonial power in around 1900 but just as an independent nation.

696 Observations amount to $N = 169$ ($p < .001$).

697 Per capita income estimates for 1900 CE are from Gapminder (op. cit., endnote 317).

698 The importance of cognitive investments confirms the emphasis that Uslaner (op. cit., endnote 26) and Rindermann (op. cit., endnote 466) place on eduction and human capital as drivers of beneficial developmental outcomes.

699 These results are documented in SOM-Section S2.

700 The evidence is shown in SOM-Section S2.

701 G.P. Murdock and D. White, 1969, "The Standard Cross-Cultural Sample." *Ethnology* 8, 329-369.

702 Ember and Ember (op. cit., endnote 374), W. Divale, 2004, "Codebook for the Standard Cross-Cultural Sample." *World Cultures* 14, 1-362.

703 Ibid.

704 As always, we have transformed every variable into a range from minimum 0 to maximum 1.0, with intermediate positions as fractions.

705 Murdock (op. cit., endnote 701).

706 Harcourt (op. cit., endnote 27), Oppenheimer (op. cit., endnote 259).

[707] The underlying formula assumes a translation rate due to which human settlement advanced on average one kilometer per seven years. In terms of mere migration time, this might sound suspiciously slow at first glance because humans are capable to cover much larger distances in a much shorter time. However, we do not deal here with just migration but with the expansion of the human population, without leaving the original place deserted. Such population expansion does not only require migration; above all it requires population growth through reproduction and that takes time. In that sense, a one kilometer population expansion per seven years does not seem particularly slow. We can, of course, manipulate the translation rate in our formula and specify one kilometer expansion every six, five, four or whatever number of years, which will give us different absolute numbers for the time spans humans exist in given places. But no matter which translation rate we assume, the estimation remains a linear transformation, for which reason the relative proportions of the estimates for the different populations remain exactly the same. For these reasons, our primary concern is not the precision of the absolute numbers but the relative differences between places.

[708] In a factor analysis, these subsistence methods load on opposite poles of a single dimension with factor loadings of .75 for agriculture, .57 for pastoralism and -.92 for foraging. This single dimension captures 58% of the variance in all three subsistence methods together.

[709] Besides, it is the CW-Condition's naturally embodied nutritional and pathogenic security that accounts for its initially disfavoring influence on the adoption of agriculture: When we include these two variables as predictors of a population's reliance on agriculture-vs-foraging, the CW-Condition's previously negative effect drops insignificant. But since these security aspects are naturally embodied in the CW-Condition, we continue using the CW-Condition itself as a proxy for them. Otherwise, we lose too many observations to pursue conclusive analyses.

[710] In a hierarchical two-level factor analysis, the seven aspects converge in three sub-factors at the lower level of abstraction. Using an oblique rotation to allow these three sub-factors to be correlated, they converge in a single super-factor at the second level of abstraction.

[711] Alesina et al. (op. cit., endnote 559).

[712] van Zanden et al. (op. cit., endnote 8).

[713] Murdock (op. cit., endnote 638).

[714] As we have seen in Chapter 3 (Figures 3-3 and 3-6) of the country-level analysis, with coastal proximity this is different: It operates as a moderating amplifier of the joint impact of cold seasons and steady rain. However, the grid cell dataset does not include a measure of coastal proximity. Creating it on our own for some 65,000 grid cells would have consumed too much resources.

[715] van Zanden et al. (op. cit., endnote 8).

[716] R. Durante, 2010, "Risk, Cooperation and the Economic Origins of Social Trust: An Empirical Investigation," *HAL* (multi-disciplinary open access archive, ID: hal-00972949, https//:hal-sciencespo.archives-ouvertes.fr).

[717] T. Natkhov and N. Vasilenok, 2019, "Technology Adoption in Agrarian Societies: The Effect of Volga Germans in Imperial Russia," *Higher School of Economics Research Paper* No. WP BRP 220, Moscow: HSE.

[718] Ibid.

[719] The website www.meteoblue.com provides climatic indicators averaged over the last 30 years to avoid data to be driven by yearly fluctuations. We merged data collected at the city level with historical regions. If we had information for more than one city in a region, we calculated the average. To calculate CW-index scores, we combine temperature and precipitation data in a manner equivalent to the country level. Hence, index scores increase alongside (*a*) lower seasonal temperatures, (*b*) less extreme summer-winter differences, (*c*) a higher base level of minimum rainfall combined with less seasonal fluctuation and (*d*) more abundant freshwater sources.

