

The Journey of Humanity

The Origins of Wealth and Inequality

Oded Galor



Mysteries of the Journey of Humanity

- The Mystery of Growth

Mysteries of the Journey of Humanity

- The Mystery of Growth
 - What are the roots of the dramatic transformation in living standards in the past centuries, after hundreds of thousands of years of stagnation?

Mysteries of the Journey of Humanity

- The Mystery of Growth
 - What are the roots of the dramatic transformation in living standards in the past centuries, after hundreds of thousands of years of stagnation?
- The Mystery of Inequality

Mysteries of the Journey of Humanity

- The Mystery of Growth
 - What are the roots of the dramatic transformation in living standards in the past centuries, after hundreds of thousands of years of stagnation?
- The Mystery of Inequality
 - What is the origin of the vast inequality in the wealth of nations?

The Journey of Humanity

Over most of human existence

- Human life was "*Nasty, Brutish & Short*" (Hobbes, 1651)

The Journey of Humanity

Over most of human existence

- Human life was "*Nasty, Brutish & Short*" (Hobbes, 1651)
 - Remarkably similar to that of other species:

The Journey of Humanity

Over most of human existence

- Human life was "*Nasty, Brutish & Short*" (Hobbes, 1651)
 - Remarkably similar to that of other species:
 - Humans were preoccupied by survival & reproduction

The Journey of Humanity

Over most of human existence

- Human life was "*Nasty, Brutish & Short*" (Hobbes, 1651)
 - Remarkably similar to that of other species:
 - Humans were preoccupied by survival & reproduction
 - Living standards were near subsistence

The Journey of Humanity

Over most of human existence

- Human life was "*Nasty, Brutish & Short*" (Hobbes, 1651)
 - Remarkably similar to that of other species:
 - Humans were preoccupied by survival & reproduction
 - Living standards were near subsistence
 - Minor differences in living conditions across time & space

Living Standards Few Centuries Ago

- 1/4 of new born died before reaching their first birthday

Living Standards Few Centuries Ago

- 1/4 of new born died before reaching their first birthday
- Numerous women perished during childbirth

Living Standards Few Centuries Ago

- 1/4 of new born died before reaching their first birthday
- Numerous women perished during childbirth
- Life expectancy rarely exceeded 40

Living Standards Few Centuries Ago

- 1/4 of new born died before reaching their first birthday
- Numerous women perished during childbirth
- Life expectancy rarely exceeded 40
- 'Economic Crisis' \Rightarrow 'Belt-tightening'

Living Standards Few Centuries Ago

- 1/4 of new born died before reaching their first birthday
- Numerous women perished during childbirth
- Life expectancy rarely exceeded 40
- 'Economic Crisis' \Rightarrow 'Belt-tightening'
 - \Rightarrow Mass starvation & Extinction

Metamorphosis

- Over the past two centuries

Metamorphosis

- Over the past two centuries
 - Dramatic transformation in living standard within & across societies

Metamorphosis

- Over the past two centuries
 - Dramatic transformation in living standard within & across societies
 - World's income per capita has increased 14-fold

Metamorphosis

- Over the past two centuries
 - Dramatic transformation in living standard within & across societies
 - World's income per capita has increased 14-fold
 - Life expectancy has more than doubled

Metamorphosis

- Over the past two centuries
 - Dramatic transformation in living standard within & across societies
 - World's income per capita has increased 14-fold
 - Life expectancy has more than doubled
 - Great divergence in income per capita across countries

Manifestations of this Striking Metamorphosis

Residents of Jerusalem whisked in a time machine:

Manifestations of this Striking Metamorphosis

Residents of Jerusalem whisked in a time machine:

- From Roman Jerusalem (1st century) to Ottoman Jerusalem (19th century)

Manifestations of this Striking Metamorphosis

Residents of Jerusalem whisked in a time machine:

- From Roman Jerusalem (1st century) to Ottoman Jerusalem (19th century)
 - Instantaneous adaptation

Manifestations of this Striking Metamorphosis

Residents of Jerusalem whisked in a time machine:

- From Roman Jerusalem (1st century) to Ottoman Jerusalem (19th century)
 - Instantaneous adaptation
 - Past knowledge would be largely applicable

Manifestations of this Striking Metamorphosis

Residents of Jerusalem whisked in a time machine:

- From Roman Jerusalem (1st century) to Ottoman Jerusalem (19th century)
 - Instantaneous adaptation
 - Past knowledge would be largely applicable
 - Technological improvements would be merely incremental

Manifestations of this Striking Metamorphosis

Residents of Jerusalem whisked in a time machine:

- From Roman Jerusalem (1st century) to Ottoman Jerusalem (19th century)
 - Instantaneous adaptation
 - Past knowledge would be largely applicable
 - Technological improvements would be merely incremental
 - Occupations would require similar skills

Manifestations of this Striking Metamorphosis

Residents of Jerusalem whisked in a time machine:

- From Roman Jerusalem (1st century) to Ottoman Jerusalem (19th century)
 - Instantaneous adaptation
 - Past knowledge would be largely applicable
 - Technological improvements would be merely incremental
 - Occupations would require similar skills
 - Life expectancy would remain largely unchanged

Manifestations of this Striking Metamorphosis

Residents of Jerusalem whisked in a time machine:

- From Roman Jerusalem (1st century) to Ottoman Jerusalem (19th century)
 - Instantaneous adaptation
 - Past knowledge would be largely applicable
 - Technological improvements would be merely incremental
 - Occupations would require similar skills
 - Life expectancy would remain largely unchanged
- From Jerusalem in the 19th century to Jerusalem today

Manifestations of this Striking Metamorphosis

Residents of Jerusalem whisked in a time machine:

- From Roman Jerusalem (1st century) to Ottoman Jerusalem (19th century)
 - Instantaneous adaptation
 - Past knowledge would be largely applicable
 - Technological improvements would be merely incremental
 - Occupations would require similar skills
 - Life expectancy would remain largely unchanged
- From Jerusalem in the 19th century to Jerusalem today
 - Shocking experience

Manifestations of this Striking Metamorphosis

Residents of Jerusalem whisked in a time machine:

- From Roman Jerusalem (1st century) to Ottoman Jerusalem (19th century)
 - Instantaneous adaptation
 - Past knowledge would be largely applicable
 - Technological improvements would be merely incremental
 - Occupations would require similar skills
 - Life expectancy would remain largely unchanged
- From Jerusalem in the 19th century to Jerusalem today
 - Shocking experience
 - Past knowledge would be largely obsolete

Manifestations of this Striking Metamorphosis

Residents of Jerusalem whisked in a time machine:

- From Roman Jerusalem (1st century) to Ottoman Jerusalem (19th century)
 - Instantaneous adaptation
 - Past knowledge would be largely applicable
 - Technological improvements would be merely incremental
 - Occupations would require similar skills
 - Life expectancy would remain largely unchanged
- From Jerusalem in the 19th century to Jerusalem today
 - Shocking experience
 - Past knowledge would be largely obsolete
 - Modern technologies would appear as a witchcraft

Manifestations of this Striking Metamorphosis

Residents of Jerusalem whisked in a time machine:

