

The journey of humanity: Roots of inequality in the wealth of nations¹

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Abstract: This essay explores the journey of humanity since the emergence of *Homo sapiens* 300,000 years ago. It analyses the critical role of Unified Growth Theory in resolving two fundamental mysteries that had characterized this journey: (i) The mystery of growth—why did living standards stagnate for most of human history and what led to their sudden soar 200 years ago? (ii) the mystery of inequality—what are the roots of the major surge in inequality across nations and why have these gaps widened dramatically over the past 200 years?

Keywords: growth, comparative development, great divergence, Malthusian Epoch, population diversity.

JEL codes: O10, O40.

Introduction

For most of human existence, since the emergence of *Homo sapiens* nearly 300,000 years ago, the patterns of human development were remarkably similar to those of other species: living standards scarcely changed over the millennia and regional variations in living conditions were insignificant. Over the past few centuries, however, these patterns have drastically changed. From a historical standpoint humankind experienced a dramatic, unprecedented improvement in its quality of life virtually overnight.

Skyrocketing living standards coincided with another major transformation unique to humanity: the emergence of vast wealth inequality between different societies across the globe. Western European nations and some of their former colonies in North America, Australia and New Zealand experienced this dramatic jump in living conditions as early as the nineteenth century while in

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most other regions this change was delayed until the latter half of the twentieth century—spurring the creation of immense global wealth disparities.

Most human beings in the eighteenth century led lives more comparable to those of their distant ancestors millennia ago than those of their present-day descendants. The quality of life of an English farmer at the turn of the nineteenth century was similar to that of a fourteenth-century Chinese serf, a fourth-century BCE Greek peasant, an Egyptian farmer 5,000 years ago, or even a shepherd in Jericho 10,000 years ago.

It is difficult to picture the world we left behind not so long ago. It was a world in which life was *nasty, brutish, and short*.³ Where a quarter of babies died of cold, hunger, and assorted illnesses before reaching their first birthday, countless women perished during childbirth and life expectancy rarely exceeded forty. It was a world in which men, women, and children spent long hours ferrying water to their homes, bathed very infrequently and utilized heating systems that were both polluting and inefficient. A world engulfed in darkness after the disappearance of the sun over the horizon, where humans lived in far-flung rural villages, rarely ventured far from their place of birth, could not read or write and survived on paltry and monotonous diets. Where an economic crisis did not mean tightening one's belt but mass death by starvation. Many of the difficulties that concern us today pale in comparison to the hardships and tragedies faced by our not-so-distant forebears.

The prevailing wisdom had been that living standards had risen gradually throughout history in a process that accelerated over time. However, as depicted in Figure 1, this viewpoint is a distorted and misleading depiction of human history. While the modern technological frontier does reflect gradual progress that accelerated over time, technological advancement did not improve living standards over most of human existence. The dramatic jump in living conditions in the past two centuries has been the product of a sharp *disruption* of an epoch of stagnation not of a process that gained momentum incrementally over the course of human history.

The prosperity and perpetual improvements in living standards in the contemporary era often obscure our perspective of just how exceptional the modern era is compared to those that preceded it. The scarcely conceivable transformations in the quality of life of the last few generations—in terms of health, wealth, and education—dwarf any other event since the birth of humanity.

Why did living standards stagnate for most of human history and what led to their sudden soar 200 years ago?

An early clue for the resolution of this mystery of growth can be found in the writings of the British cleric and philosopher Thomas Malthus. In the late eighteenth century he described the mechanism that had trapped humanity in poverty since time immemorial. When a given population experienced

³ Hobbes (1651, p. 97).