[720] Fouka and Schlaepfer (op. cit., endnote 328).

[721] This is a weighted average of labor intensity for each crop presented in the region. The data on percentages of territory sowed with a particular crop derive from the Russian agricultural census presented on http://ristat.org/. Labor intensity$_i$ = labor share 1 * % territory with crop 1$_i$ + labor share 2 * % territory with crop 2$_i$.

[722] For data sources and measurement details, see SOM-Section S2.

723 As is the case throughout this book, we keep the narrative clear from distracting details as concerns data sources, measurement issues and methodological considerations. All of these technical aspects are SOM-Section S8.

724 SOM-Section S8 documents measurement and modelling details.

725 As for the data from Word Values Surveys, see Inglehart, Haerpfer, Moreno and Welzel et al. (op. cit., endnote 452).

726 Welzel (op. cit., endnote 17, p. 210) shows that emancipative values combine openness- and transcendence values in Schwartz's terms.

727 European Social Survey (ESS), online at www.ess.org; Schwartz (op. cit., endnote 197).

728 This pattern has been documented extensively, for instance by Minkov and Bond (op. cit., endnote 215) and Inglehart and Welzel (op. cit., endnote 105). Yet, the most recent and systematic documentation of the strength of nations' cultural field is by Akalyiski et al. (op. cit., endnote 106).

729 N. Charron, V. Lapuente and P. Annoni, 2019, "Measuring Quality of Government in EU Regions Across Space and Time," *Regional Science* 98, 1925-1953.

730 Ibid.

731 SOM-Section S2 documents the matching procedure.

732 Hajnal (op. cit., endnote 395) located the nuclear family pattern to the West and North of this line and the extended family pattern to the East and South of it. As our data show, however, variation on the West-East and North-South gradients is more continuous than reflecting a categorical division.

733 The choice sub-index of emancipative values is based on three items asking respondents on a 1-to-10 scale to indicate their toleration (1 "never justified", 10 "always justified") of "homosexuality," "abortion" and "divorce."

734 SOM-Section S2 documents the technical details.

735 United Nations Development Program (op. cit., endnote 398).

736 Significance is at $p < .001$ ($N = 275$).

737 Significance is at $p < .009$ ($N = 275$).

738 Unfortunately, the indicators of female reproductive autonomy are not exactly identical in the US and India, for which reason we bundle the indicators by means of a factor analysis separately for each of the two countries. Now, summarizing indicators into a single variable by means of a factor analysis yields so called factor scores, which are always centered on a mean of zero with negative and positive deviation scores, mostly in a range between -2 and +2. Therefore, the mean in reproductive autonomy across India's federal states is the same (namely zero) as the one for the US federal states (also zero), which is deceptive because the US is a more developed country. To take this developmental difference into account, we center the US and Indian states on two different country means whose distance reflects the difference between the US and India's HDI scores. Then we standardize the rescaled reproductive autonomy measure across all of India's and the US's states into normalized range from 0 to 1, with decimal fractions representing a multiplicity of intermediate positions.

739 Akalyiski et al. (op. cit., endnote 104).

740 Ibid.

741 The survey uses a stratified random probability sampling method to select the respondents. The migrant population of interest is defined as those who had moved to Sweden during the last ten years, that is, between 2007 and 2018. The sampling frame specified two additional criteria, namely: (*a*) migrants are registered as residents in Sweden and (*b*) they live in one of fifty-four pre-selected municipalities chosen as a representative sample of urban and rural localities distributed across Sweden. Respondents who met these criteria were selected for an interview through three different methods: (*i*) via written invitations sent to migrants who had stayed in Sweden for more than five years, (*ii*) by contacting migrants attending courses on Swedish for Immigrants, and (*iii*) by interviewing all those attending selected language classes in the upper secondary school system. Through these selection criteria, a total of 7,161 respondents have been identified and invited to participate in the study. Of these, only eleven percent declined the invitation, yielding a total sample size of 6,516 respondents. The

interviewees could choose to answer the survey in any of seven different languages (English, Arabic, Somali, Tigrinya, Dari, Turkish or Swedish). Interviews were conducted via computer-assisted questionnaires available both in Swedish and in the chosen mother-tongue. For illiterate respondents, translation assistants fluent in the respondents' native languages were present.