- From Roman Jerusalem (1st century) to Ottoman Jerusalem (19th century)
 - Instantaneous adaptation
 - Past knowledge would be largely applicable
 - Technological improvements would be merely incremental
 - Occupations would require similar skills
 - Life expectancy would remain largely unchanged
- From Jerusalem in the 19th century to Jerusalem today
 - Shocking experience
 - Past knowledge would be largely obsolete
 - Modern technologies would appear as a witchcraft
 - Occupations would require incomprehensible skills

Manifestations of this Striking Metamorphosis

Residents of Jerusalem whisked in a time machine:

- From Roman Jerusalem (1st century) to Ottoman Jerusalem (19th century)
 - Instantaneous adaptation
 - Past knowledge would be largely applicable
 - Technological improvements would be merely incremental
 - Occupations would require similar skills
 - Life expectancy would remain largely unchanged
- From Jerusalem in the 19th century to Jerusalem today
 - Shocking experience
 - Past knowledge would be largely obsolete
 - Modern technologies would appear as a witchcraft
 - Occupations would require incomprehensible skills
 - Life expectancy would double & require future-oriented mindset

Evolution of Living Standards across the Globe

In contrast to popular views

Evolution of Living Standards across the Globe

In contrast to popular views

- Living standards had *not* increased *gradually* in the course of history

Evolution of Living Standards across the Globe

In contrast to popular views

- Living standards had *not* increased *gradually* in the course of history
 - Technological progress had accelerated *gradually* over time, but

Evolution of Living Standards across the Globe

In contrast to popular views

- Living standards had *not* increased *gradually* in the course of history
 - Technological progress had accelerated *gradually* over time, but
 - It had contributed mostly to the explosion of the world's population

Evolution of Living Standards across the Globe

In contrast to popular views

- Living standards had *not* increased *gradually* in the course of history
 - Technological progress had accelerated *gradually* over time, but
 - It had contributed mostly to the explosion of the world's population
 - It had a negligible impact on living standards over most of history

Evolution of Living Standards across the Globe

In contrast to popular views

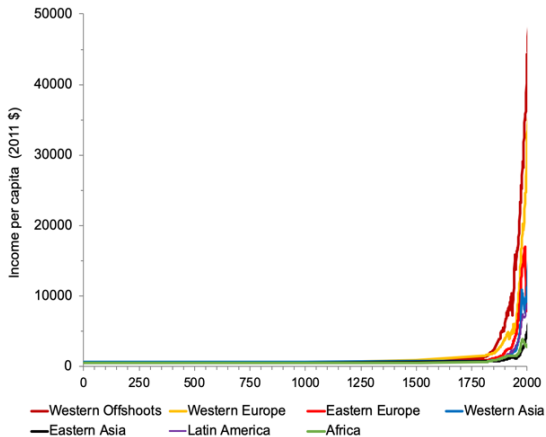
- Living standards had *not* increased *gradually* in the course of history
 - Technological progress had accelerated *gradually* over time, but
 - It had contributed mostly to the explosion of the world's population
 - It had a negligible impact on living standards over most of history
 - The recent rise in living standards reflects a *phase transition*

Evolution of Living Standards across the Globe

In contrast to popular views

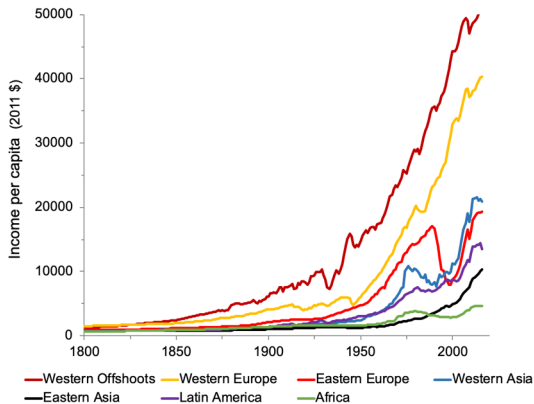
- Living standards had *not* increased *gradually* in the course of history
 - Technological progress had accelerated *gradually* over time, but
 - It had contributed mostly to the explosion of the world's population
 - It had a negligible impact on living standards over most of history
 - The recent rise in living standards reflects a *phase transition*
 - Abrupt transformation, once a tipping point has been reached

Metamorphosis: Income per Capita: 1–2020



Data Source: Maddison Project (2020)

Great Divergence: 1800–2018



Data Source: Maddison Project (2020)

Resolution of these Mysteries

- Requires the identification of:

Resolution of these Mysteries

- Requires the identification of:
 - Forces that permitted the transition from stagnation to growth

Resolution of these Mysteries

- Requires the identification of:
 - Forces that permitted the transition from stagnation to growth
 - The origins of the differential timing of the transition across the globe

Resolution of these Mysteries

- Requires the identification of:
 - Forces that permitted the transition from stagnation to growth
 - The origins of the differential timing of the transition across the globe
 - The role of historical & pre-historical initial conditions in this process

Resolution of these Mysteries

- Requires the identification of:
 - Forces that permitted the transition from stagnation to growth
 - The origins of the differential timing of the transition across the globe
 - The role of historical & pre-historical initial conditions in this process
- Provides important insights about:

Resolution of these Mysteries

- Requires the identification of:
 - Forces that permitted the transition from stagnation to growth
 - The origins of the differential timing of the transition across the globe
 - The role of historical & pre-historical initial conditions in this process
- Provides important insights about:
 - Design of strategies to mitigate inequality across the globe

Unified Growth Theory



Princeton University Press, 2011

Phases of Development

- The Malthusian Epoch

Phases of Development

- The Malthusian Epoch
- The Post-Malthusian Regime

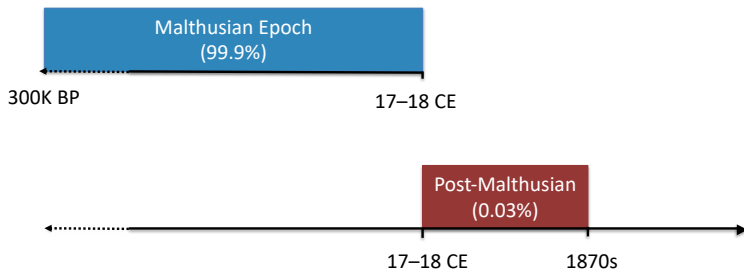
Phases of Development

- The Malthusian Epoch
- The Post-Malthusian Regime
- The Modern Growth Regime

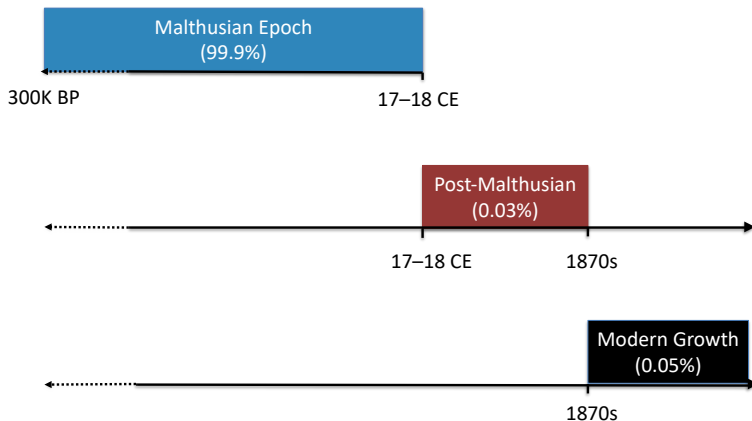
Phases of Development: Timeline in the Most Developed Economies



