Gideon Henderson

Dean's Lecture

Taking it Back: Removing CO_2 from the Atmosphere to Limit Climate Change

Wednesday, April 3, 2019
19:00 Ted Center, Blue Big Room

Climate change

Let nature heal climate and biodiversity crises, say campaigners

Restoration of forests and coasts can tackle 'existential crises' but is being overlooked

- Read the letter from campaigners
- George Monbiot: the natural world can help save us from climate catastrophe

Damian Carrington
Environment editor
@dpcarrington

Wed 3 Apr 2019
01.00 EDT

The Natural Climate Solutions approach to tackling climate change explained –

Opinion
Climate change

The natural world can help save us from climate catastrophe

George Monbiot

@GeorgeMonbiot

Wed 3 Apr 2019 01.00 EDT

Ecological restoration can be a powerful means of protecting the atmosphere - we need to rewild on a massive scale

- Letter: A natural solution to the climate disaster

Climate change

A natural solution to the climate disaster

Letters

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Climate and ecological crises can be tackled by restoring forests and other valuable ecosystems, say scientists and activists

▲ Trees have been planted on upland moor to improve wildlife habitat in Cumbria, UK. Photograph: Wayne Hutchinson/Alamy

The world faces two existential crises, developing with terrifying speed: climate breakdown and ecological breakdown. Neither is being addressed with the urgency needed to prevent our life-support systems from spiralling into collapse. We are writing to champion a thrilling but neglected approach to averting climate chaos while defending the living world: natural climate solutions. This means drawing carbon dioxide out of the air by protecting

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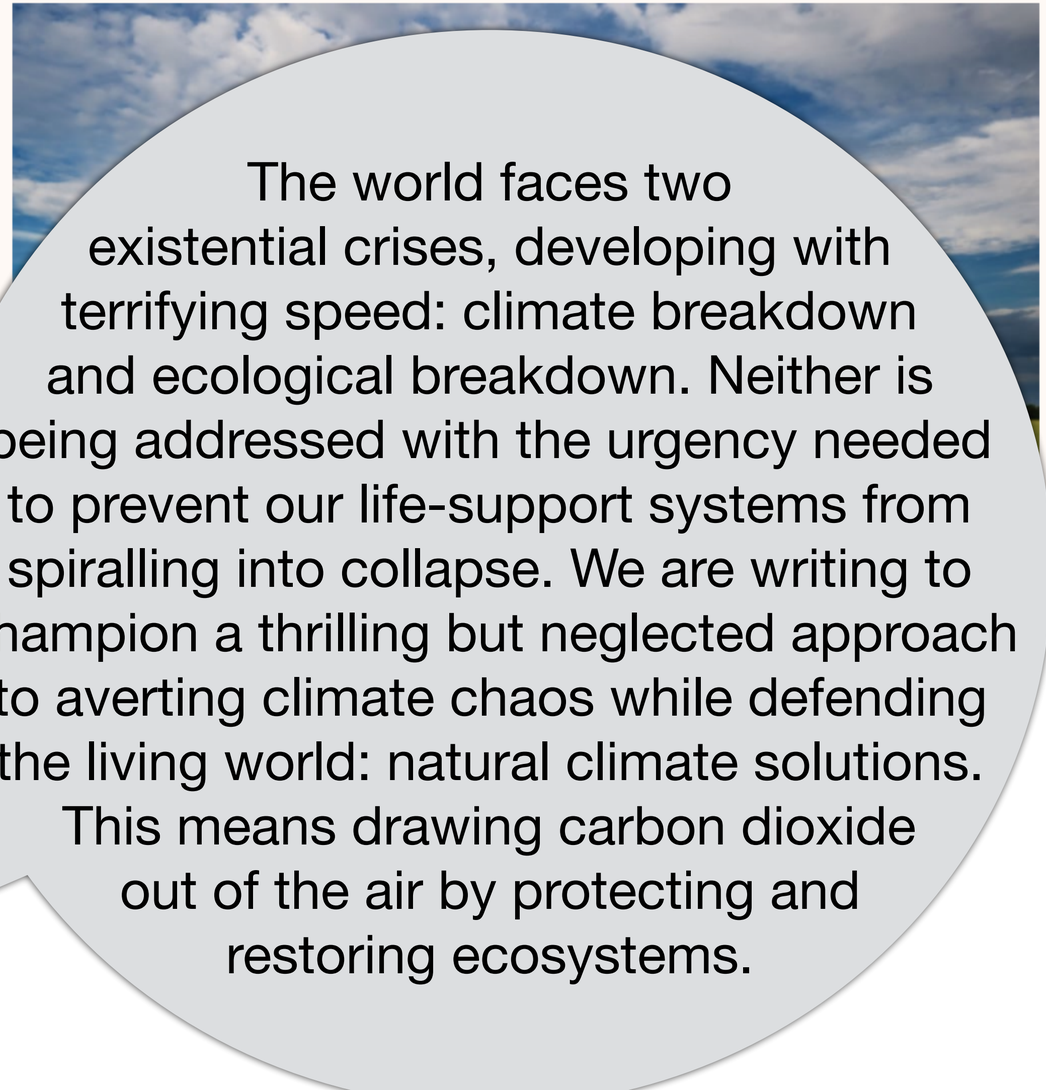

Climate change

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Mitigation and Adaptation Studies

Class 20: Decision-Making: Human Nature and Facing Threats (cont.)

Contents

- Decisions and Human Nature:
  - Biases
  - Overcoming Biases
  - Fast and Slow Thinking - Enigma of Reason
- Science-Society Dialog
- Economic Context
- Social and Political Context

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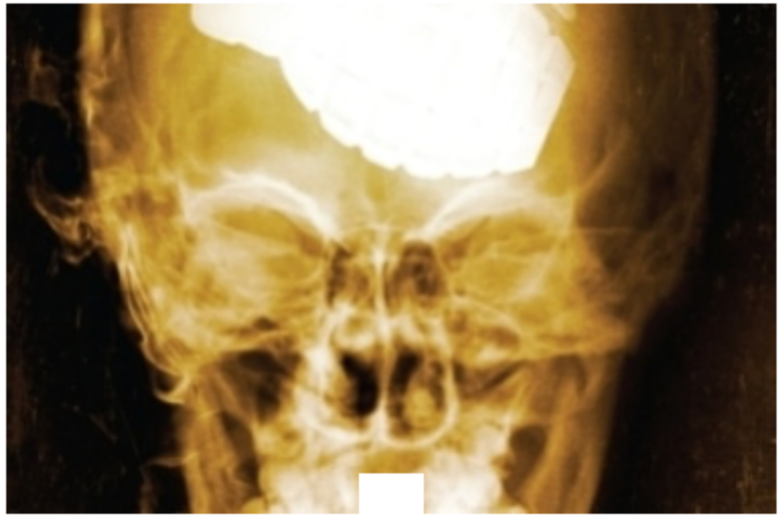
Creating the ‘Illusion of Truth’

“Repeat a lie often enough and it becomes the truth”, is a law of propaganda often attributed to the Nazi Joseph Goebbels.

Creating Knowledge
(as in “justified true belief”)

“Repeat a truth often enough and eventually it will become widely accepted.”

USING - OR IGNORING - KNOWLEDGE



Special Report: The Psychology of Terrorism

Five experts share recent studies, classical research and professional experiences that shed light on defusing the threat of extremism

March 25, 2016 — THE EDITORS

What Research Says about Defeating Terrorism

Seven enlightening studies from social psychology hold vital lessons for policy makers —and the rest of us

March 25, 2016 — Kevin Dutton and Dominic Abrams

Fueling Terror: How Extremists Are Made

The psychology of group dynamics goes a long way toward explaining what drives ordinary people toward radicalism

March 25, 2016 — Stephen D. Reicher and S. Alexander Haslam

Terrorism:

Bouzar, D., Escaping Radicalism. Scientific American Mind, May/June 2016, 41-43.

Dutton, K., Abrams, D., 2016. Extinguishing the threat. Scientific American Mind, May/June 2016, 44-49.

Reicher, S. D., Haslam, S. A., 2016. Fueling Extremes. Scientific American Mind, May/June 2016, 35-39.

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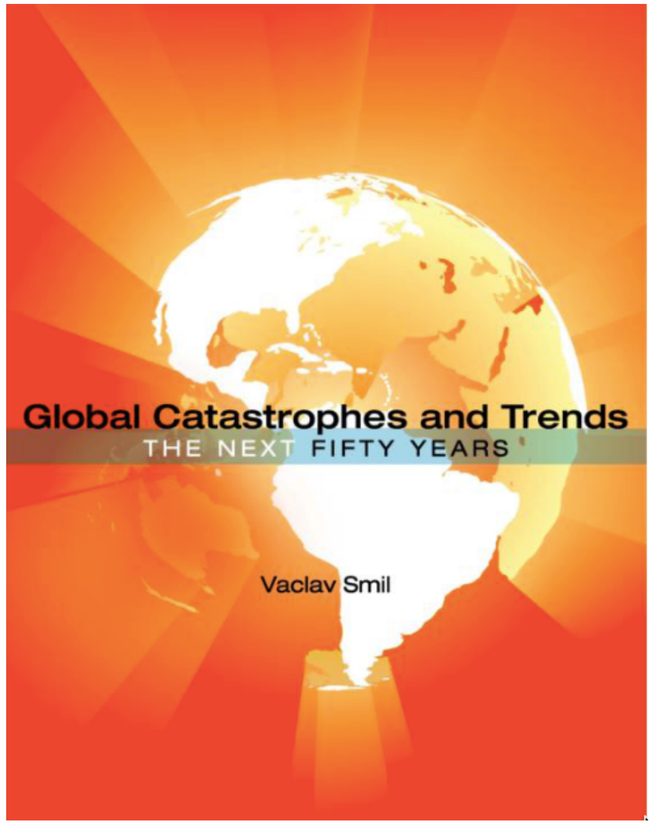
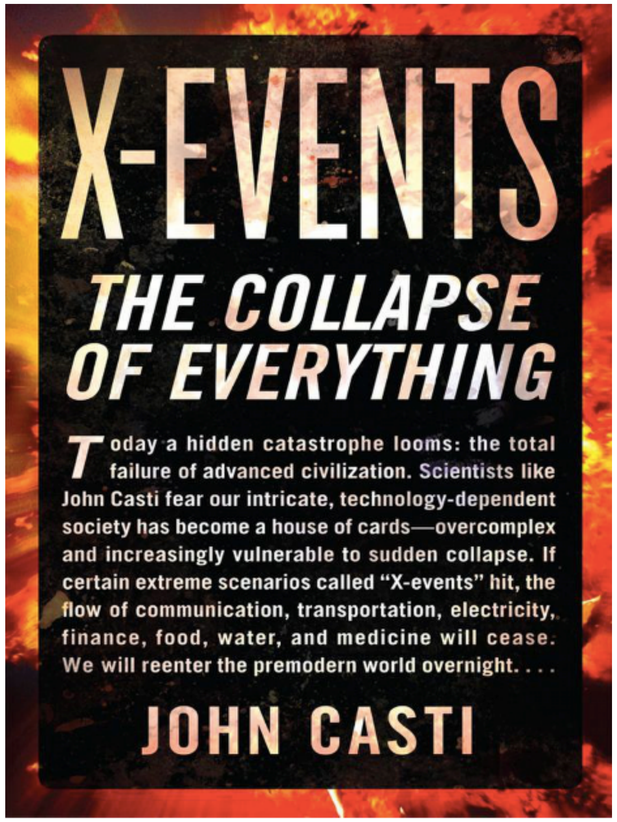
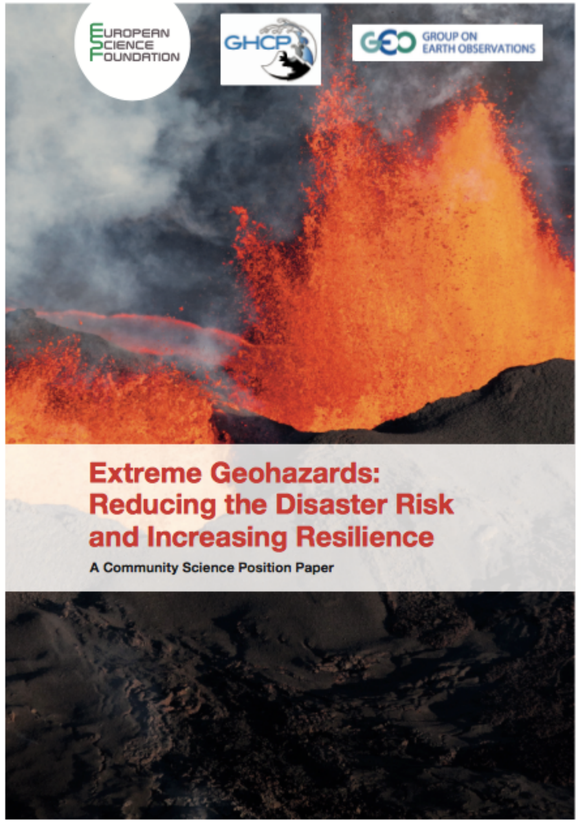
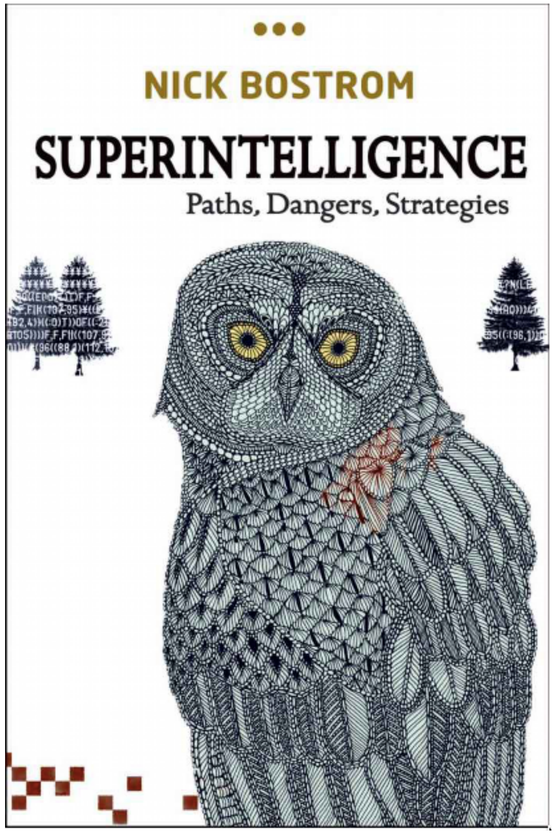