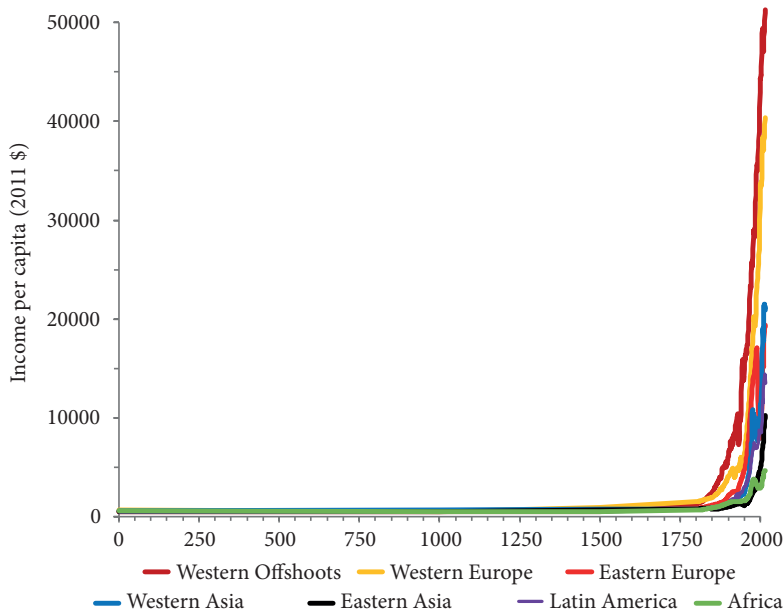


Figure 1. Per capita income across world regions over the past 2,000 years

Data source: (Bolt, Inklaar, de Jong, & van Zanden, 2013, 2018).

a food surplus resulting from technological innovations such as the advent of the plough and more efficient gristmills it enjoyed a temporary boost in wealth, rising birth rates and falling mortality rates. But over time this population growth depleted the surplus as the more prosperous population kept having children until its food abundance vanished. Population growth, therefore, restored original living standards and left human beings as poor as they were before their technology improved. During the Malthusian Epoch—the entire course of human history leading up to the recent dramatic leap—technological progress made populations larger and denser but not richer. The human population grew but human living conditions stagnated. Malthus argued that this poverty trap would endure forever. Ironically, however, the mechanism that he described stopped operating in the same period in which he wrote his treatise.

Why? How did humanity break out of the poverty trap and escape the Malthusian Epoch?

1. Unified Growth Theory

Despite their resounding importance for understanding modern wealth inequalities the underlying causes of the economic ice age that defined human history during the Malthusian Epoch and the trigger for humanity's escape from this poverty trap had long been shrouded in mystery. Over the past two

decades, however, a unified theory of economic growth has been developed to shed light on the journey of humanity over its entire history and the roots of the big bang of civilizations in recent centuries.⁴

Unified Growth Theory captures the transition from an epoch of stagnation to an era of sustained growth, revealing the fingerprints of the distant past in the fate of nations. It traces the processes that facilitated the transition of humanity from the poverty trap that had ensnared it for millennia to an era of prosperity and sustained improvements in living standards. It uncovers the cogs and gears that governed this development beneath the surface, accelerated the pace of technological progress and ultimately generated the incentives for the critical behavioral change that resulted in the sudden ascent in per capita income: the Demographic Transition. This drastic collapse in birth and death rates, which began in most Western countries in the late nineteenth century and in the developing world throughout the twentieth century, enabled technological progress to contribute to humanity's welfare rather than its scale.

Unified Growth Theory suggests that the positive feedback loop between technological progress and the size and the composition of human populations. These cogs are the centerpiece of the engine that drove and steered the journey of humanity everywhere on earth. But in some regions these cogs whirred more rapidly and allowed humanity to escape the grips of the Malthusian octopus earlier, thus contributing to inconceivable levels of inequality across nations.

2. The journey of humanity

The technological progress that defined the history of humankind was extraordinary—breathhtaking in its power and radically different from the development of any other species on Planet Earth. The story began with prehistoric humans roaming the savannahs of East Africa; using fire for cooking, warmth and light; and chiseling pebbles to make sharp handheld axes.

The first spark that propelled this technological progress was the increasing complexity of the human brain, the result of evolutionary pressures that were unique to the human species. Over millions of years this evolutionary process led to gradual technological improvements which allowed hunter-gatherers to operate more efficiently. Technological advances caused the human population to swell and bestowed survival advantages on humans born with attributes that equipped them to take better advantage of existing technologies. Technological progress shaped modern human beings whose fingers adapted to sculpt raw materials into useful objects, whose arms developed to allow them to hurl spears and whose brains evolved to analyze and store information and under-

⁴ Galor (2011), Galor and Weil (2000), Galor and Moav (2002), and Galor and Mountford (2008).

stand language, facilitating cooperation and complicated trade relations with other members of their species. Over hundreds of thousands of years, these survival advantages prompted incremental changes to the human characteristics—changes that adapted humankind to a technological world that is being transformed at an ever-faster pace.

Technological progress prompted the proliferation of physical, cognitive and cultural traits tailored to the changing technological environment, such as the ability to hunt with spears, the propensity to invest and transmit knowledge to future generations and the capacity for delayed gratification. Humans endowed with such attributes amassed more resources and supported more children into adulthood. Their descendants formed a greater share of the population and their neighbors emulated their behavior. This biological and cultural evolutionary process in the course of human history, therefore, permitted humanity to adapt to changing technological environments. The growth and adaptation of the human population contributed to further technological progress which in turn further shaped the human population. Rapid technological progress accelerated the pace of population growth and humanity's adaptation to changing technological environments spurring even more intense technological development.