Phases of Development: Timeline of the Most Developed Economies



Phases of Development: Timeline of the Most Developed Economies



The Malthusian Epoch

- Dualism: Stagnation & Dynamism:

The Malthusian Epoch

- Dualism: Stagnation & Dynamism:
 - Stagnation in living standards:

The Malthusian Epoch

- Dualism: Stagnation & Dynamism:
 - Stagnation in living standards:
 - Income per capita: fluctuated near the subsistence level

The Malthusian Epoch

- Dualism: Stagnation & Dynamism:
 - Stagnation in living standards:
 - Income per capita: fluctuated near the subsistence level
 - Life expectancy: fluctuated in the range of 25-40 years

The Malthusian Epoch

- Dualism: Stagnation & Dynamism:
 - Stagnation in living standards:
 - Income per capita: fluctuated near the subsistence level
 - Life expectancy: fluctuated in the range of 25-40 years
 - Dynamism (Slow at any point in time, but sizable over 300,000-year period)::

The Malthusian Epoch

- Dualism: Stagnation & Dynamism:
 - Stagnation in living standards:
 - Income per capita: fluctuated near the subsistence level
 - Life expectancy: fluctuated in the range of 25-40 years
 - Dynamism (Slow at any point in time, but sizable over 300,000-year period):
 - Technological progress

The Malthusian Epoch

- Dualism: Stagnation & Dynamism:
 - Stagnation in living standards:
 - Income per capita: fluctuated near the subsistence level
 - Life expectancy: fluctuated in the range of 25-40 years
 - Dynamism (Slow at any point in time, but sizable over 300,000-year period):
 - Technological progress
 - Population growth

The Malthusian Epoch

- Dualism: Stagnation & Dynamism:
 - Stagnation in living standards:
 - Income per capita: fluctuated near the subsistence level
 - Life expectancy: fluctuated in the range of 25-40 years
 - Dynamism (Slow at any point in time, but sizable over 300,000-year period):
 - Technological progress
 - Population growth
 - Adaptation

The Malthusian Epoch

- Dualism: Stagnation & Dynamism:
 - Stagnation in living standards:
 - Income per capita: fluctuated near the subsistence level
 - Life expectancy: fluctuated in the range of 25-40 years
 - Dynamism (Slow at any point in time, but sizable over 300,000-year period):
 - Technological progress
 - Population growth
 - Adaptation
 - Malthusian dynamism

The Malthusian Epoch

- Dualism: Stagnation & Dynamism:
 - Stagnation in living standards:
 - Income per capita: fluctuated near the subsistence level
 - Life expectancy: fluctuated in the range of 25-40 years
 - Dynamism (Slow at any point in time, but sizable over 300,000-year period):
 - Technological progress
 - Population growth
 - Adaptation
 - Malthusian dynamism
 - Ultimately triggered the transition from stagnation to growth

Impact of Technological Progress

- Technological progress

Impact of Technological Progress

- Technological progress
 - \Rightarrow Increased income per capita in the short-run

Impact of Technological Progress

- Technological progress
 - \Rightarrow Increased income per capita in the short-run
 - \Rightarrow Population grew: due to: reduced mortality & increased fertility

Impact of Technological Progress

- Technological progress
 - \Rightarrow Increased income per capita in the short-run
 - \Rightarrow Population grew: due to: reduced mortality & increased fertility
 - \Rightarrow Income per capita inevitably reverted back to its long-run level

Impact of Technological Progress

- Technological progress
 - \Rightarrow Increased income per capita in the short-run
 - \Rightarrow Population grew: due to: reduced mortality & increased fertility
 - \Rightarrow Income per capita inevitably reverted back to its long-run level
- Technologically advanced & land-rich economies had:

Impact of Technological Progress

- Technological progress
 - \Rightarrow Increased income per capita in the short-run
 - \Rightarrow Population grew: due to: reduced mortality & increased fertility
 - \Rightarrow Income per capita inevitably reverted back to its long-run level
- Technologically advanced & land-rich economies had:
 - Higher population density

Impact of Technological Progress

- Technological progress
 - \Rightarrow Increased income per capita in the short-run
 - \Rightarrow Population grew: due to: reduced mortality & increased fertility
 - \Rightarrow Income per capita inevitably reverted back to its long-run level
- Technologically advanced & land-rich economies had:
 - Higher population density
 - But similar levels of income per-capita in the long-run

Adaptation

- The Malthusian pressure affected

Adaptation

- The Malthusian pressure affected
 - The size of the population

Adaptation

- The Malthusian pressure affected
 - The size of the population
 - The composition of the population

Adaptation

- The Malthusian pressure affected
 - The size of the population
 - The composition of the population
- Traits (cultural & individual) that were complementary to the growth process

Adaptation

- The Malthusian pressure affected
 - The size of the population
 - The composition of the population
- Traits (cultural & individual) that were complementary to the growth process
 - Generated higher income

Adaptation

- The Malthusian pressure affected
 - The size of the population
 - The composition of the population
- Traits (cultural & individual) that were complementary to the growth process
 - Generated higher income
 - \Rightarrow Higher reproductive success

Adaptation

- The Malthusian pressure affected
 - The size of the population
 - The composition of the population
- Traits (cultural & individual) that were complementary to the growth process
 - Generated higher income
 - ⇒ Higher reproductive success
 - ⇒ Became more prevalent in the population

Adaptation

- The Malthusian pressure affected
 - The size of the population
 - The composition of the population
- Traits (cultural & individual) that were complementary to the growth process
 - Generated higher income
 - \Rightarrow Higher reproductive success
 - \Rightarrow Became more prevalent in the population
- Adaptation

Adaptation

- The Malthusian pressure affected
 - The size of the population
 - The composition of the population
- Traits (cultural & individual) that were complementary to the growth process
 - Generated higher income
 - \Rightarrow Higher reproductive success
 - \Rightarrow Became more prevalent in the population
- Adaptation
 - Raised the prevalence of complementary traits to the growth process

Adaptation

- The Malthusian pressure affected
 - The size of the population
 - The composition of the population
- Traits (cultural & individual) that were complementary to the growth process
 - Generated higher income
 - \Rightarrow Higher reproductive success
 - \Rightarrow Became more prevalent in the population
- Adaptation
 - Raised the prevalence of complementary traits to the growth process
 - Reinforced the process of development & the ultimate take-off

The Wheels of Change

- During the Malthusian epoch:

The Wheels of Change

- During the Malthusian epoch:
 - Population size & composition \Rightarrow

The Wheels of Change

- During the Malthusian epoch:
 - Population size & composition \Rightarrow

The Wheels of Change

- During the Malthusian epoch:
 - Population size & composition \Rightarrow Technological progress