THE VALUE OF EVIDENCE …

nature climate change

Perspective | Published: 14 January 2019

Evidence-based strategies to combat scientific misinformation

Justin Farrell, Kathryn McConnell & Robert Brulle

Nature Climate Change **9**, 191–195 (2019) | Download Citation

Abstract

Nowhere has the impact of scientific misinformation been more profound than on the issue of climate change in the United States. Effective responses to this multifaceted problem have been slow to develop, in large part because many experts have not only underestimated its impact, but have also overlooked the underlying institutional structure, organizational power and financial roots of misinformation. Fortunately, a growing body of sophisticated research has emerged that can help us to better understand these dynamics and provide the basis for developing a coordinated set of strategies across four related areas (public inoculation, legal strategies, political mechanisms and financial transparency) to thwart large-scale misinformation campaigns before they begin, or after they have taken root.

Climate change

Americans' climate change concerns surge to record levels, poll shows

Total of 72% polled now say global warming is personally important to them, Yale said, as 73% accept it is happening

Oliver Milman *in New York*

@olliemilman

Tue 22 Jan 2019
12.45 EST

▲ People in Atlantic Beach, North Carolina watch as Hurricane Florence threatens the Carolinas on 12 September 2018. Photograph: Travis Long/TNS/Getty Images

Science-Society Dialog

Risk Analysis, Vol. 31, No. 9, 2011 DOI: 10.1111/j.1539-6924.2010.01477.x

Perspective

The Challenge of Degraded Environments: How Common Biases Impair Effective Policy

Alan Berger,[1] Case Brown,[2] Carolyn Kousky,[3,*] and Richard Zeckhauser[4]

Economic activity can damage natural systems and reduce the flow of ecosystem services. The harms can be substantial, as our case studies vividly illustrate. Most degraded landscapes have at least some potential to be reclaimed. However, uncertainty plagues decision making regarding degradation and reclamation, in relation to the extent of the damage, the success of reclamation, and how exposure will change in the future. We examine how a range of observed decision biases can lead to far-from-optimal policies regarding how much degradation to allow and when, as well as how and how much, to reclaim degraded sites. Despite our focus on degraded landscapes, we believe these are generic biases present in a wide range of risk situations. Our three case studies show these biases at work. The first two studies are of mining operations in the United States and Canada, and the third is of climate change.

The biases we discuss here lead to suboptimal decision making in a range of cases where risks and uncertainties are present. These biases play a particularly pernicious role in decision making regarding degradation and reclamation. In dealing with a disease, the crucial first step is diagnosis. In dealing with biases, the crucial first step is recognition. Once we understand the ways we are biased in our decision making, we can design systematic methods to address the issues more effectively. …

These cases also suggest that degrading environments on a large scale and only afterwards considering how to clean up the damages simply does not work. Landscapes — or the climate—are left permanently damaged.

Science & Environment

World wildlife 'falls by 58% in 40 years'

By Rebecca Morelle
Science Correspondent, BBC News

27 October 2016 | Science & Environment

Share

ROGER LEGUEN / WWF

This report estimates that wildlife populations have declined by nearly 60% since 1970

Global wildlife populations have fallen by 58% since 1970, a report says.

"We do see particularly strong declines in the freshwater environment - for freshwater species alone, the decline stands at 81% since 1970. This is related to the way water is used and taken out of fresh water systems, and also the fragmentation of freshwater systems through dam building, for example."

WWF

African elephants numbers have fallen dramatically as poaching has increased

It also highlighted other species, such as African elephants , which have suffered huge declines in recent years with the increase in poaching, and sharks, which are threatened by overfishing.

WWF · LIVING PLANET REPORT 2016

WWF

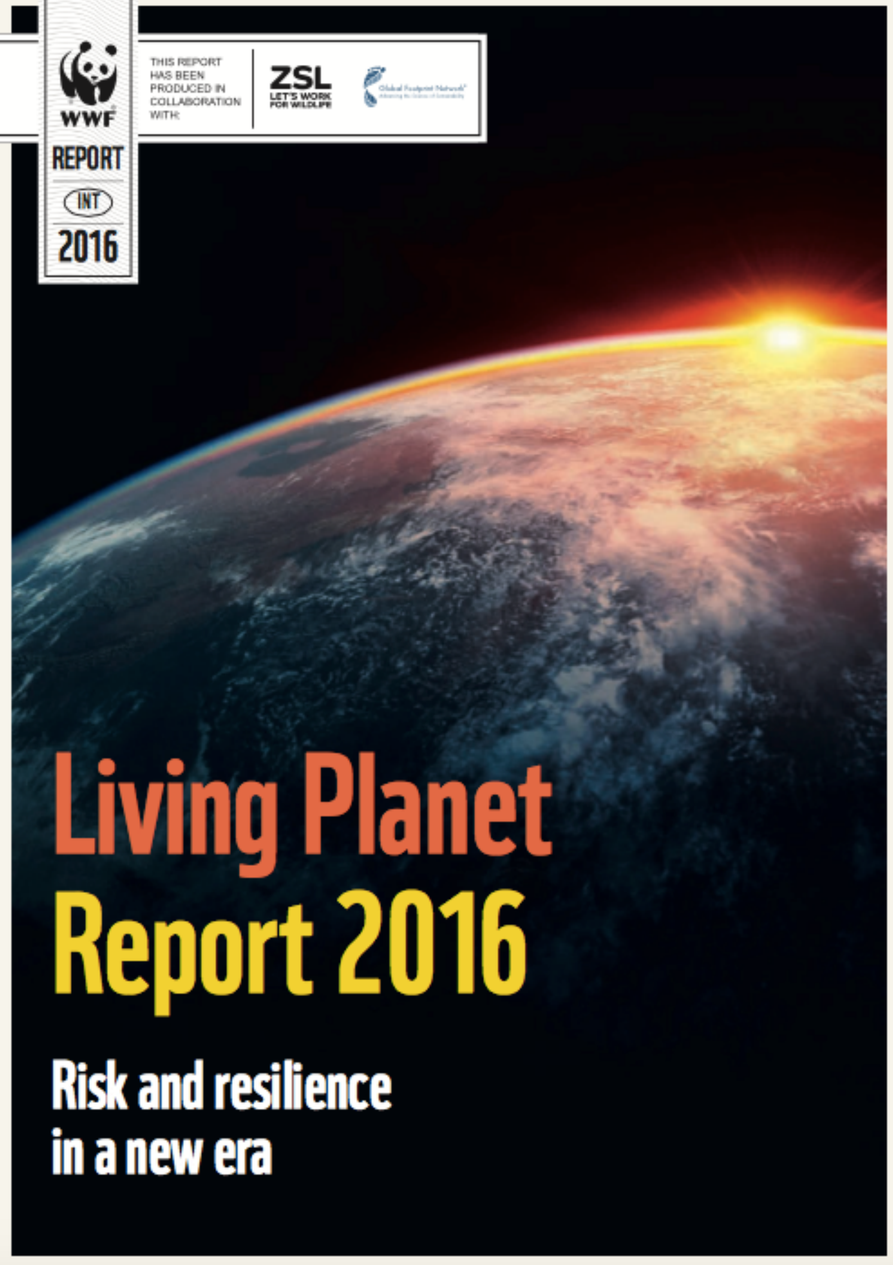
REPORT

INT

2016

THIS REPORT HAS BEEN PRODUCED IN COLLABORATION WITH:

ZSL LET'S WORK FOR WILDLIFE



Living Planet Report 2016

Risk and resilience in a new era

INT

WWF.ORG

LIVING PLANET REPORT 2016

100% RECYCLED

RISKS

Our use of natural resources has grown dramatically, particularly since the mid-20th century, so that we are endangering the key environmental systems that we rely upon.

BIODIVERSITY

The Living Planet Index, which measures biodiversity abundance levels based on 14,152 monitored populations of 3,706 vertebrate species, shows a persistent downward trend.

ANTHROPOCENE

Scientists propose that, as a result of human activity, we have transitioned from the Holocene into a new geological epoch: the "Anthropocene".

RESILIENCE

The 21st century presents humanity with a dual challenge to maintain nature in all of its many forms and functions and to create an equitable home for people on a finite planet.

WWF

Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

panda.org/lpr

© NASA

Science-Society Dialog

Role of Science in Society

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However, Living Planet reports have drawn some criticisms.

Stuart Pimm, professor of conservation ecology at Duke University in the United States, said that while wildlife was in decline, there were too many gaps in the data to boil population loss down to a single figure.

> **There are some numbers [in the report] that are sensible, but there are some numbers that are very very sketchy**
> Stuart Pimm, Duke University

"There are some numbers [in the report] that are sensible, but there are some numbers that are very, very sketchy," he told BBC News.

"For example, if you look at where the data comes from, not surprisingly, it is massively skewed towards western Europe.

"When you go elsewhere, not only do the data become far fewer, but in practice they become much, much sketchier... there is almost nothing from South America, from tropical Africa, there is not much from the tropics, period. Any time you are trying to mix stuff like that, it is is very very hard to know what the numbers mean.

"They're trying to pull this stuff in a blender and spew out a single number.... It's flawed."

But Dr Freeman said the team had taken the best data possible from around the world.

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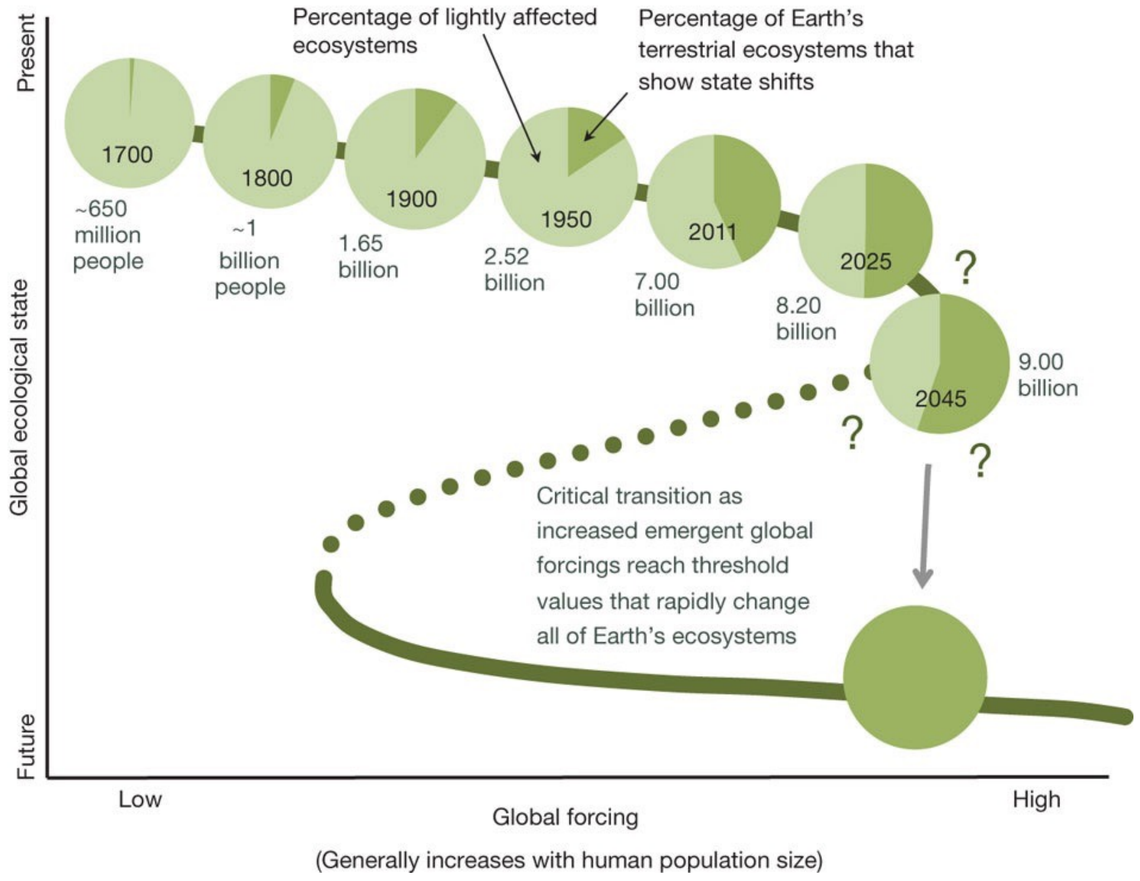

Science-Society Dialog

Science-Society Dialog

EARTH OBSERVATORY
Where every day is Earth Day

Home | Image

Svante Arrhenius (1859-1927)

Arrhenius did very little research in the fields of climatology and geophysics, and considered any work in these fields a hobby. His basic approach was to apply knowledge of basic scientific principles to make sense of existing observations, while hypothesizing a theory on the cause of the "Ice Age." Later on, his geophysical work would serve as a catalyst for the work of others.