For most of human history, technological progress and humanity's battle for survival boosted the size of the human population and the prevalence of traits that were conducive to technological progress and this change in the size and composition of the population accelerated the march of technology. Population growth widened the pool of inventors, expanded profitable markets for their innovations and prevented the knowledge loss and technological regression that may characterize small populations. The adaptation of the human population spurred the adoption of new technologies and boosted investment in human capital and thus, for eons the great cogs of human history whirred under the earth's mantle and propelled the journey of humanity. Technological progress caused the human population to grow and its composition to change and these changes in the size and the composition of the human population accelerated technological progress.

Humankind progressed, prospered, and permeated new ecological niches out of Africa. It learned to protect itself from precarious weather conditions in a wide range of environments, honed its hunting and gathering skills and then about 10,000 years ago, experienced its first major revolution: human beings transitioned to sedentary lifestyles and began farming their food.

The Neolithic Revolution had a lasting effect on humanity. Human beings gradually abandoned their nomadic lifestyles and started cultivating the land and raising cattle, sheep, and chickens. Rapid evolutionary change induced the adaptation of humans to their new surroundings. The human habitat changed. Farms became villages, villages grew into towns, and towns expanded into walled cities. These cities sprouted magnificent palaces and temples, the home

of wealthy elites who built professional armies and slaughtered their enemies in battles for land, prestige, and power. But throughout this period the fated cycle remained unchanged. Technologies improved, populations grew, traits that suited new technologies spread—and these changes accelerated further technological progress. In every civilization, on every continent and in every era. Anywhere humans set foot, animals that could threaten their existence were driven to extinction at an ever-faster pace, ceding control of Planet Earth to its new masters. But one central aspect remained unchanged: human living standards.

For most of human history technological progress failed to lead to any long-term rises in human living standards, because like all other species on earth humanity was stuck in the poverty trap first described by Thomas Malthus.⁵ Technological progress and the associated expansion of resources, led to population growth and the fruits of progress were shared by growing numbers of human mouths. Technological advances caused living standards to rise for a few generations but ultimately population growth brought them back down to subsistence levels. The virtuous cycle remained unchanged. Technological change led to changes in the size and composition of the human population, which in turn spurred technological progress, but none of these changes made a dent on living standards because population growth brought them back to their initial position.

The inevitable acceleration of technological progress catapulted humanity into another technological growth spurt in the eighteenth century. But after tens of thousands of years of technological progress humanity reached a tipping point. The technological progress of the Industrial Revolution in the eighteenth to nineteenth centuries was sufficiently rapid to trigger demand for the skills and knowledge that would enable workers to navigate this rapidly changing technological environment. However, in order to properly invest in their children and equip them for a rapidly changing technological world parents were ultimately forced to bear fewer children. Moreover, new technologies reduced the importance of physical strength in the production process, enabled more women to enter the labor market, and contributed to the decline in gender wage gaps. These forces triggered the Demographic Transition, severing the positive (and seemingly eternal) association between economic growth and birth rates. The dramatic drop in birth rates liberated the economic growth process from the counterbalancing effects of population growth and allowed technological improvements to raise living standards—permanently, not in fleeting spurts. Thanks to a better quality workforce, growing investment in human capital and further declines in birth rates accelerated technological progress and led to a take-off in humanity's living standards and its escape from the Malthusian poverty trap. Humanity had undergone a phase transition.

⁵ Malthus (1789) and Ashraf and Galor (2011).

Over the past 200 years, after a long epoch of stagnation, average per capita incomes around the world have risen by a factor of seventeen and life expectancy has nearly doubled. The cruel world in which a quarter of children died before turning five gave way to a world of prosperity in which the death of a child is an extraordinary tragedy but improvements in living standards meant more than better health and higher incomes. Technological progress led to a decline in the use of child labor, a switch to more comfortable and less dangerous occupations, communication and commerce across vast distances and the proliferation of mass entertainment and culture on a scale that our ancestors could never have dreamed of.

Human history is rich with fascinating details. Mighty leaders who rose and fell; charismatic generals who led armies into vast conquests; artists who created enchanting cultural treasures and inventors, philosophers and scientists who made breakthroughs into new fields of knowledge and advanced our understanding of the nature of humanity and the universe. It is easy to become adrift in this ocean of detail, buffeted between the waves and unaware of the powerful currents underneath. Unified Growth Theory focuses on these undercurrents: the interplay of technological progress and the size and the composition of the human population which swept humanity along its journey.