The Wheels of Change

- During the Malthusian epoch:
 - Population size & composition \Rightarrow Technological progress
 - Technological progress \Rightarrow

The Wheels of Change

- During the Malthusian epoch:
 - Population size & composition \Rightarrow Technological progress
 - Technological progress \Rightarrow

The Wheels of Change

- During the Malthusian epoch:
 - Population size & composition \Rightarrow Technological progress
 - Technological progress \Rightarrow Population size & composition

The Wheels of Change

- During the Malthusian epoch:
 - Population size & composition \Rightarrow Technological progress
 - Technological progress \Rightarrow Population size & composition
- Technological progress accelerated & ultimately reached a critical threshold

The Wheels of Change

- During the Malthusian epoch:
 - Population size & composition \Rightarrow Technological progress
 - Technological progress \Rightarrow Population size & composition
- Technological progress accelerated & ultimately reached a critical threshold
 - Human capital became essential to cope with the changing environment

The Wheels of Change

- During the Malthusian epoch:
 - Population size & composition \Rightarrow Technological progress
 - Technological progress \Rightarrow Population size & composition
- Technological progress accelerated & ultimately reached a critical threshold
 - Human capital became essential to cope with the changing environment
- Human capital formation triggered a reduction in fertility

The Wheels of Change

- During the Malthusian epoch:
 - Population size & composition \Rightarrow Technological progress
 - Technological progress \Rightarrow Population size & composition
- Technological progress accelerated & ultimately reached a critical threshold
 - Human capital became essential to cope with the changing environment
- Human capital formation triggered a reduction in fertility
 - The Malthusian equilibrium vanished

The Wheels of Change

- During the Malthusian epoch:
 - Population size & composition \Rightarrow Technological progress
 - Technological progress \Rightarrow Population size & composition
- Technological progress accelerated & ultimately reached a critical threshold
 - Human capital became essential to cope with the changing environment
- Human capital formation triggered a reduction in fertility
 - The Malthusian equilibrium vanished
 - Growth was freed from the counterbalancing effect of population

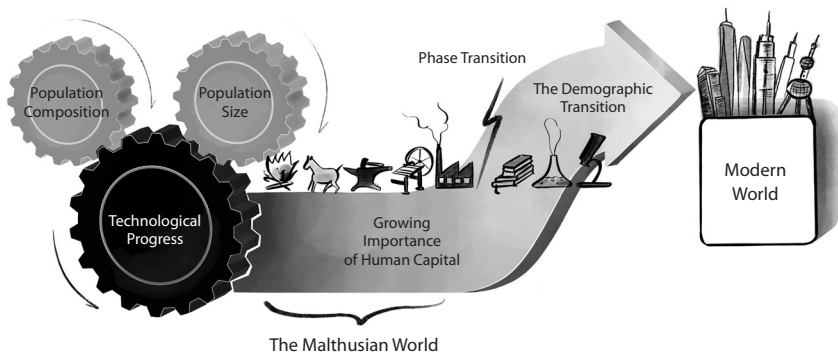
The Wheels of Change

- During the Malthusian epoch:
 - Population size & composition \Rightarrow Technological progress
 - Technological progress \Rightarrow Population size & composition
- Technological progress accelerated & ultimately reached a critical threshold
 - Human capital became essential to cope with the changing environment
- Human capital formation triggered a reduction in fertility
 - The Malthusian equilibrium vanished
 - Growth was freed from the counterbalancing effect of population
- Tech progress & human capital formation & decline in population growth

The Wheels of Change

- During the Malthusian epoch:
 - Population size & composition \Rightarrow Technological progress
 - Technological progress \Rightarrow Population size & composition
- Technological progress accelerated & ultimately reached a critical threshold
 - Human capital became essential to cope with the changing environment
- Human capital formation triggered a reduction in fertility
 - The Malthusian equilibrium vanished
 - Growth was freed from the counterbalancing effect of population
- Tech progress & human capital formation & decline in population growth
 - \Rightarrow Sustained economic growth

The Wheels of Change

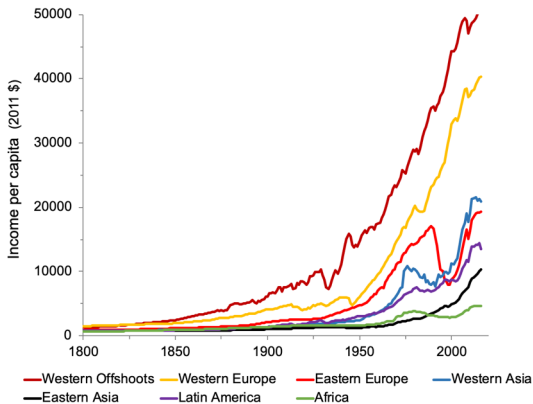


The Cogs of Change

Phase Transition



Roots of Global Inequality



Data Source: Maddison Project (2018)

Proximate Causes of Uneven Development

- Cross-country differences in:

Proximate Causes of Uneven Development

- Cross-country differences in:
 - Human capital accumulation

Proximate Causes of Uneven Development

- Cross-country differences in:
 - Human capital accumulation
 - Physical capital accumulation

Proximate Causes of Uneven Development

- Cross-country differences in:
 - Human capital accumulation
 - Physical capital accumulation
 - Technological Levels

Proximate Causes of Uneven Development

- Cross-country differences in:
 - Human capital accumulation
 - Physical capital accumulation
 - Technological Levels
- But why some societies fail to:

Proximate Causes of Uneven Development

- Cross-country differences in:
 - Human capital accumulation
 - Physical capital accumulation
 - Technological Levels
- But why some societies fail to:
 - Efficiently invest in physical and human capital?

Proximate Causes of Uneven Development

- Cross-country differences in:
 - Human capital accumulation
 - Physical capital accumulation
 - Technological Levels
- But why some societies fail to:
 - Efficiently invest in physical and human capital?
 - Adopt advance technologies?

Proximate Causes of Uneven Development

- Cross-country differences in:
 - Human capital accumulation
 - Physical capital accumulation
 - Technological Levels
- But why some societies fail to:
 - Efficiently invest in physical and human capital?
 - Adopt advance technologies?
- What are the historical and pre-Historical barriers for development?