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In 1895, Arrhenius presented a paper to the Stockholm Physical Society titled, "On the Influence of Carbonic Acid in the Air upon the Temperature of the Ground." This article described an energy budget model that considered the radiative effects of carbon dioxide (carbonic acid) and water vapor on the surface temperature of the Earth, and variations in atmospheric carbon dioxide concentrations. In order to proceed with his experiments, Arrhenius relied heavily on the experiments and observations of other scientists, including Josef Stefan, Arvid Gustaf Högbom, Samuel Langley, Leon Teisserenc de Bort, Knut Angstrom, Alexander Buchan, Luigi De Marchi, Joseph Fourier, C.S.M. Pouillet, and John Tyndall.

Arrhenius argued that variations in trace constituents—namely carbon dioxide—of the atmosphere could greatly influence the heat budget of the Earth. Using the best data available to him (and making many assumptions and estimates that were necessary), he performed a series of calculations on the temperature effects of increasing and decreasing amounts of carbon dioxide in the Earth's atmosphere. His calculations showed that the "temperature of the Arctic regions would rise about 8 degrees or 9 degrees Celsius, if the carbonic acid increased 2.5 to 3 times its present value. In order to get the temperature of the ice age between the 40th and 50th parallels, the carbonic acid in the air should sink to 0.62 to 0.55 of present value (lowering the temperature 4 degrees to 5 degrees Celsius)."

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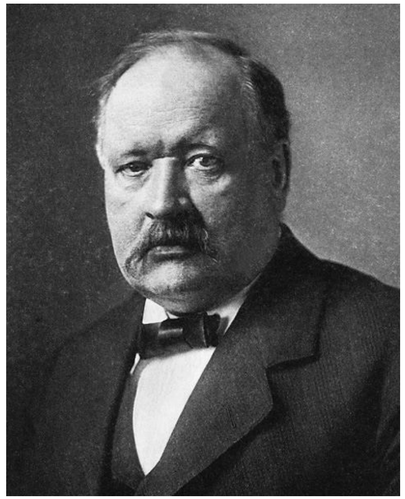

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Science-Society Dialog

Actionable Knowledge for Environmental Decision Making: Broadening the Usability of Climate Science

Christine J. Kirchhoff,[1] Maria Carmen Lemos,[1] and Suraje Dessai[2]

[1]School of Natural Resources and Environment, University of Michigan, Ann Arbor, Michigan 48109-1041; email: ckirchhoff@engr.uconn.edu, lemos@umich.edu

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Annu. Rev. Environ. Resour. 2013. 38:393–414

SUMMARY POINTS

1. There has been a rapid evolution of increasingly complex science-policy models to help understand science-society interaction and to aid in understanding how to provide information to solve societal problems.
2. Despite this advancement and attention to problem solving, there is a persistent gap between production and use of scientific knowledge.
3. Much of the work to bridge the gap has focused on interactions between producers and individual users and their decision contexts.
4. We propose that to achieve more widespread uptake in information requires a shift in the way in which we approach information provisioning.
5. To advance more broad dissemination and use of information, we suggest there is a need to better understand users in the aggregate to increase the efficiency of interactions and to inform the strategies producers use to reach groups of potential users.

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Rapid evolution of increasingly complex science-policy models. How to provide information to solve societal problems?

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Bridge the gap focused on interactions between producers and individual users and their decision contexts.

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1. There has been a rapid evolution of increasingly complex science-policy models to help understand science-society interaction and to aid in understanding how to provide information to solve societal problems.
2. Despite this advancement and attention to problem solving, there is a persistent gap between production and use of scientific knowledge.
3. Much of the work to bridge the gap has focused on interactions between producers and individual users and their decision contexts.
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To achieve more widespread uptake in information requires a shift in the way in which we approach information provisioning.

Actionable Knowledge for Environmental Decision Making: Broadening the Usability of Climate Science

Christine J. Kirchhoff,[1] Maria Carmen Lemos,[1] and Suraje Dessai[2]

[1]School of Natural Resources and Environment, University of Michigan, Ann Arbor, Michigan 48109-1041; email: ckirchhoff@engr.uconn.edu, lemos@umich.edu

[2]Sustainability Research Institute and ESRC Centre for Climate Change Economics and Policy, School of Earth and Environment, University of Leeds, Leeds LS2 9JT, United Kingdom; email: s.dessai@leeds.ac.uk

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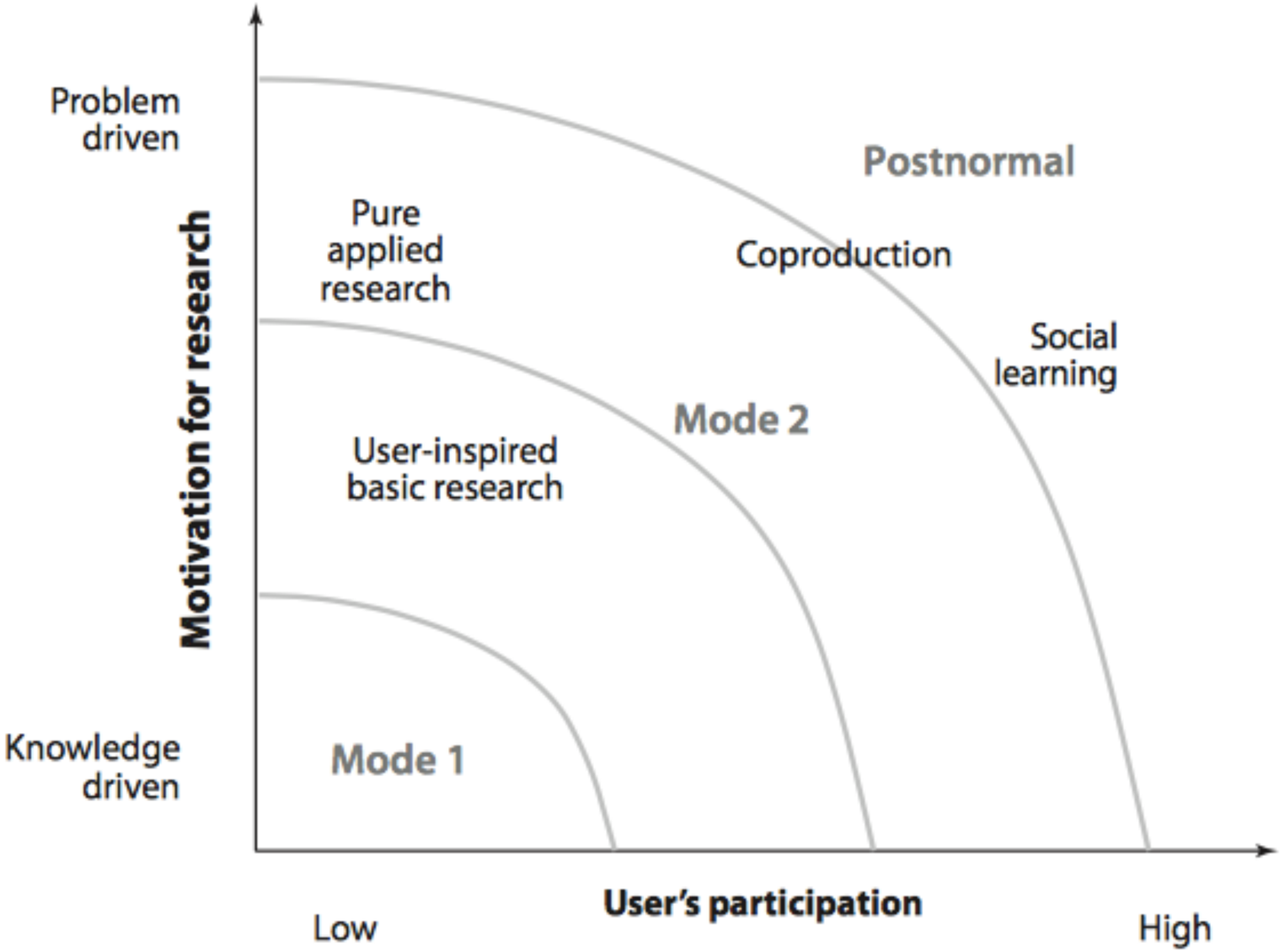
Science-Society Dialog



Evolution in the complexity of knowledge production and user participation. On the vertical axis, the complexity of knowledge production increases from low (where production is predominately focused on increasing our fundamental knowledge) to high (where production aims to help solve societal problems). On the horizontal axis, the complexity of user participation changes from low to high as users become increasingly active agents in the knowledge creation process.

Science-Society Dialog

Intrinsic factors affecting the use of information in decision making (among others):

- informal and formal institutional barriers,
- the decision and policy goals,
- the information's spatial and temporal scale resolution,
- the level of skill required to utilize the information,
- the level of trust between information producers and users
- focus on disciplinary knowledge originating from university settings,
- ignoring of both other sources of knowledge and other disciplinary perspectives

Other issues with Mode 1:

- separation between science, policy, and society is artificial;
- in reality, knowledge is neither unfettered nor neutral,
- science and policy are coproduced in the day-to-day interaction between scientists and their social environment.
- Rather than objective and value free, knowledge influences and is influenced by social practices, identities, discourses, and institutions.

Selective knowledge creation and use:

- Attitudes toward risks vary across people, cultures, time, and experience;
- these attitudes have a profound impact on the character and type of information sought and used (or not) in decision making.

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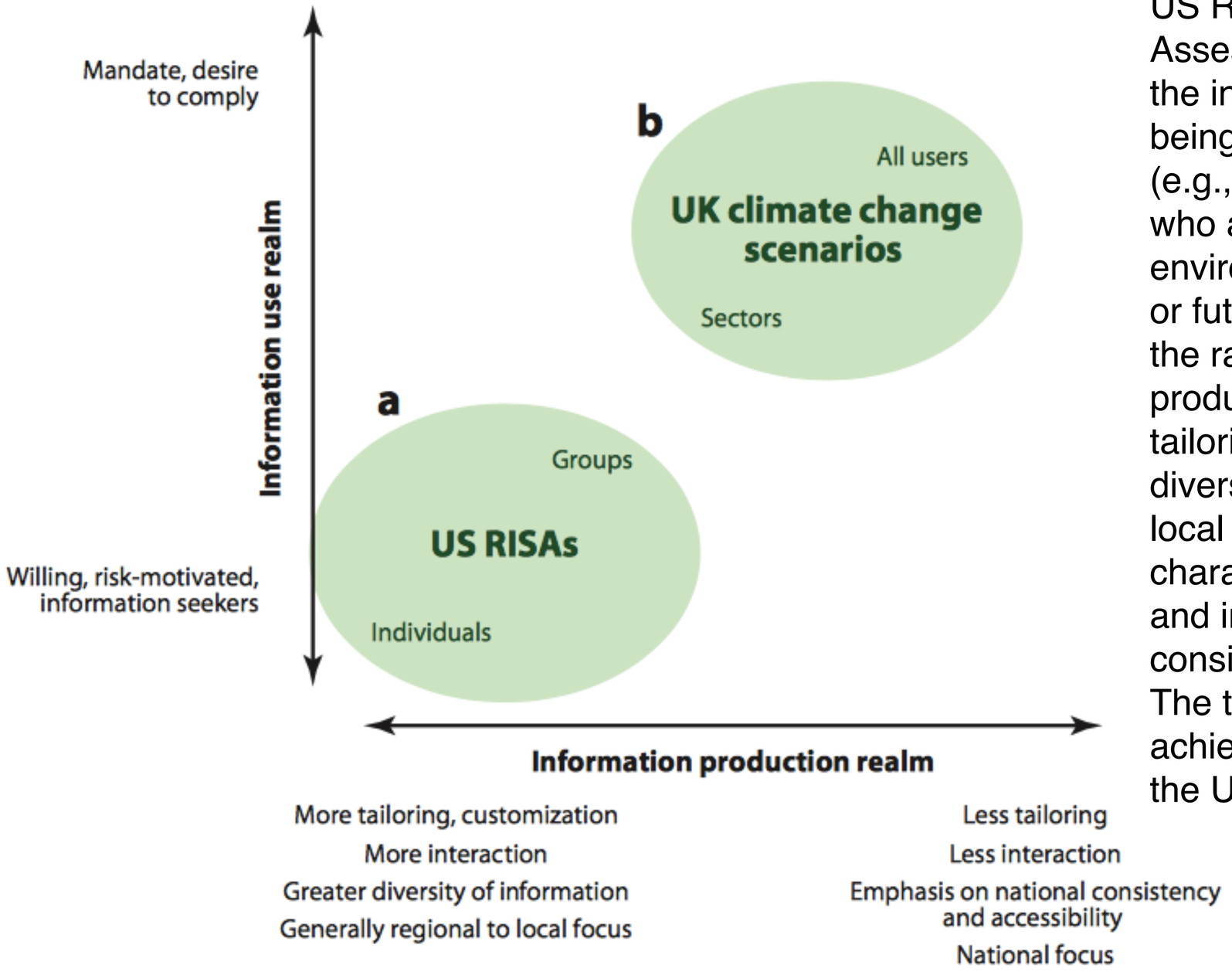
Strongly impacted by cognitive biases