It is virtually impossible to understand human history without grasping the contributions of these undercurrents to human evolution, to two mighty revolutions (the Neolithic and the Industrial), to the growth of human capital investment and to the Demographic Transition—the major trends that made us the masters of Planet Earth. Without these mechanisms human history would be merely a chronological list of facts—an incomprehensible wilderness of randomly rising and falling civilizations but the positive feedback loop between technological progress and the size and composition of the human population provides a unifying conceptual framework to understand human history and a clear axis of development.

Unified Growth Theory is not the first attempt to describe the core development axis of human history. Thinkers such as Plato, Hegel, Marx, and Weber tried to conceptualize the grand arc of history in an approach known as “historicism.” In his landmark book *The open society and its enemies*, the Austrian philosopher Karl Popper (1945) quite rightly criticized these thinkers’ attempts to trace the long-term development of human history. Indeed, these efforts were tainted by ideological biases, wishful thinking and dependence on the limited knowledge that prevailed at the time about the history of humanity.

Unified Growth Theory is radically different. It provides an empirically-founded theoretical framework of analysis that relies on historical, geographical and biological evidence that were largely unknown to earlier thinkers and on dramatic developments of humanity that took place after their deaths. Moreover, it neither pretends to point to an inexorable march toward utopia or dystopia, nor does it purport to derive moral insights about human society.

Unified Growth Theory captures the major patterns of human history rooted in the conviction that just as humankind has deciphered many of the mysterious forces that governed the natural world, so can we decipher the forces that have governed the historical journey of humanity.

3. The Big Bang of civilizations

The escape from the poverty trap and the dramatic improvement in the standard of living in the past two centuries have not occurred simultaneously across nations and regions, generating vast global wealth disparities, as depicted in Figure 2.

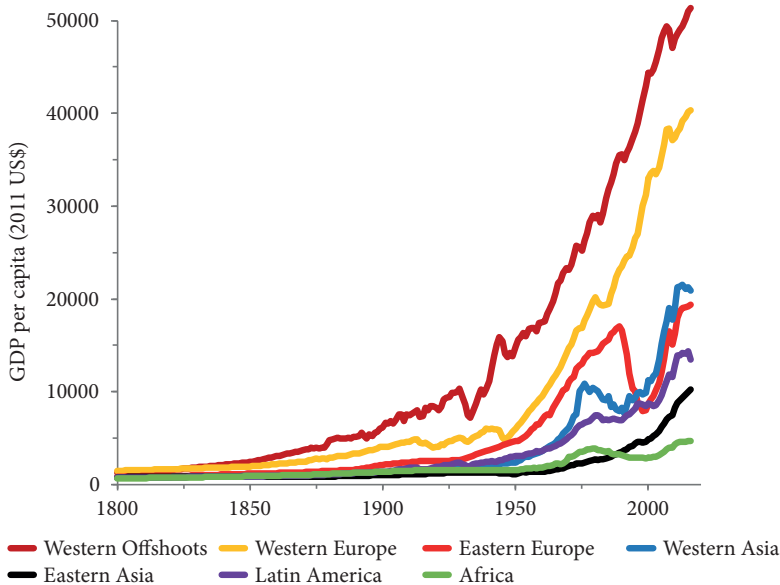


Figure 2. Divergence of per capita income across different parts of the world over the last 200 years

Data source: (Bolt et al., 2018).

What are the roots of the major surge in inequality across nations? What is the origin of the vast contemporary disparities in the wealth of nations? Why have these gaps widened dramatically over the past 200 years?

A deceptively simple explanation was initially proposed for the Mystery of Inequality: in comparison to poorer nations, rich ones used more advanced technology, employed a better educated workforce and enjoyed greater physical capital and better infrastructure. This explanation, however, only shifts the

mystery a step backward: how, then, did these disparities in technology, education and physical capital and infrastructure emerge and what are the hurdles faced by poorer countries in their attempts to narrow these gaps and shrink these wealth inequalities? Given the high expected return one might expect financial institutions to eagerly fund investment in infrastructure, technologies and schools in poorer nations. Even less-enlightened rulers of these less-developed nations should encourage this investment, which could enhance their political survival and boost their tax revenues. Nevertheless economic growth in many poorer countries is not sufficiently fast to narrow the income gap between poor and rich nations.

In recent decades it has become apparent that the divergence in the prosperity of nations is a reflection of the variation in the timing of the transition from stagnation to growth across the globe. Deeply rooted geographical, cultural and institutional factors that were formed in the distant past propelled societies along different historical trajectories, influencing the timing of the spike in living standards and triggering the great divergence. Thus, in order to trace the ultimate factors behind modern wealth disparities across nations, we must take several steps backward—far back into the recesses of time.