Historical and Pre-Historical Barriers for Development

- Deeper Roots:

Historical and Pre-Historical Barriers for Development

- Deeper Roots:
 - Colonialism

Historical and Pre-Historical Barriers for Development

- Deeper Roots:
 - Colonialism
 - Institutional & Cultural characteristics

Historical and Pre-Historical Barriers for Development

- Deeper Roots:
 - Colonialism
 - Institutional & Cultural characteristics
- Ultimate Roots:

Historical and Pre-Historical Barriers for Development

- Deeper Roots:
 - Colonialism
 - Institutional & Cultural characteristics
- Ultimate Roots:
 - Geographical & Population diversity

Colonialism & Uneven Development

- Colonialism: Extraction & Asymmetric Trade (Galor-Mountford, RES 2008)

Colonialism & Uneven Development

- Colonialism: Extraction & Asymmetric Trade (Galor-Mountford, RES 2008)
 - Colonies: specialized in the production agricultural goods & raw material

Colonialism & Uneven Development

- Colonialism: Extraction & Asymmetric Trade (Galor-Mountford, RES 2008)
 - Colonies: specialized in the production agricultural goods & raw material
 - Reduced human capital formation & delayed the fertility decline

Colonialism & Uneven Development

- Colonialism: Extraction & Asymmetric Trade (Galor-Mountford, RES 2008)
 - Colonies: specialized in the production agricultural goods & raw material
 - Reduced human capital formation & delayed the fertility decline
 - Delayed the take-off from stagnation to growth

Colonialism & Uneven Development

- Colonialism: Extraction & Asymmetric Trade (Galor-Mountford, RES 2008)
 - Colonies: specialized in the production agricultural goods & raw material
 - Reduced human capital formation & delayed the fertility decline
 - Delayed the take-off from stagnation to growth
 - Colonizers: specialized in the production of manufactured goods

Colonialism & Uneven Development

- Colonialism: Extraction & Asymmetric Trade (Galor-Mountford, RES 2008)
 - Colonies: specialized in the production agricultural goods & raw material
 - Reduced human capital formation & delayed the fertility decline
 - Delayed the take-off from stagnation to growth
 - Colonizers: specialized in the production of manufactured goods
 - Fostered human capital formation & the fertility decline

Colonialism & Uneven Development

- Colonialism: Extraction & Asymmetric Trade (Galor-Mountford, RES 2008)
 - Colonies: specialized in the production agricultural goods & raw material
 - Reduced human capital formation & delayed the fertility decline
 - Delayed the take-off from stagnation to growth
 - Colonizers: specialized in the production of manufactured goods
 - Fostered human capital formation & the fertility decline
 - Expedited the take-off from stagnation to growth

The Fingerprints of Institutions

- Emergence of differential institutions: (North, 1981; Engerman-Sokoloff, 1997; Acemoglu-Robinson, 2012)

The Fingerprints of Institutions

- Emergence of differential institutions: (North, 1981; Engerman-Sokoloff, 1997; Acemoglu-Robinson, 2012)
 - Growth-enhancing inclusive institution

The Fingerprints of Institutions

- Emergence of differential institutions: (North, 1981; Engerman-Sokoloff, 1997; Acemoglu-Robinson, 2012)
 - Growth-enhancing inclusive institution
 - Growth-retarding extractive institution

The Fingerprints of Institutions

- Emergence of differential institutions: (North, 1981; Engerman-Sokoloff, 1997; Acemoglu-Robinson, 2012)
 - Growth-enhancing inclusive institution
 - Growth-retarding extractive institution
- Institutions had (sometime) emerged at “random critical junctures”

The Fingerprints of Institutions

- Emergence of differential institutions: (North, 1981; Engerman-Sokoloff, 1997; Acemoglu-Robinson, 2012)
 - Growth-enhancing inclusive institution
 - Growth-retarding extractive institution
- Institutions had (sometime) emerged at “random critical junctures”
 - The Black Death’s impact on the decline of Feudalism in UK

The Fingerprints of Institutions

- Emergence of differential institutions: (North, 1981; Engerman-Sokoloff, 1997; Acemoglu-Robinson, 2012)
 - Growth-enhancing inclusive institution
 - Growth-retarding extractive institution
- Institutions had (sometime) emerged at “random critical junctures”
 - The Black Death’s impact on the decline of Feudalism in UK
 - The Glorious Revolution & Constitutional Monarchy (England 1688-9)

The Fingerprints of Institutions

- Emergence of differential institutions: (North, 1981; Engerman-Sokoloff, 1997; Acemoglu-Robinson, 2012)
 - Growth-enhancing inclusive institution
 - Growth-retarding extractive institution
- Institutions had (sometime) emerged at “random critical junctures”
 - The Black Death’s impact on the decline of Feudalism in UK
 - The Glorious Revolution & Constitutional Monarchy (England 1688-9)
 - Division of Korea (along the 38th parallel)

Impact of the Division of Korean Peninsula along the 38th Parallel



The Fingerprints of Institutions

Yet institutions have mostly evolved gradually in the course of human history

- The Neolithic (Agriculture) Revolution (Diamond, 1997)

The Fingerprints of Institutions

Yet institutions have mostly evolved gradually in the course of human history

- The Neolithic (Agriculture) Revolution (Diamond, 1997)
 - Higher population density & cities & states → demand for institutions

The Fingerprints of Institutions

Yet institutions have mostly evolved gradually in the course of human history

- The Neolithic (Agriculture) Revolution (Diamond, 1997)
 - Higher population density & cities & states → demand for institutions
- Land Fragmentation (Europe) vs. Geographical Connectivity (China)

The Fingerprints of Institutions

Yet institutions have mostly evolved gradually in the course of human history

- The Neolithic (Agriculture) Revolution (Diamond, 1997)
 - Higher population density & cities & states → demand for institutions
- Land Fragmentation (Europe) vs. Geographical Connectivity (China)
 - Political competition → inclusive institutions (Europe)

The Fingerprints of Institutions

Yet institutions have mostly evolved gradually in the course of human history

- The Neolithic (Agriculture) Revolution (Diamond, 1997)
 - Higher population density & cities & states → demand for institutions
- Land Fragmentation (Europe) vs. Geographical Connectivity (China)
 - Political competition → inclusive institutions (Europe)
 - Political uniformity → extractive institutions (China)

The Fingerprints of Institutions

Yet institutions have mostly evolved gradually in the course of human history

- The Neolithic (Agriculture) Revolution (Diamond, 1997)
 - Higher population density & cities & states → demand for institutions
- Land Fragmentation (Europe) vs. Geographical Connectivity (China)
 - Political competition → inclusive institutions (Europe)
 - Political uniformity → extractive institutions (China)
- Soil suitability for large plantations (Engerman-Sokoloff, 1997, Galor et al., RES 2009)

The Fingerprints of Institutions

Yet institutions have mostly evolved gradually in the course of human history

- The Neolithic (Agriculture) Revolution (Diamond, 1997)
 - Higher population density & cities & states → demand for institutions
- Land Fragmentation (Europe) vs. Geographical Connectivity (China)
 - Political competition → inclusive institutions (Europe)
 - Political uniformity → extractive institutions (China)
- Soil suitability for large plantations (Engerman-Sokoloff, 1997, Galor et al., RES 2009)
 - Concentration of political power → extractive institutions & slavery

The Cultural Factor

- Adherence to cultural norms was essential for survival

The Cultural Factor

- Adherence to cultural norms was essential for survival
 - Norms reflected the cumulative collective wisdom of a society

The Cultural Factor

- Adherence to cultural norms was essential for survival
 - Norms reflected the cumulative collective wisdom of a society
 - Permitted individuals to act, as if, based the understanding of their surroundings

The Cultural Factor

- Adherence to cultural norms was essential for survival
 - Norms reflected the cumulative collective wisdom of a society
 - Permitted individuals to act, as if, based the understanding of their surroundings
- Emergence of differential cultural traits (norms, values, beliefs) across regions:

The Cultural Factor

- Adherence to cultural norms was essential for survival
 - Norms reflected the cumulative collective wisdom of a society
 - Permitted individuals to act, as if, based the understanding of their surroundings
- Emergence of differential cultural traits (norms, values, beliefs) across regions:
 - Growth-enhancing cultural traits

The Cultural Factor

- Adherence to cultural norms was essential for survival
 - Norms reflected the cumulative collective wisdom of a society
 - Permitted individuals to act, as if, based the understanding of their surroundings
- Emergence of differential cultural traits (norms, values, beliefs) across regions:
 - Growth-enhancing cultural traits
 - Growth-retarding cultural traits

The Cultural Factor

- Adherence to cultural norms was essential for survival
 - Norms reflected the cumulative collective wisdom of a society
 - Permitted individuals to act, as if, based the understanding of their surroundings
- Emergence of differential cultural traits (norms, values, beliefs) across regions:
 - Growth-enhancing cultural traits
 - Growth-retarding cultural traits
 - Rare instances of random cultural mutations

The Geographical Roots of Cultural Traits

- High Crop Yield

The Geographical Roots of Cultural Traits

- High Crop Yield
 - Planting & Harvesting → Future-oriented mindset (Galor-Ozak, AER 2016)

The Geographical Roots of Cultural Traits

- High Crop Yield
 - Planting & Harvesting → Future-oriented mindset (Galor-Ozak, AER 2016)
- Suitability of the land for the use of the plow

The Geographical Roots of Cultural Traits

- High Crop Yield
 - Planting & Harvesting → Future-oriented mindset (Galor-Ozak, AER 2016)
- Suitability of the land for the use of the plow
 - Gender division of labor → Gender bias (Boserup, 1970; Alesina et al., QJE 2013)



The Shadow of Geography

Geographical characteristics: (Soil quality, Climate, Disease environment, Isolation)

The Shadow of Geography

Geographical characteristics: (Soil quality, Climate, Disease environment, Isolation)

- Indirect (long shadow) impact on

The Shadow of Geography

Geographical characteristics: (Soil quality, Climate, Disease environment, Isolation)

- Indirect (long shadow) impact on
 - The evolution of cultural & institutional characteristics

The Shadow of Geography

Geographical characteristics: (Soil quality, Climate, Disease environment, Isolation)

- Indirect (long shadow) impact on
 - The evolution of cultural & institutional characteristics
- Direct impact – Mitigated by diffusion of medical, transportation & IT technologies

The Shadow of Geography

Geographical characteristics: (Soil quality, Climate, Disease environment, Isolation)

- Indirect (long shadow) impact on
 - The evolution of cultural & institutional characteristics
- Direct impact – Mitigated by diffusion of medical, transportation & IT technologies
 - Labor productivity

The Shadow of Geography

Geographical characteristics: (Soil quality, Climate, Disease environment, Isolation)

- Indirect (long shadow) impact on
 - The evolution of cultural & institutional characteristics
- Direct impact – Mitigated by diffusion of medical, transportation & IT technologies
 - Labor productivity
 - Human capital formation

The Shadow of Geography

Geographical characteristics: (Soil quality, Climate, Disease environment, Isolation)

- Indirect (long shadow) impact on
 - The evolution of cultural & institutional characteristics
- Direct impact – Mitigated by diffusion of medical, transportation & IT technologies
 - Labor productivity
 - Human capital formation
 - Trade & Technological progress

The Legacy of the Agricultural Revolution (10,000 BCE)

The transition from hunter-gatherer tribes to agricultural communities

- The emergence of non-food-producing class:

The Legacy of the Agricultural Revolution (10,000 BCE)

The transition from hunter-gatherer tribes to agricultural communities

- The emergence of non-food-producing class:
 - \implies Knowledge creation (science, technology & written languages)

The Legacy of the Agricultural Revolution (10,000 BCE)

The transition from hunter-gatherer tribes to agricultural communities

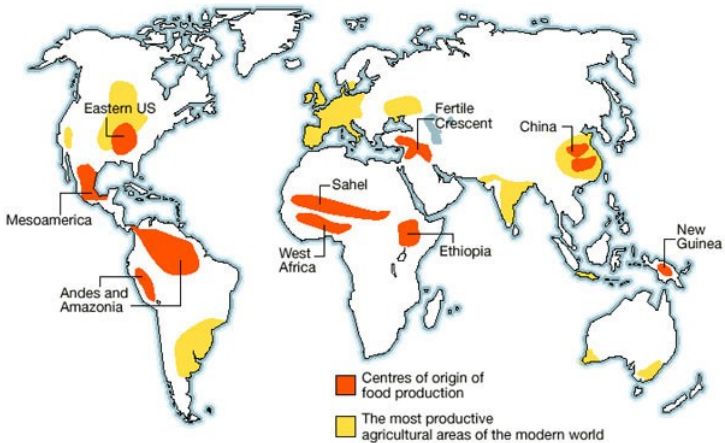
- The emergence of non-food-producing class:
 - \implies Knowledge creation (science, technology & written languages)
 - \implies Technological head start

The Legacy of the Agricultural Revolution (10,000 BCE)

The transition from hunter-gatherer tribes to agricultural communities

- The emergence of non-food-producing class:
 - \implies Knowledge creation (science, technology & written languages)
 - \implies Technological head start
- Variations in the timing of the NR – origins of global inequality (Diamond, 1997)

Emergence and Diffusion of the Neolithic Revolution



Source: Diamond, Nature, 2002

Origins of Global Variations in the Timing of the Neolithic Revolution

- Earlier Neolithic Revolution in Euro-Asia reflects:

Origins of Global Variations in the Timing of the Neolithic Revolution

- Earlier Neolithic Revolution in Euro-Asia reflects:
 - Geographical factors conducive for biodiversity (climate, latitude, landmass)

Origins of Global Variations in the Timing of the Neolithic Revolution

- Earlier Neolithic Revolution in Euro-Asia reflects:
 - Geographical factors conducive for biodiversity (climate, latitude, landmass)
 - Largest number of domesticable species of plants & animals

Origins of Global Variations in the Timing of the Neolithic Revolution

- Earlier Neolithic Revolution in Euro-Asia reflects:
 - Geographical factors conducive for biodiversity (climate, latitude, landmass)
 - Largest number of domesticable species of plants & animals
 - East-West orientation

Origins of Global Variations in the Timing of the Neolithic Revolution

- Earlier Neolithic Revolution in Euro-Asia reflects:
 - Geographical factors conducive for biodiversity (climate, latitude, landmass)
 - Largest number of domesticable species of plants & animals
 - East-West orientation
 - Diffusion of agricultural practices along similar latitudes

The Legacy of the Agricultural Revolution (10,000 BCE)

- Earlier onset of the Neolithic Revolution

The Legacy of the Agricultural Revolution (10,000 BCE)

- Earlier onset of the Neolithic Revolution
 - Beneficial in the Middle Ages

The Legacy of the Agricultural Revolution (10,000 BCE)

- Earlier onset of the Neolithic Revolution
 - Beneficial in the Middle Ages
 - Due to technological head-start