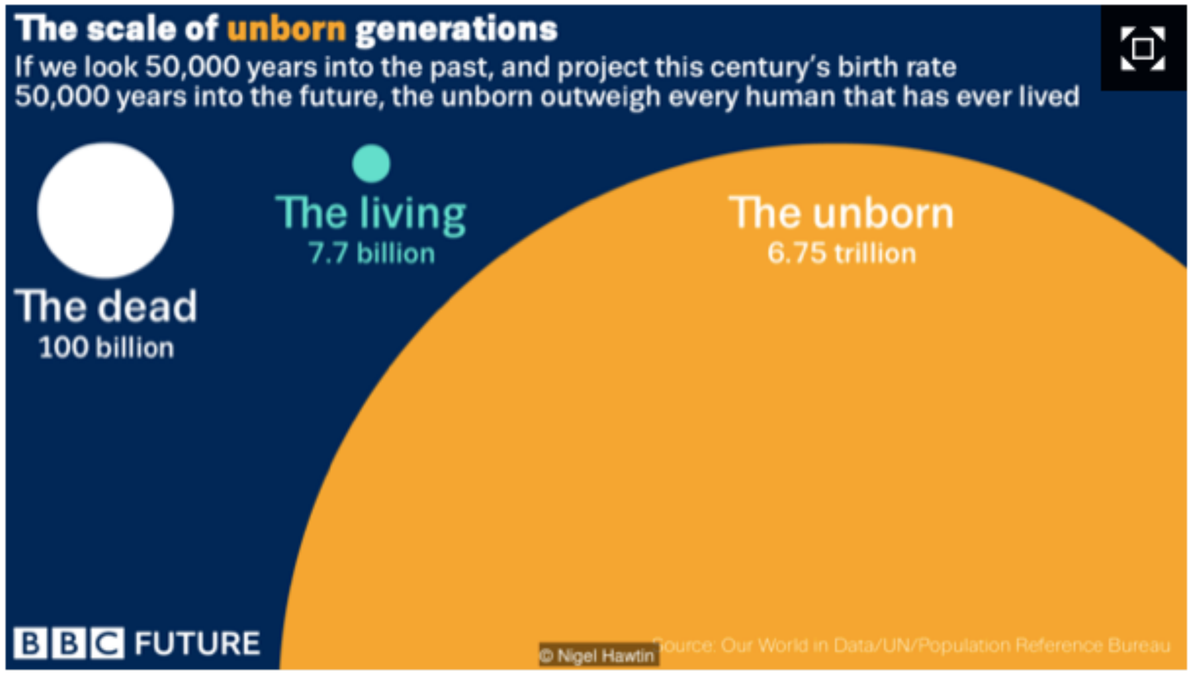
Science-Society Dialog



Usability space in the United Kingdom versus the US Regional Integrated Sciences and Assessments (RISAs). The vertical axis depicts the information use realm where users range from being primarily self-motivated to use information (e.g., risk motivated, information seeking) to users who are motivated through the regulatory environment (e.g., desire to comply with existing or future regulations). The horizontal axis shows the range of information production. On the left, production is characterized by high levels of tailoring, interaction, and support for use; there is diversity of information; and there is a regional to local focus. On the right, information production is characterized by much lower levels of tailoring and interaction; the emphasis is on national consistency; and the focus is the national level. The two green ovals represent the usability space achieved through the US RISAs (in oval a) and the UK climate change scenarios (in oval b).

Science-Society Dialog

By some estimates, **around 100 billion people have lived and died on Earth in the last 50,000 years**. But if the average annual birth numbers projected for the 21st Century were to hold steady for the next 50,000 years (unlikely, but let's assume they do for illustration), then the number of people still to be born during this period looks like this:



A **social discount rate** is a technique that policy-makers use in their cost-benefit analyses to gauge whether to make investments with a long-term impact. It weighs the **upsides for future people against costs borne in the present-day**, and proposes that the calculated value of benefits to future economies and people should steadily decline over time. For example, if you're weighing up whether to build an expensive sea-bridge to foster trade, it'll tell you that a 5% boost in economic growth in 12 months is better than a 5% boost in 12 years.

http://www.bbc.com/future/story/20190109-the-perils-of-short-termism-civilisations-greatest-threat

Science-Society Dialog

Present bias: disregarding of costs and benefits occurring in the future.

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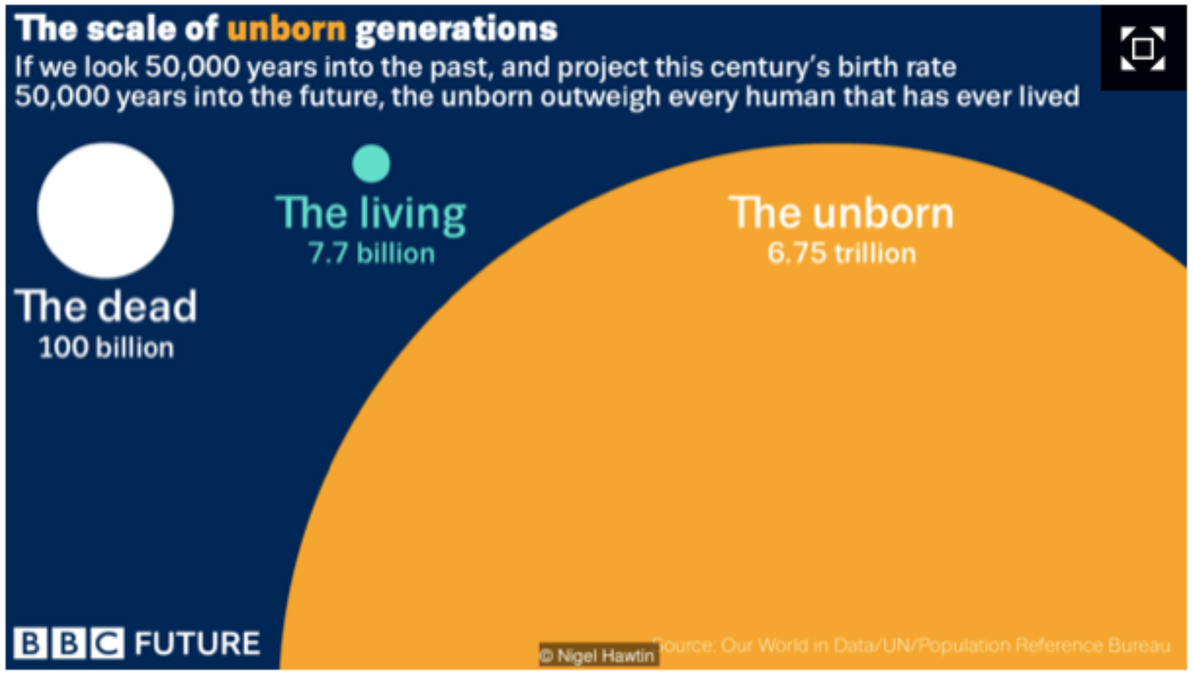

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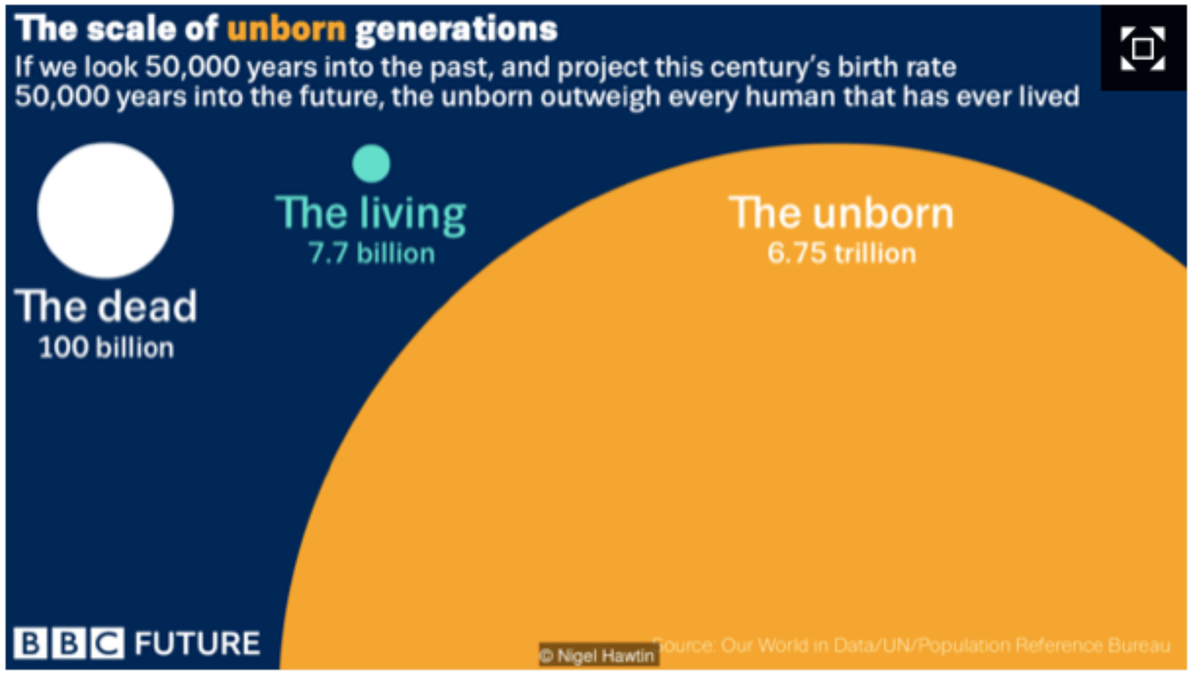

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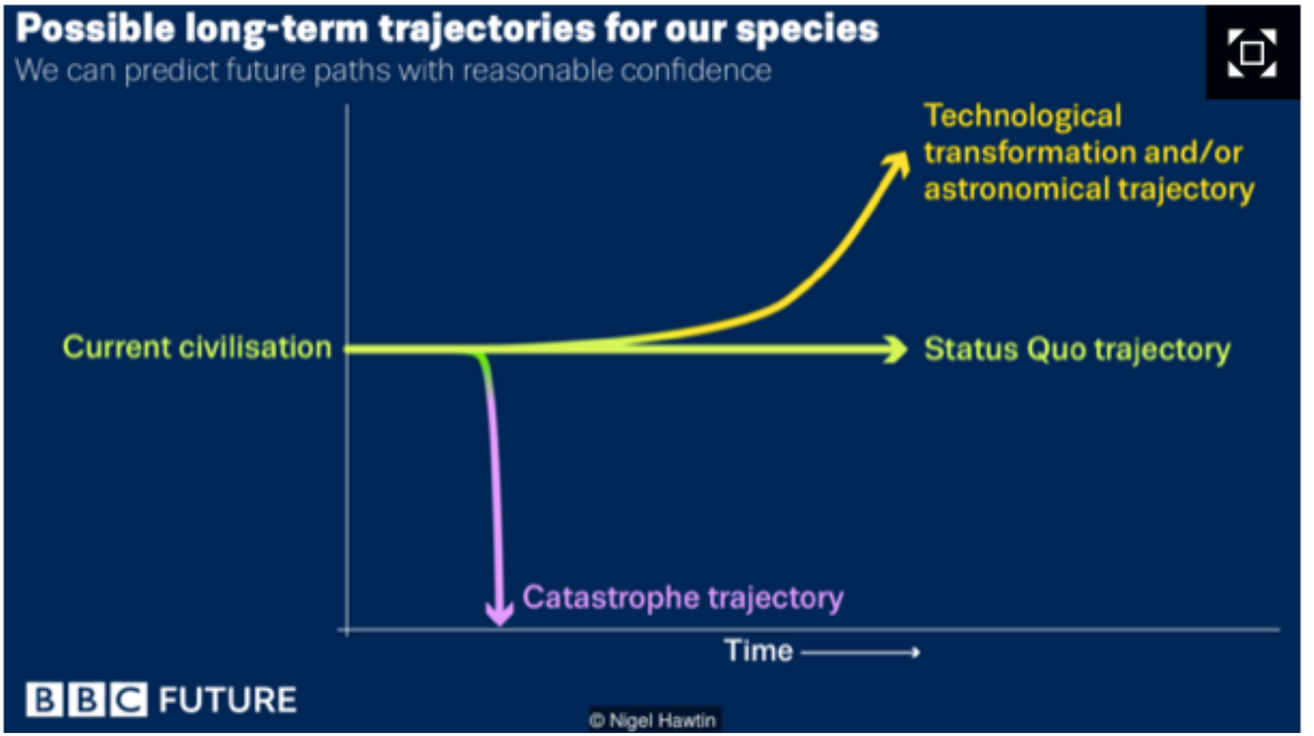
Science-Society Dialog

Long-Term Trajectories of Human Civilization

Published in *Foresight* 21(1):53-83 (2019), DOI 10.1108/FS-04-2018-0037.
This version 11 March 2019.