742 The number of observations is $N = 309$.

743 This includes countries classified as "not free" by Freedom House (www.freedomhouse.org).

744 This includes countries with per capita incomes below 10,000 international US-Dollars per year, due to recent World Bank data (www.worldbank.org).

745 The data source is The World Values Survey (WVS-7) - Survey of Migrants to Sweden.

746 According to our tripartite division of global culture zones, 309 migrants in the sample are from countries belonging to *Western civilization* (74 migrants from Poland, 37 from Latvia, 25 from Germany, 18 from the UK and 155 from twenty Western countries, including Australia, Austria, Belgium, Canada, Denmark, Finland, France, Norway and the US). The average CW-score of these Western migrants' home countries (weighted for the share of migrants) is 0.58 (SD = 0.11). In the same tripartite division of global culture zones, 3,877 migrants in the sample are from *Eastern civilizations* (2,338 migrants from Syria, 558 from Afghanistan, 440 from Iraq, 167 from Turkey, 46 from China and 328 from twenty-eight countries in the Middle East, the post-Soviet space and Central and East Asia). The average CW-score of these Eastern migrants' home countries (weighted for the share of migrants) is 0.15 (SD = 0.07). Again, in the same tripartite division of global culture zones, 2,150 migrants in the sample are from the *Global South* (478 from Eritrea, 374 from Somalia, 105 from Thailand, 94 from Ethiopia, 47 from Pakistan, 47 from the Philippines, 45 from India and 960 from roughly fifty countries in South America, South Asia and Sub-Saharan Africa). The average CW-score of these Southern migrants' home countries (weighted for the share of migrants) is 0.07 (SD = 0.05). The lowest CW-score for a migrant's country of origin is 0.01 for Uzbekistan; the highest CW-score is 0.81 for Iceland. The mean CW-score for all the migrants' countries of origin (weighted in proportion to the share among all migrants in the sample) is 0.15 (SD = 0.13), which is about the CW-score of Egypt from where 38 migrants are in the Swedish sample. This compares with a CW-score of about 0.75 for Sweden. The migrants' scoring on emancipative values varies from a minimum of 0.05 to a maximum of 0.88, with a mean of 0.49 for the entire migrant sample (SD = 0.16). Scores on emancipative values are normally distributed (skewness = .39, kurtosis = -.16). However, since emancipative values summarize responses to a total of twelve items, we lose more than half of the sample (N = 2,415 with observed scores on emancipative values). SOM-Table 10-7-1 documents the composition of the sample, indicating a diverse and socio-demographically rather balanced respondent selection.

747 Alexander and Welzel (op. cit., endnote 224).

748 The measure is provided by the United Nations Development Program (op. cit., endnote 392) and combines data on life expectancy, per capita income and education into a single index, scaled from minimum 0 to maximum 1 (available online at: www.undp.org).

749 The measure is provided by the V-Dem Institute at Gothenburg University in Sweden: see Lindberg et al. (op. cit., endnote 234). It is based on expert judgements on the fairness, competitiveness and cleanliness of general elections and the strength of liberal institutional qualities, including horizontal checks on executive power and minority protection, scaled from minimum 0 to maximum 1.

750 Data are available online at: www.alfred.med.yale.edu.

751 For the Big Five, see M.B. Stein, M.D. Fallin, N.J. Schork and J. Gelernter, 2005, "COMT Polymorphisms and Anxiety-related Personality Traits," *Neuropsychopharmacology* 30, 2092-2102.

752 J.Y. Chiao and K.D. Blizinski, 2010, "Culture-Gene Coevolution of Individualism-Collectivism and the Serotonin Transporter Gene," *Proceedings of the Royal Society B - Biological Sciences* 277, 529-537.

753 For the DRD4 gene and its societal relevance, see Chen et al. (op. cit., endnote 545), Matthews and Butler (op. cit., endnote 545).