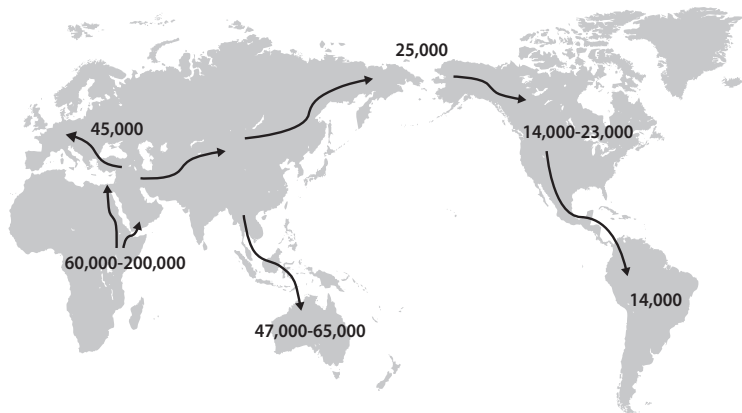
The Legacy of the Agricultural Revolution (10,000 BCE)

- Earlier onset of the Neolithic Revolution
 - Beneficial in the Middle Ages
 - Due to technological head-start
 - No impact on prosperity in the present-day

The Legacy of the Agricultural Revolution (10,000 BCE)

- Earlier onset of the Neolithic Revolution
 - Beneficial in the Middle Ages
 - Due to technological head-start
 - No impact on prosperity in the present-day
 - Due to offsetting effect of comparative advantage in agriculture

The Exodus of Homo sapiens from Africa 60,000-90,000 BP



Declining Diversity with Migratory Distance from Africa

During the exodus of modern humans from Africa

Declining Diversity with Migratory Distance from Africa

During the exodus of modern humans from Africa

- Departing populations:

Declining Diversity with Migratory Distance from Africa

During the exodus of modern humans from Africa

- Departing populations:
 - Carried a subset of diversity of their parental colonies

Declining Diversity with Migratory Distance from Africa

During the exodus of modern humans from Africa

- Departing populations:
 - Carried a subset of diversity of their parental colonies
 - cultural, phenotypic, behavioral & linguistic

Declining Diversity with Migratory Distance from Africa

During the exodus of modern humans from Africa

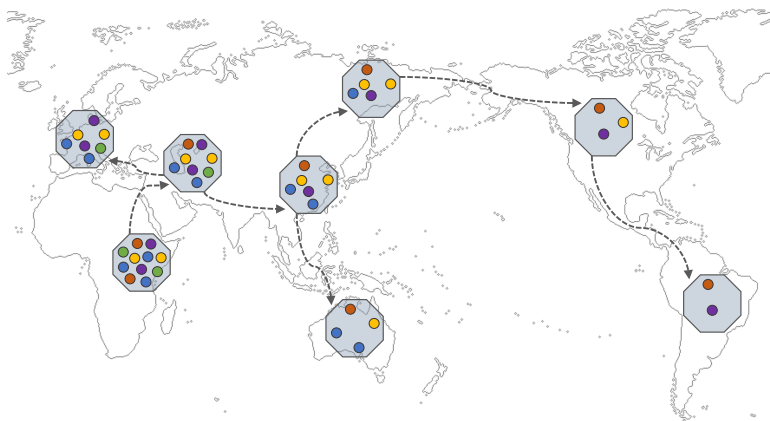
- Departing populations:
 - Carried a subset of diversity of their parental colonies
 - cultural, phenotypic, behavioral & linguistic
 - Migration was sequential

Declining Diversity with Migratory Distance from Africa

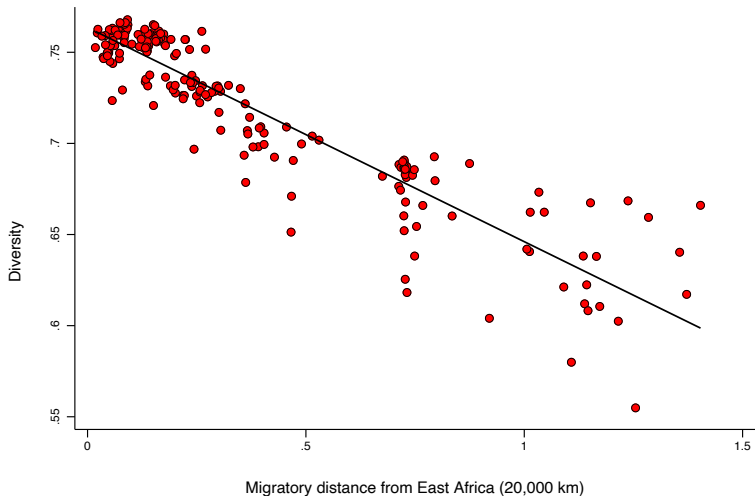
During the exodus of modern humans from Africa

- Departing populations:
 - Carried a subset of diversity of their parental colonies
 - cultural, phenotypic, behavioral & linguistic
 - Migration was sequential
 - Lower diversity among ancestral populations at greater migratory distances from East Africa

An Illustration of the Serial Founder Effect

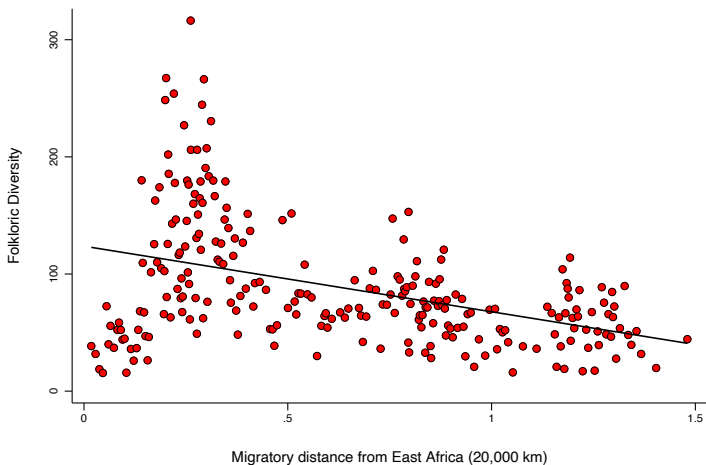


Migratory Distance from Africa & Population Diversity



Slope coefficient = -0.118; (robust) standard error = 0.003; t-statistic = -33.612; observations = 207

Migratory Distance from Africa & Folkloric Diversity



Slope coefficient = -55.572; (robust) standard error = 6.822; t-statistic = -8.146; observations = 958

Data Source: Berezkin's Folklore and Mythology Catalogue

Conflicting Effects of Diversity

- Beneficial effects on creativity and innovations

Conflicting Effects of Diversity

- Beneficial effects on creativity and innovations
 - Cross-fertilization & complementarities in the production process

Conflicting Effects of Diversity

- Beneficial effects on creativity and innovations
 - Cross-fertilization & complementaries in the production process
- Adverse effects on social cohesiveness

Conflicting Effects of Diversity

- Beneficial effects on creativity and innovations
 - Cross-fertilization & complementaries in the production process
- Adverse effects on social cohesiveness
 - Mistrust