Seth D. Baum,[1] Stuart Armstrong,[2] Timoteus Ekenstedt,[3] Olle Häggström,[4] Robin Hanson,[5] Karin Kuhlemann,[6] Matthijs M. Maas,[7] James D. Miller,[8] Markus Salmela,[9] Anders Sandberg,[2] Kaj Sotala,[10] Phil Torres,[11] Alexey Turchin,[12] and Roman V. Yampolskiy[13]



- **Status quo** trajectories, in which human civilisation persists in a broadly similar state into the distant future.
- **Catastrophe** trajectories, in which one or more events cause significant harm to human civilisation.
- **Technological transformation** trajectories, in which radical technological breakthroughs put human civilisation on a fundamentally different course.
- **Astronomical** trajectories, in which human civilisation expands beyond its home planet and into the accessible portions of the cosmos.

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The blind spot

It's tempting to think science gives a God's-eye view of reality. But we forget the place of human experience at our peril

Objectivism and physicalism are philosophical ideas, not scientific ones

We erect a false idol of science as something that bestows absolute knowledge

The contention that science reveals a perfectly objective 'reality' is more theological than scientific

The time of the physicist depends for its meaning on our lived experience of time

We can now appreciate the deeper significance of our three scientific conundrums – the nature of matter, consciousness and time. They all point back to the Blind Spot and the need to reframe how we think about science. When we try to understand reality by focusing only on physical things outside of us, we lose sight of the experiences they point back to. The deepest puzzles can't be solved in purely physical terms, because they all involve the unavoidable presence of experience in the equation. There's no way to render 'reality' apart from experience, because the two are always intertwined.

To finally 'see' the Blind Spot is to wake up from a delusion of absolute knowledge. It's also to embrace the hope that we can create a new scientific culture, in which we see ourselves both as an expression of nature and as a source of nature's self-understanding. We need nothing less than a science nourished by this sensibility for humanity to flourish in the new millennium.

https://aeon.co/essays/the-blind-spot-of-science-is-the-neglect-of-lived-experience

Mitigation and Adaptation Studies

Class 21: Decision-Making: Economic, Social, and Political Context

Contents

- Decisions and Human Nature:
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The Economic Context

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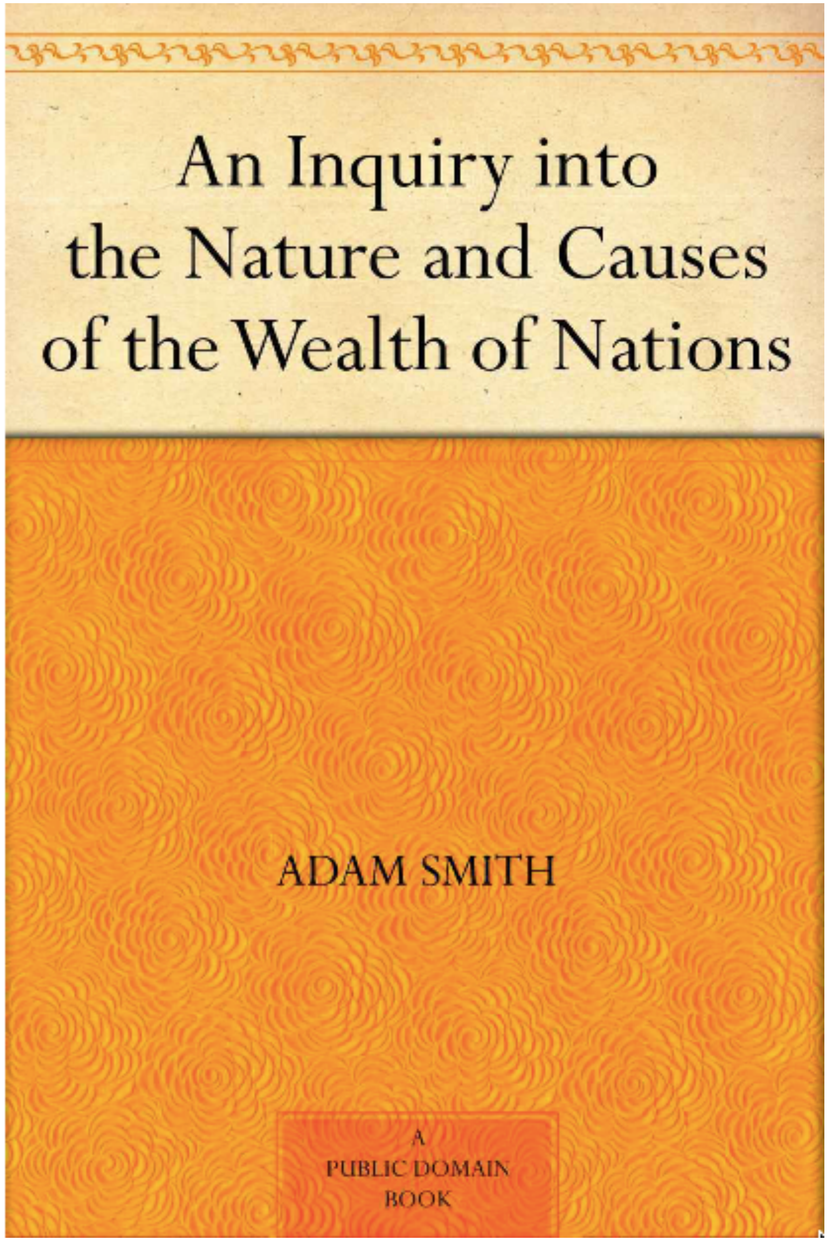
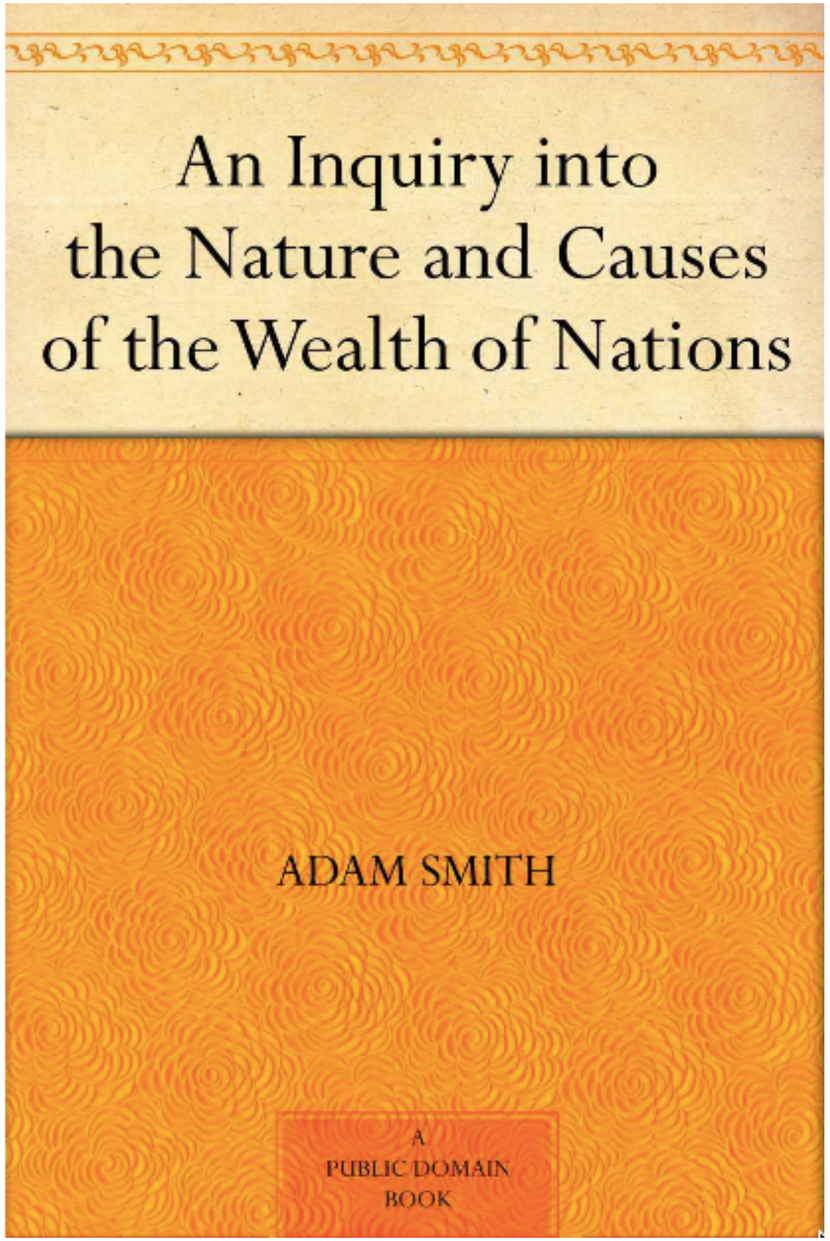


Published in 1776

The Economic Context



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The current mainstream model of the global economy is based on a number of assumptions about the way the world works, what the economy is, and what the economy is for. **These assumptions arose in an earlier period, when the world was relatively empty of humans and their artifacts.** Built capital was the limiting factor, while natural capital was abundant. It made sense not to worry too much about environmental "externalities," since they could be assumed to be relatively small and ultimately solvable. It also made sense to focus on the growth of the market economy, as measured by gross domestic product (GDP), as a primary means to improve human welfare. And it made sense to think of the economy as only marketed goods and services and to think of the goal as increasing the amount of these that were produced and consumed.

The Worldwatch Institute. State of the World 2013: Is Sustainability Still Possible? (Kindle Locations 2921-2927). Island Press. Kindle Edition.