The big bang of civilizations placed human societies on divergent development paths. Was the emergence of international wealth inequalities deterministic or random? Could the big bang of civilizations have been predicted in advance? Are human societies trapped by the history and geography of the regions in which they sprouted?

Deep-rooted factors contributed significantly to the emergence of the gulf in living standards and technological progress between developed and developing nations. Institutions and cultures, alongside geography and human diversity, affected the speed of the great cogs of human history around the world—technological progress and the growth and adaptation of the human population set the pace of the journey of humanity from the Malthusian poverty trap to the modern era of sustained growth.⁶ Growth enhancing institutions and cultural traits were the lubricants that oiled the positive feedback loop between technological progress and the size and composition of the human population, spurring investment in human capital, the Demographic Transition and the remarkable transition to the modern era of growth.

In contrast, political and economic institutions and cultural traits that impeded technological progress shoved a spoke in these historical wheels. They slowed the pace of the growth and adaptation of populations and hindered human capital investment, the Demographic Transition, and the escape from the Malthusian trap. Historical differences in culture and the quality of political and economic institutions across countries, often rooted in geography or

⁶ Ashraf & Galor (2013, 2018), Arbatli, Ashraf, Galor and Klemp (2020), Galor and Ozak (2016), Galor and Klemp (2019).

human diversity, thus affected the timing of the transition from stagnation to growth and contributed to the big bang of civilizations and the creation of the massive rise in global inequality.

Random events have undoubtedly played a role in human history but their impact on the progression of humanity as a whole was modest and largely temporary. The emergence of the great civilizations in fertile lands around major rivers such as the Euphrates, Tigris, Nile, Yangtze, and Ganges is naturally not a coincidence and random events could not have generated and sustained major ancient civilization in the heart of the Sahara Desert.

The rise in globalization in the past centuries often generated asymmetric effects on developed and developing nations. It accelerated the transition from stagnation to growth of developed nations while delaying the escape of less developed nations from their poverty trap. Moreover, the adoption and the persistence of extractive colonial institutions designed to perpetuate inequality, also contributed to widening disparities in the wealth of nations. In contrast the subsequent diffusion of medical, agricultural and industrial technologies from developed economies to the developing ones contributed to the transition of less developed societies into the modern era of growth.

In recent decades, in contrast, globalization and the rapid diffusion of the information technology revolution have diminished the institutional and cultural gaps across nations, permitting weaker nations to adopt growth-enhancing cultural and institutional characteristics. Moreover, technological progress and economic growth enabled countries to mitigate the adverse effects of their geography on their economic prosperity. The great cogs that operated beneath the surface of human history have continued whirring apace in recent decades. Thanks to the growing importance of human capital in changing technological environments most countries are currently experiencing falling birth rates, rising education levels, and growing female participation in the workforce. Cultural prejudices against technological progress and women's independence are dissipating and these trends are unlikely to come to a halt in the foreseeable future.

Consequently even the most underdeveloped nations have started to escape the Malthusian trap. In the near future the Malthusian Epoch will become a fading memory and humanity will have embarked on a new journey. Nevertheless these trends do not necessarily foretell the disappearance of inequality between nations. Regional differences in institutions, culture and geography will continue affecting the accumulation of physical and human capital and the adoption of new technologies, thereby perpetuating inequality.

Over time globalization, the spread of technology and the information technology revolution should bridge some institutional and cultural gaps and mitigate the importance of geography. However, since cultures and institutions are slow to change and since it is even harder to generate population diversity levels conducive to growth, inequality between nations are likely to persist.

Conclusions

For thousands of years thinkers have tried to identify the causes of the rise and fall of nations. Many have proposed brilliant and surprising insights that shed light on international wealth disparities but only now do we have an empirically-based theoretical framework and a long-term perspective to understand the entire journey of humanity and decipher the two central mysteries of human development: the mystery of growth, namely the stagnation in human living standards over hundreds of thousands of years until the surprising leap in the last 200 years; and the mystery of inequality—the unprecedented widening of the inequality between nations since the big bang of civilizations.

Yet despite the long shadow of history the movements of the great cogs that governed the journey of humanity in each region persist and the destiny of nations is not set in stone. Understanding the contribution of deep-rooted factors to the disparity in the wealth of nations could help countries to design policies to mitigate the adverse effect of these historical forces and foster economic development across the planet—making the world a better place, with equal opportunity for all.

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