Conflicting Effects of Diversity

- Beneficial effects on creativity and innovations
 - Cross-fertilization & complementaries in the production process
- Adverse effects on social cohesiveness
 - Mistrust
 - Disagreement about the desirable public goods

Conflicting Effects of Diversity

- Beneficial effects on creativity and innovations
 - Cross-fertilization & complementarities in the production process
- Adverse effects on social cohesiveness
 - Mistrust
 - Disagreement about the desirable public goods
 - \implies conflicts

The Out of Africa Hypothesis of Comparative Development

- Positive & diminishing effects of:

The Out of Africa Hypothesis of Comparative Development

- Positive & diminishing effects of:
 - Diversity on innovations

The Out of Africa Hypothesis of Comparative Development

- Positive & diminishing effects of:
 - Diversity on innovations
 - Homogeneity on social cohesiveness

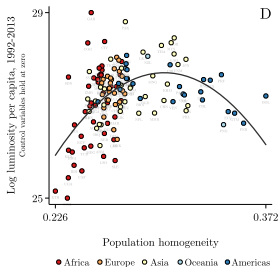
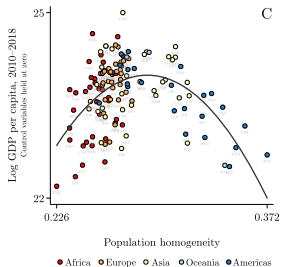
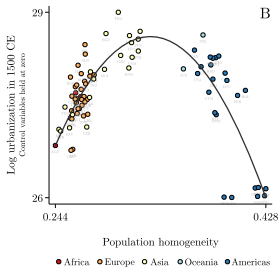
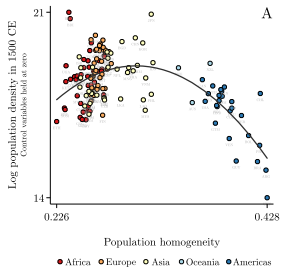
The Out of Africa Hypothesis of Comparative Development

- Positive & diminishing effects of:
 - Diversity on innovations
 - Homogeneity on social cohesiveness
 - Sweet spot level of diversity

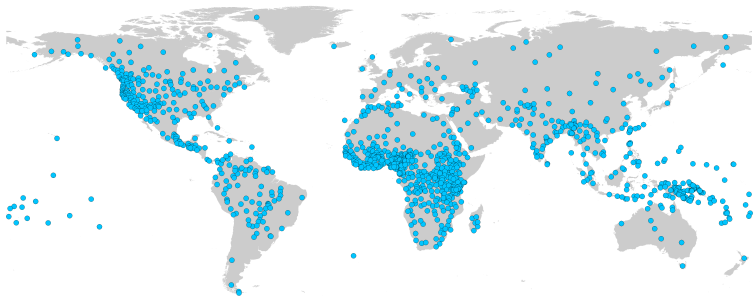
The Out of Africa Hypothesis of Comparative Development

- Positive & diminishing effects of:
 - Diversity on innovations
 - Homogeneity on social cohesiveness
 - Sweet spot level of diversity
 - Sweet spot level of migratory distance from Africa of the ancestral population of each society (Ashraf-Galor, AER 2013)

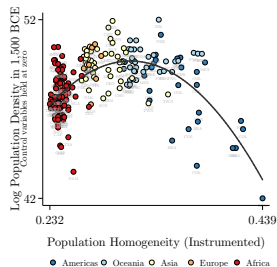
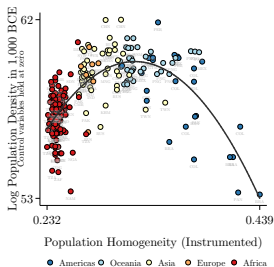
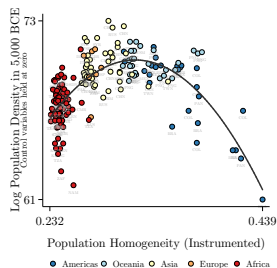
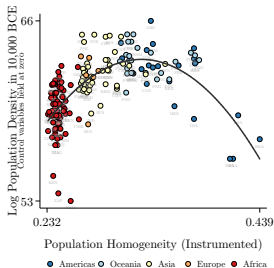
Diversity and Comparative Development



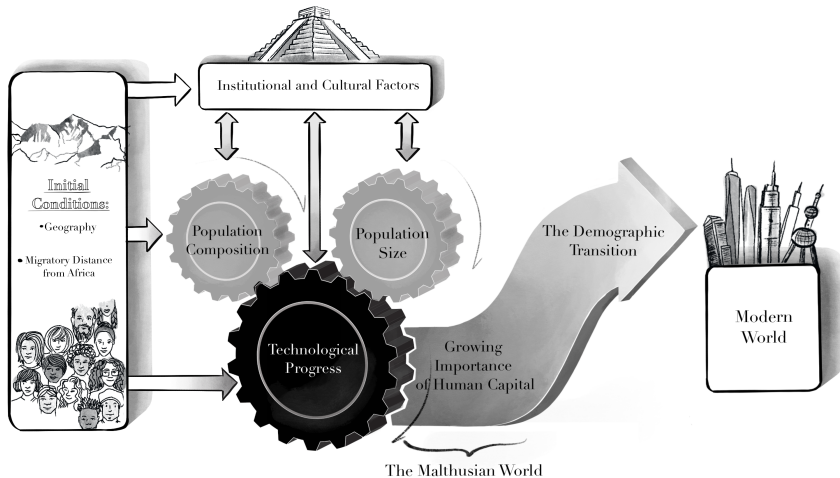
Diversity - 1265 Ethnic Groups



Diversity and Population Density 10,000 BCE - 1500 CE



Determinants of the Pace of the Wheels of Change



Our Future Journey



Is History a Fate?

- The Journey of Humanity

Is History a Fate?

- The Journey of Humanity
 - *"History is not a fate"*

Is History a Fate?

- The Journey of Humanity
 - *"History is not a fate"*
 - *"Considering our history will permit us to design our future"*

Is History a Fate?

- The Journey of Humanity
 - *"History is not a fate"*
 - *"Considering our history will permit us to design our future"*
- Growth-enhancing policies ought to be uniquely designed for each country:

Is History a Fate?

- The Journey of Humanity
 - *"History is not a fate"*
 - *"Considering our history will permit us to design our future"*
- Growth-enhancing policies ought to be uniquely designed for each country:
 - One policy does not fit all nations

Is History a Fate?

- The Journey of Humanity
 - *"History is not a fate"*
 - *"Considering our history will permit us to design our future"*
- Growth-enhancing policies ought to be uniquely designed for each country:
 - One policy does not fit all nations
- Key for sustaining the Age of Abundance

Is History a Fate?

- The Journey of Humanity
 - *"History is not a fate"*
 - *"Considering our history will permit us to design our future"*
- Growth-enhancing policies ought to be uniquely designed for each country:
 - One policy does not fit all nations
- Key for sustaining the Age of Abundance
 - Fertility decline, Adaptable education, Gender equality, Diversity, Tolerance