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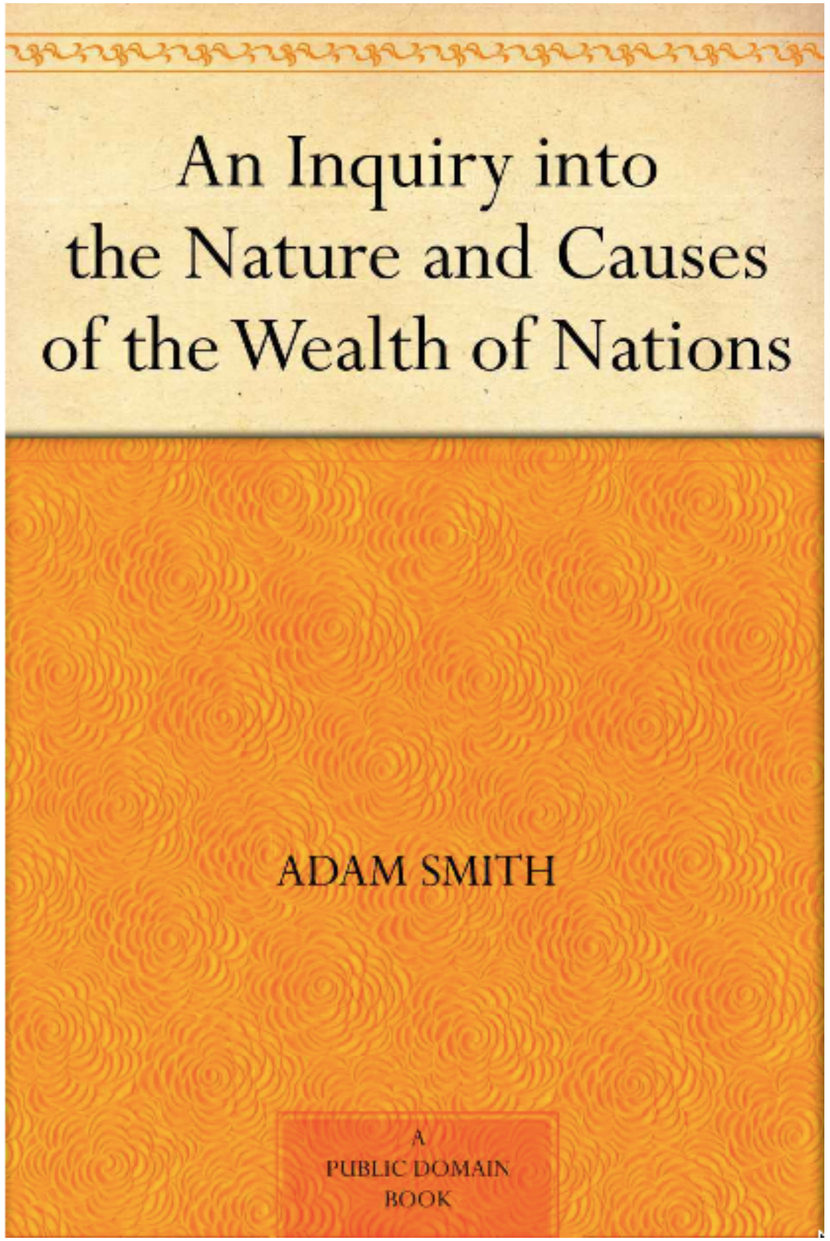

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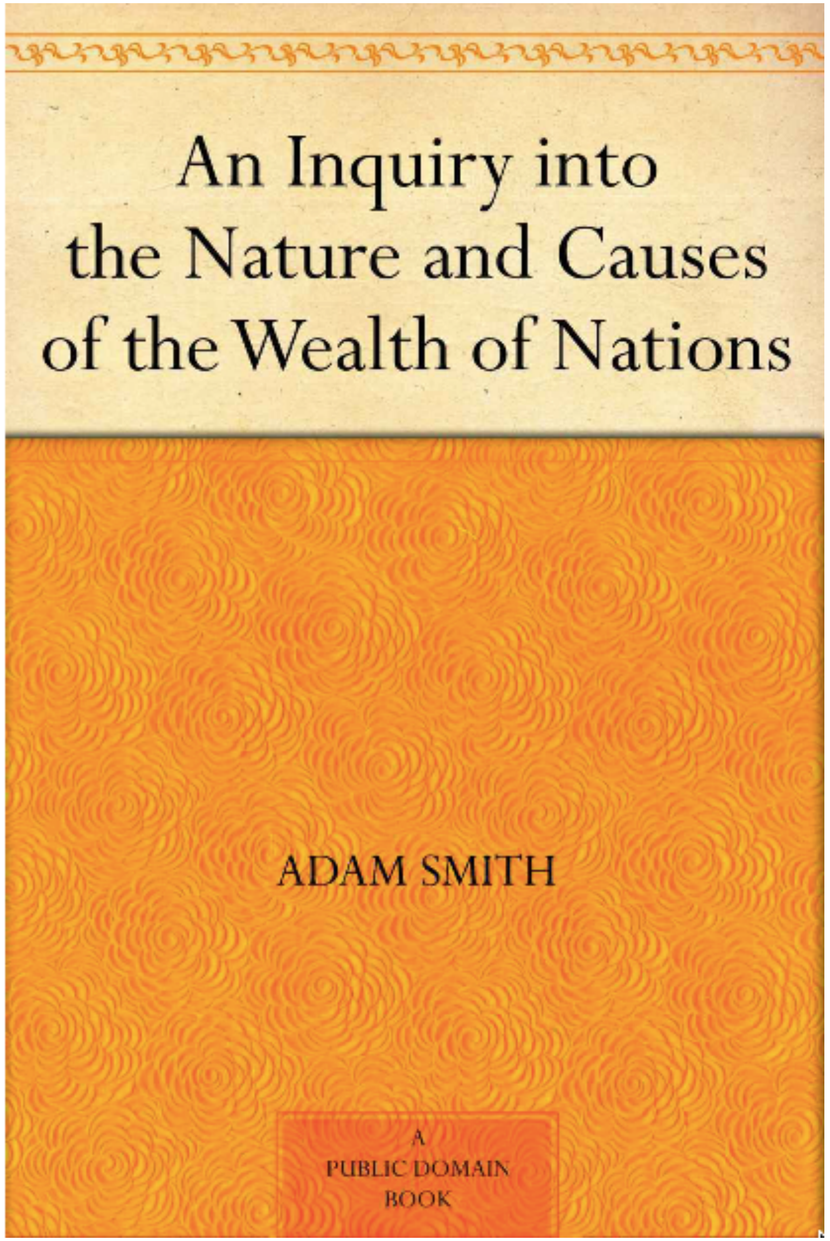

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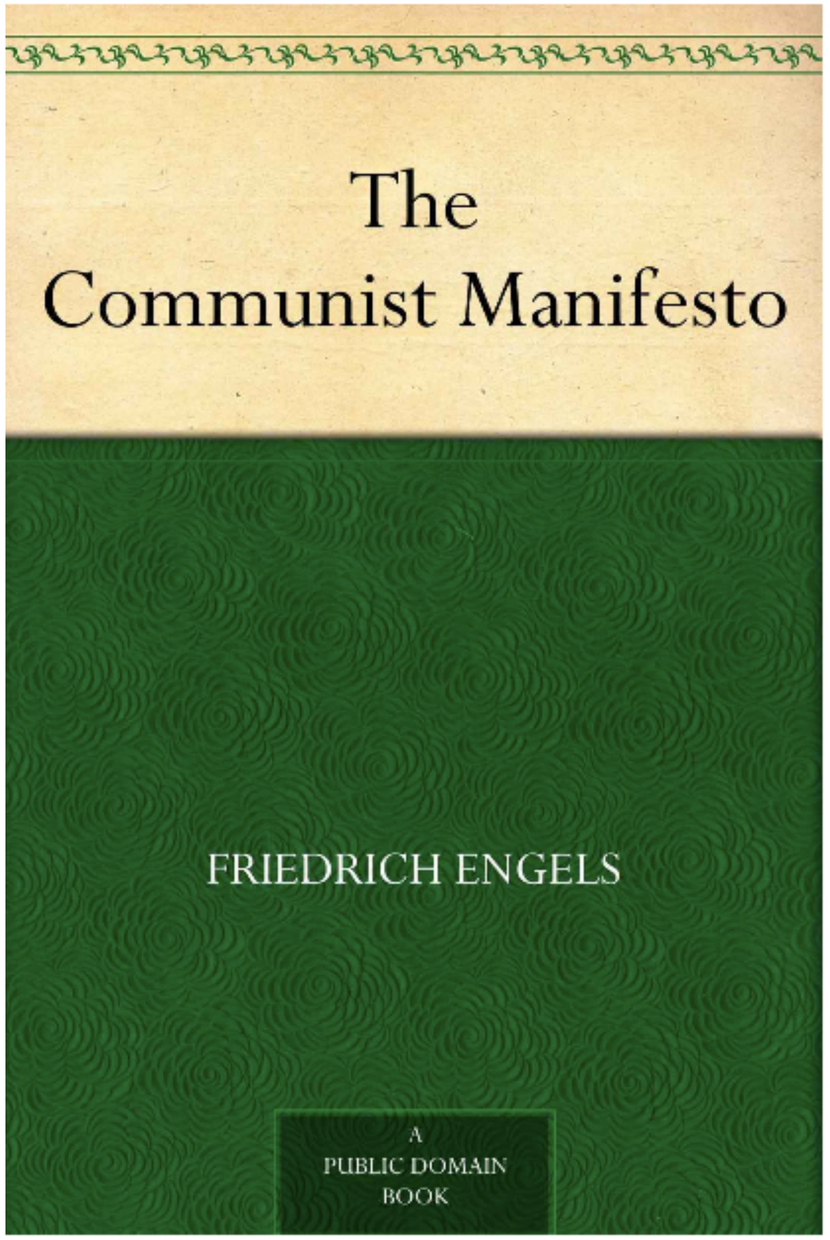

Published in 1848

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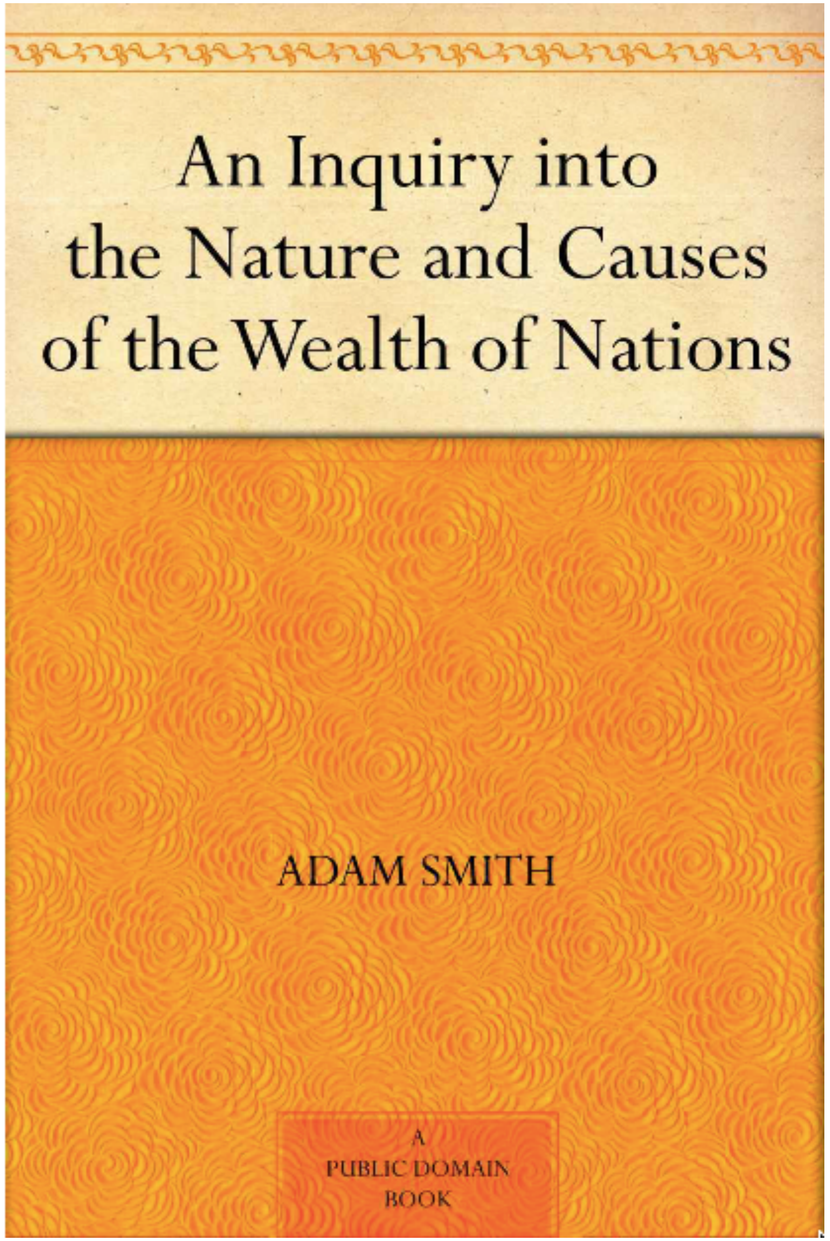