754 K. Distin, 2011, *Cultural Evolution*, New York: Cambridge University Press.

755 Y.N. Harari, 2017, *Homo Deus: A Brief History of Tomorrow*, New York: Harper & Collins.

[756] R. Flynn, 2012, *Are We Getting Smarter: Rising IQ in the 21st Century*. New York: Cambridge University Press.

[757] For the debate about "race" and intelligence, see C.E. Dale and A.J. Onwuegbuzie, 2011, "Race and Intelligence," in R.J. Sternberg and S.B. Kaufman (eds.), *Cambridge Handbooks in Psychology. The Cambridge Handbook of Intelligence*, New York: Cambridge University Press, 293–306.

[758] For the role of the migration frontier and the mental predispositions it supposedly favored, see Chen et al. (op. cit., endnote 545); Matthews and Butler (op. cit., endnote 545).

[759] To be precise, the correlation amounts to $r = .50$ ($N = 156$; $p < .001$).

[760] The correlation is $r = .70$ ($N = 156$; $p < .001$).

[761] For the belief that population differences in general intelligence are genetic, see Vanhanen and Lynn (op. cit., endnote 88).

[762] Dale and Onwuegbuzie (op. cit., endnote 757).

[763] Ibid.

[764] J. Qiu, 2016, "How China Is Rewriting the Book on Human Origins," *NATURE - Evolution* July.

[765] G. Miller, 2002, *The Mating Mind: How Sexual Choice Shaped the Evolution of Human Nature*, New York: Vintage.

[766] According to the four-drives theory by Lawrence and Nohria (op. cit., endnote 162), the "drive to bond" is universally human and, hence, does not vary by ethnicity or race. Hence, if intelligence evolved to manage social bonds, there can be no intelligence differential in ethnicity when the drive to bond is invariant across ethnic groups.

[767] T.E. Kuzu and S. Prediger, 2017, "Two Languages - Separate Conceptualizations? Multilingual Students' Processes of Combining Conceptualizations of the Part-Whole Concept," in *Proceedings of the 41st Conference of the International Group for the Psychology of Mathematics Education* – Vol 3, London: PME.

[768] Y. Kovas, S. Malykh and S.A. Petrill, 2013, "Genetics for Education," in D. Mareshal, D. Butterworth and A. Tolmie (eds.), *Educational Neuroscience*, London: Wiley-Blackwell, 77-110 (esp. 103).

[769] We recognize that the national IQ-data collected by Vanhanen and Lynn (op. cit., endnote 88) as well as those collected by other scholars are criticized as culturally biased in favor of the mindsets of people in "developed" countries and in disfavor of those in "developing" countries (see, for instance, Dale and Onwuegbuzie, op. cit., endnote 757). This criticism implies that aggregate IQ-scores are artificially inflated for "developed" and artificially deflated for "developing" countries, thus pretending a bigger IQ-differential than actual exists. If so, it will be more difficult to demolish the strong correlation between development and aggregate IQs. For this reason, a successful demolishment gains even more credibility than otherwise.

[770] The correlation amounts to $r = -.66$ ($N = 168$, $p < .001$).

[771] Vanhanen and Lynn (op. cit., endnote 88).

[772] Welzel (op. cit, endnote 17, chapter 11).

[773] The correlation amounts to $r = .86$ ($N = 98$, $p < .001$).

[774] The correlation between the CW-Condition and the countries' scores on the breeding-vs-building index is consistently strong over time. It should be clear that this association can only be understood as an effect of the CW-Condition on breeding-vs-building. Nevertheless, the correlation has been continuously decreasing from $r = .88$ in 1900 ($N = 112$, $p < .001$) to $r = .74$ in 2018 ($N = 166$, $p < .001$). This means a considerable drop in explained variance (i.e., geo-climatic determination) from 77 to 55%. Chapter 12 explores this issue in greater detail.

[775] These results are not subject to an ecological fallacy. Scholars have not argued that individual-level IQ differences but average population differences in IQs are subject to natural selection by environmental conditions. Since these conditions are similar for people in the same environment, they impossibly account for individual-level IQ differences. In as far, however, as the environmental conditions differ between countries, country populations are the appropriate unit of analysis to test the argument about natural selection.