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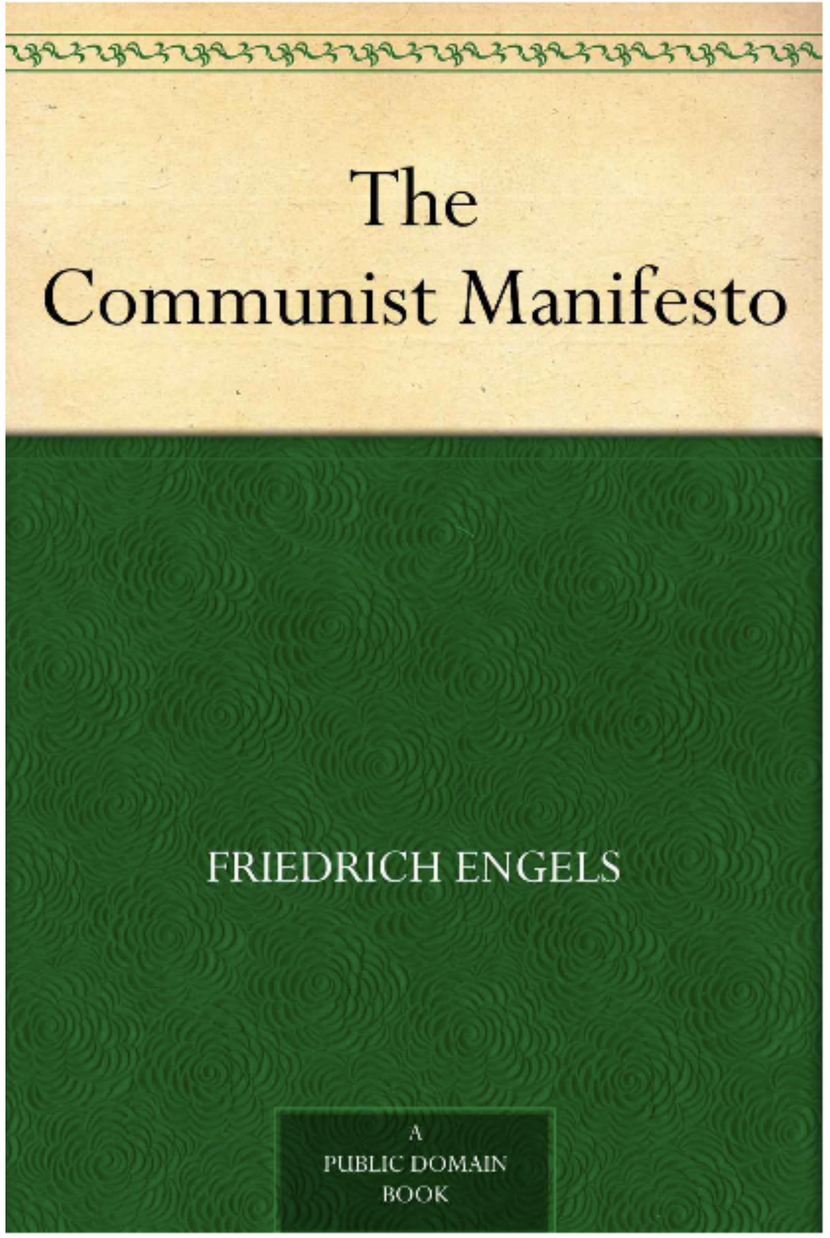

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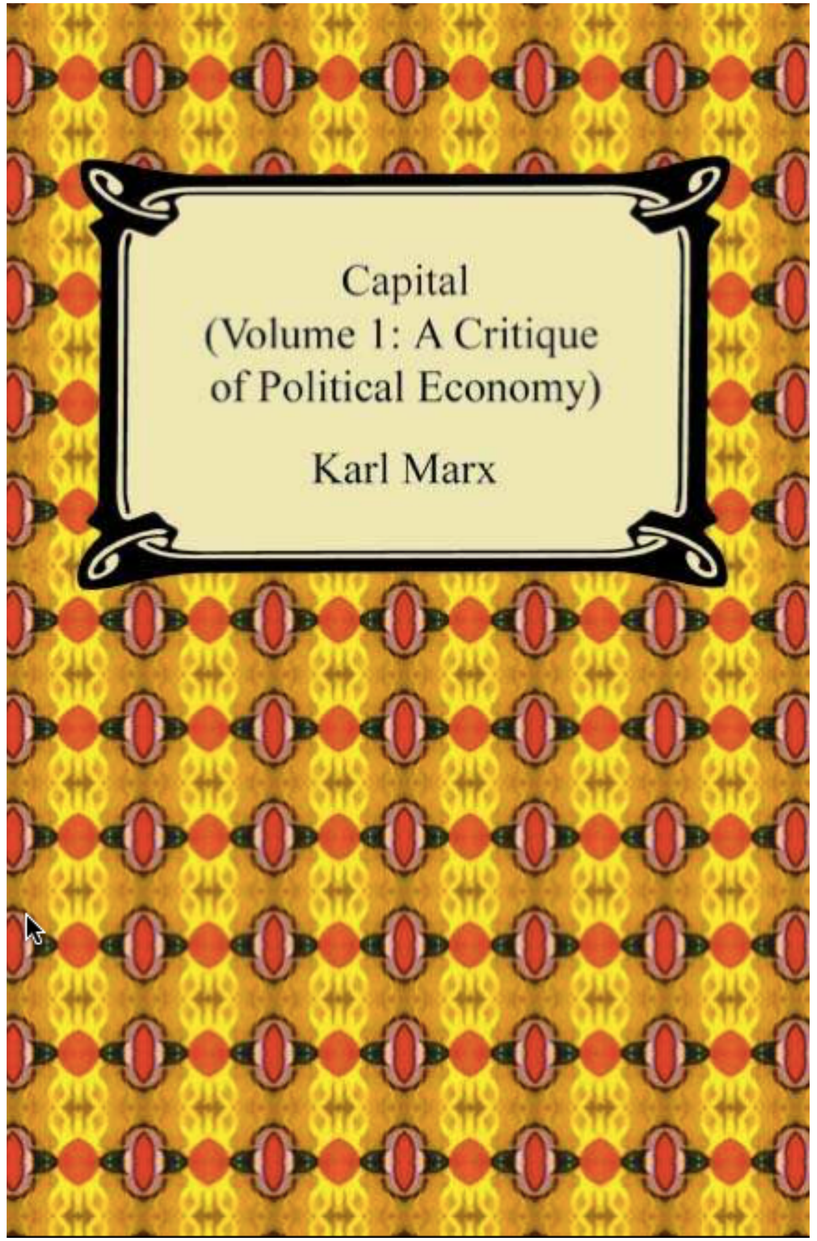

Published in 3 Volumes, 1867-1883

The Economic Context

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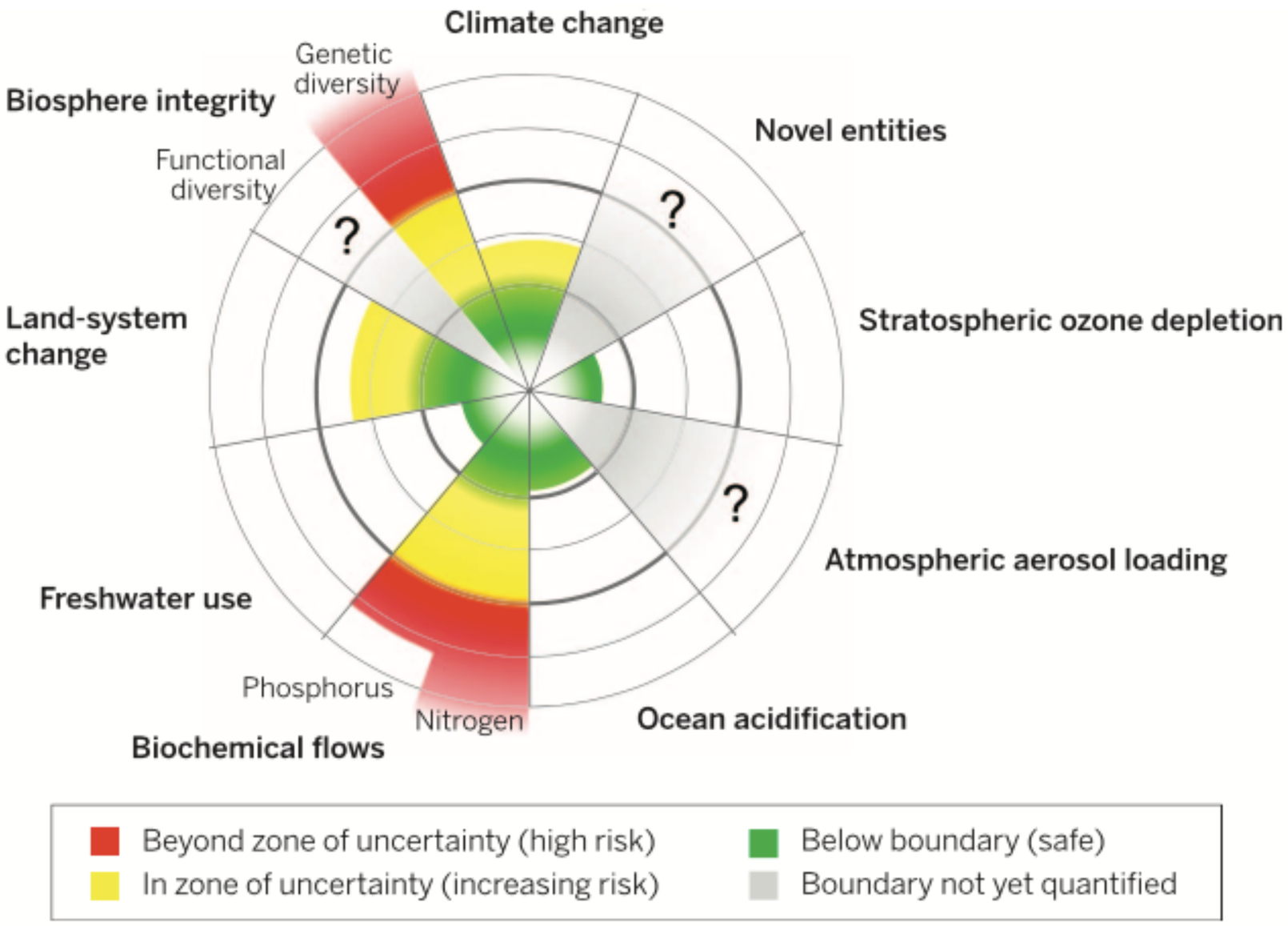
"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs".

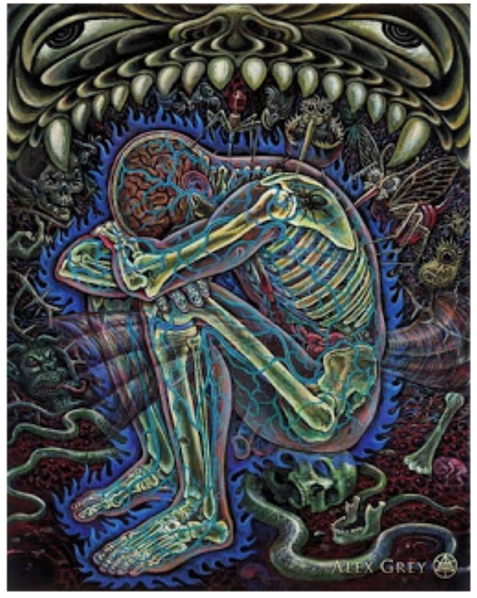
The Economic Context



Current status of the control variables for seven of the planetary boundaries. The green zone is the safe operating space, the yellow represents the zone of uncertainty (increasing risk), and the red is a high-risk zone. The planetary boundary itself lies at the intersection of the green and yellow zones. The control variables have been normalized for the zone of uncertainty; the center of the figure therefore does not represent values of 0 for the control variables. The control variable shown for climate change is atmospheric CO2 concentration. Processes for which global-level boundaries cannot yet be quantified are represented by gray wedges; these are atmospheric aerosol loading, novel entities, and the functional role of biosphere integrity.

The Other Side of the Global Crisis: Entropy and the Collapse of Civilizations

by Jacopo Simonetta, originally published by Cassandra's Legacy | MAR 7, 2016



When we discuss the impending crisis of our civilisation, we mainly look at the resources our economy need in a growing quantity. And we explain why the diminishing returns of resource exploitation pose a growing burden on the possibility of a further growing of the global economy. It is a very interesting topic, indeed, but here I suggest to turn 180 degrees around and take a look at the "other side;" that is to what happens where the used resources are discarded.

Eventually, our society (as any other society in history) is a dissipative structure. It means that it exists only

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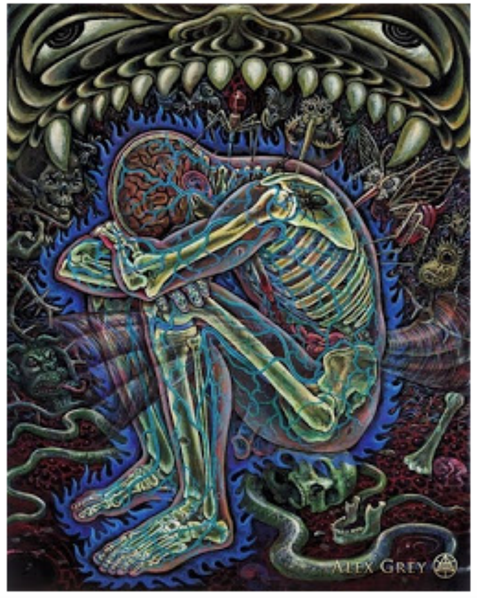

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EVOLUTION First biography of W. D. Hamilton, the gentle giant of genetics p.313

FUNDING Australia's grant system wastes centuries of researchers' time p.314

ILLUSTRATION BY PHIL DISLEY

Sustainable development goals for people and planet

Planetary stability must be integrated with United Nations targets to fight poverty and secure human well-being, argue **David Griggs** and colleagues.

The United Nations Rio+20 summit in Brazil in 2012 committed governments to create a set of sustainable development goals (SDGs) that would be integrated into the follow-up to the Millennium Development Goals (MDGs) after their 2015 deadline. Discussions on how to formulate these continue this week at UN headquarters in New York.

We argue that the protection of Earth's life-support system and poverty reduction must be the twin priorities for SDGs. It is not enough simply to extend MDGs, as some are suggesting, because humans are transforming the planet in ways that could undermine development gains.