[776] To be precise, we use the per capita Gross Domestic Product in international US-Dollars per year. Following standard practice, we log the numbers to correct an otherwise skewed distribution. We take the data from the V-Dem dataset (see Lindberg et al., op. cit., endnote 234). The logged GDP numbers vary roughly between 6 and 12, which corresponds with a scale range in real numbers from 620 US-Dollars per year and person in the Central African Republic till 140,000 US-Dollars per year and person in Qatar.

[777] This finding supports from another angle Heiner Rindermann's (op. cit., endnote 466) extensive study of the subject.

[778] Flynn (op. cit., endnote 756). Recently, scholars observe a stagnation or slight reversal of the Flynn-effect in some of the most developed countries, including the US. While the magnitude of this "reverse Flynn-effect" is still debated, various scholars see immigration from the Global South into the North (i.e., from populations with less to those with more cognitive training) as the reason for stagnating IQ-scores in parts of the developed world. See H. Rindermann, D. Becker and T. R. Coyle, 2017, "Survey of Expert Opinion on Intelligence: The Flynn Effect and the Future of Intelligence," *Personality and Individual Differences* 106, 242–247.

[779] R.J. Herrnstein and C. Murray, 1994, *The Bell Curve: Intelligence and Class Structure in American Life*, New York: Free Press.

[780] Welzel (op. cit., endnote 17, 369-373).

[781] Welzel (op. cit., endnote 178, 46-47).

[782] The data source is the World Bank (op. cit., endnote 367).

[783] A. Dreher, N. Gaston and W.J.M. Martens, 2010, *Measuring Globalization: Gauging Its Consequences*, New York: Springer.

[784] Data are from V-Dem. See Lindberg et al. (op. cit., endnote 236). Numbers are obtained after weighting countries for the size of their populations.

[785] On Dreher and his colleagues' (op. cit., endnote 783) "globalization index," which measures all kinds of cross-border exchange, the global average (on a 0-to1 scale range) has risen steadily from 0.39 in 1970 to 0.64 in 2018.

[786] R.J. Barro, 2012, "Convergence and Modernization Revisited." *NBER Working Paper* 18295, Cambridge, MA: National Bureau of Economic Research, 1-66.

[787] Santos Silva et al. (op. cit., endnote 19).

[788] L. Putterman and D.N. Weil, 2010, "Post-1500 Population Flows and the Long-Run Determinants of Economic Grwoth and Inequality," *Quarterly Journal of Economics* 125, 1627-1682.

[789] Voigtländer and Voth (op. cit., endnote 311).

[790] van Zanden (op. cit., endnote 404), Goody (op. cit., endote 404), Fukuyama (op. cit., endnote 404).

[791] Henrich (op. cit., endnote 2), Schulz et al. (op. cit., endnote 26).

[792] S. Klasen and F. Lamanna, 2009, "The Impact of Gender Inequality in Education and Employment on Economic Growth," *Female Economics* 15, 91-132. E. Duflo, 2012, "Women, Empowerment and Economic Development," *Journal of Economic Literature* 50, 1051-1079. B. Branisa, S. Klasen and M. Ziegler, 2013, "Gender Inequality in Social Institutions and Gendered Developmental Outcomes," *World Development* 45, 252-268. F. Brollo and U. Troiano, 2016, "What Happens When a Woman Wins an Election? Evidence from Close Races in Brazil," *Journal of Development Economics* 122, 28-45. M. Santos Silva and S. Klasen, 2021, "Gender Inequality as a Barrier to Economic Growth: A Review of the Theoretical Literature," *Review of Economic Studies* 19, 581-614.

[793] Sen (op. cit., endnote 11).

[794] Andersen and Bjoerkman (op. cit., endnote 40), Pinker (op. cit., endnote 71), Roesling et al. (op. cit., endnote 213).

[795] As a qualifying remark, democracies' performative advantage over their autocratic competitors is limited to genuinely liberal democracies and vanishes when looking at deficient democracies that lack liberal qualities when it comes to minority rights, separation of powers, judicial independence and free media. For evidence, see C.

Haerpfer, P. Bernhagen, R. Inglehart and C. Welzel, 2009, "Introduction." In Haerpfer, C., P. Bernhagen, R. Inglehart and C. Welzel (eds.), *Democratization* (1st edition), Oxford: Oxford University Press, 1-7.