As mounting research shows, the stable functioning of Earth systems — including the atmosphere, oceans, forests, waterways, biodiversity and biogeochemical cycles — is a prerequisite for a thriving global society. With the human population set to rise to 9 billion by 2050, definitions of sustainable development must be revised to include the security of people and the planet.

Defining a unified set of SDGs is challenging, especially when there can be conflict between individual goals, such as energy provision and climate-change prevention. But we show here that it is possible. By ▶

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"Sustainable Development is a development that meets the needs of the present while safeguarding Earth's life support systems, on which the welfare of current and future generations depends." (Griggs et al., 2013)

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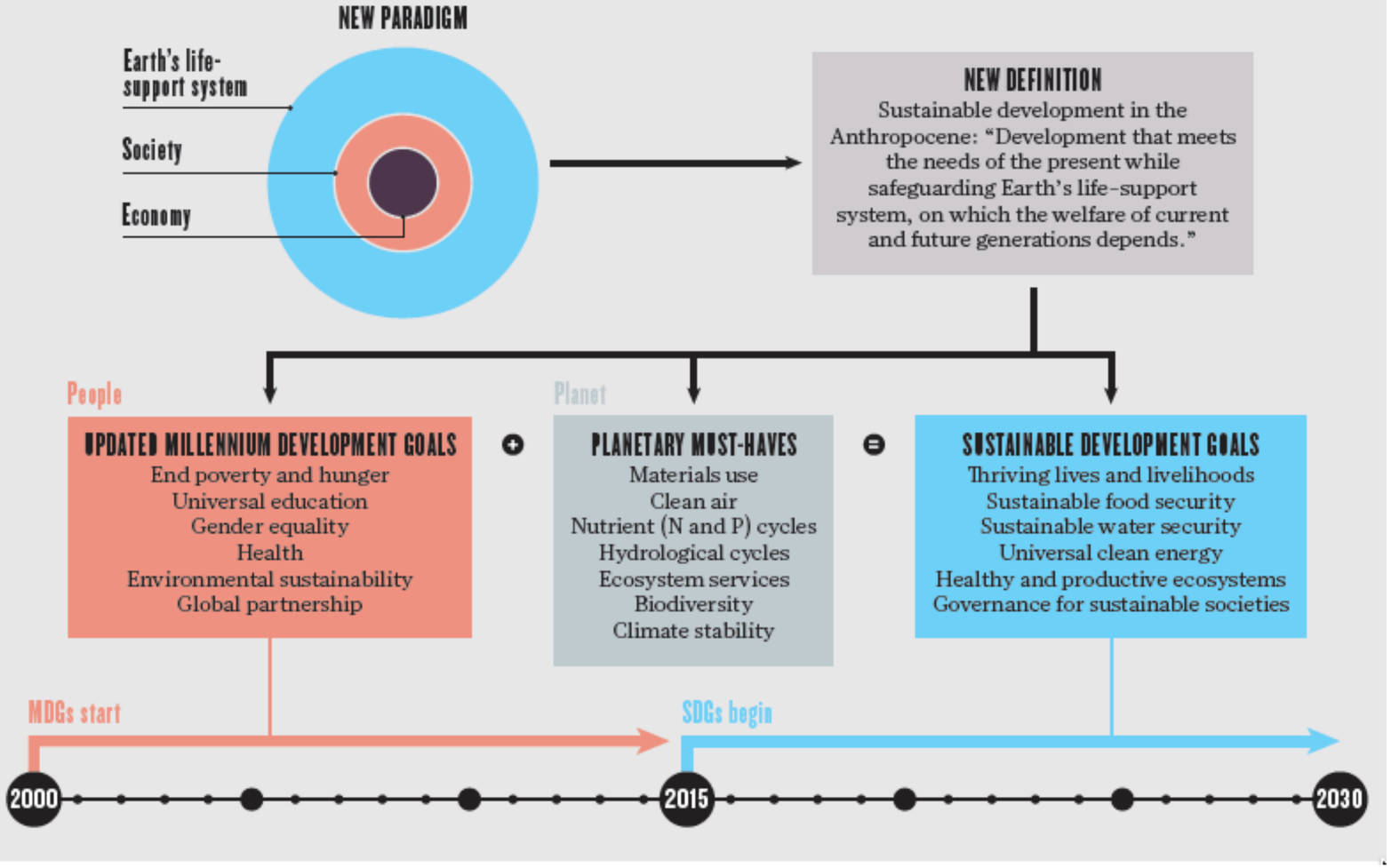
A UNIFIED FRAMEWORK

A set of six sustainable development goals (SDGs) follow from combining the Millennium Development Goals (MDGs) with conditions necessary to assure the stability of Earth's systems.



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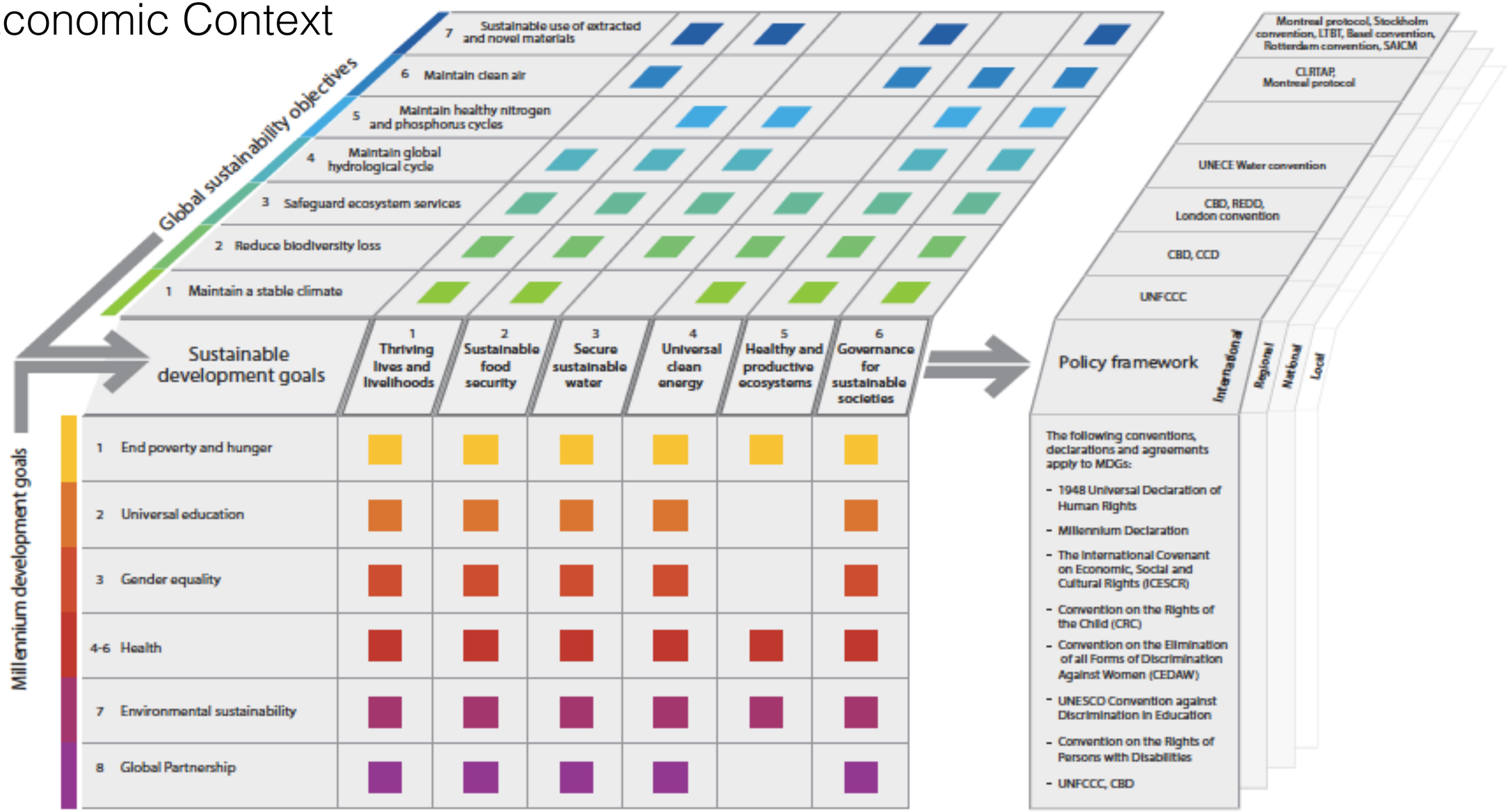

Figure 2 | Six sustainable development goals (SDGs) for integrated delivery of Millennium Development Goals and planetary 'must-haves' (or Global Sustainability Objectives). Targets set within each SDG directly address social, economic and environmental dimensions. These goals, and the targets beneath, may be operationalized through a policy framework across levels from international to local, some of it already extant.

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Defining a unified set of SDGs is challenging, especially when there can be conflict between individual goals, such as energy provision and climate-change prevention. But we show here that it is possible. By ▶

The Economic Context

COMMENT

ILLUSTRATION BY PHIL DISLEY

Sustainable development goals for people and planet

Planetary stability must be integrated with United Nations targets to fight poverty and secure human well-being, argue **David Griggs** and colleagues.

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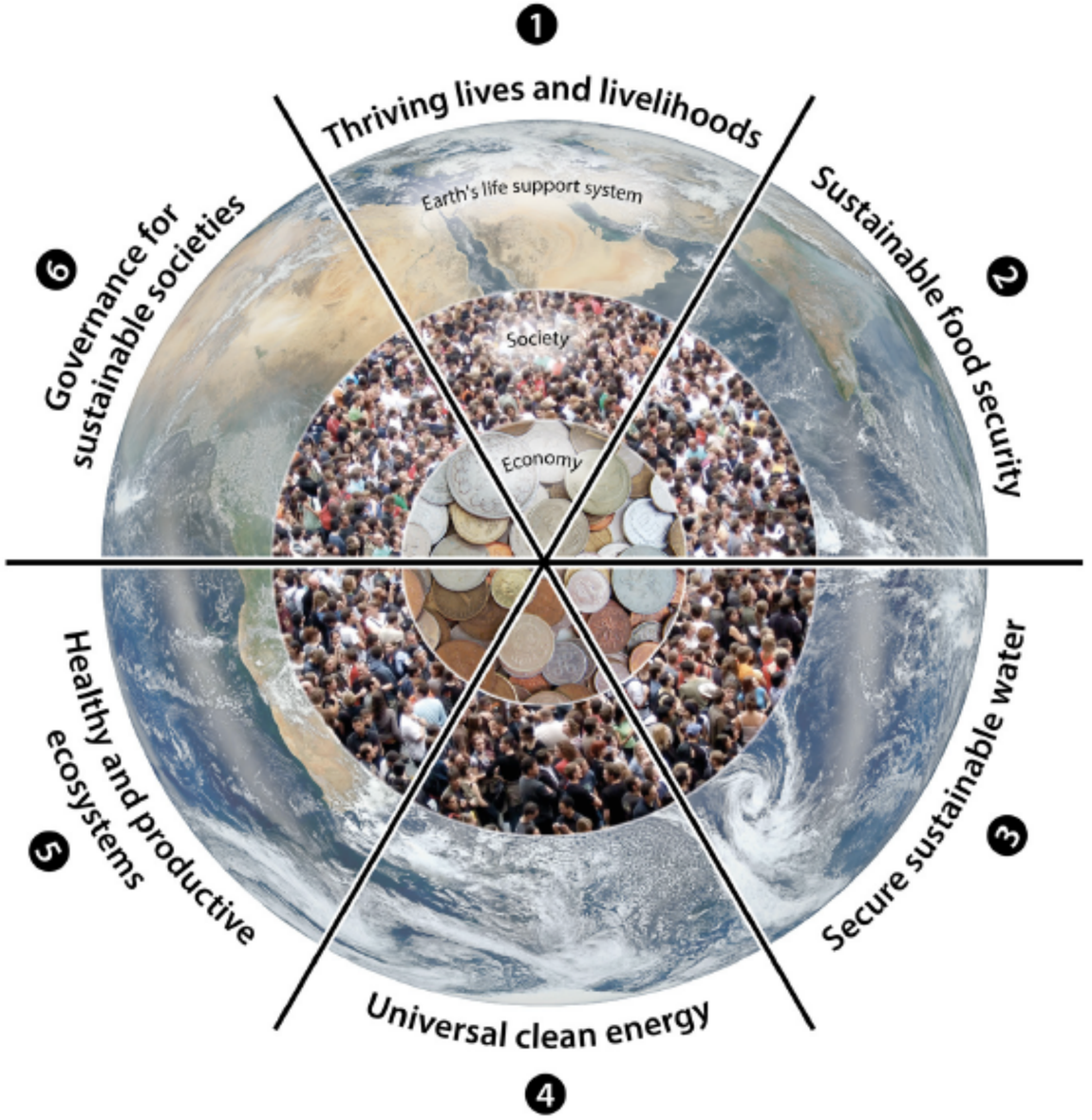


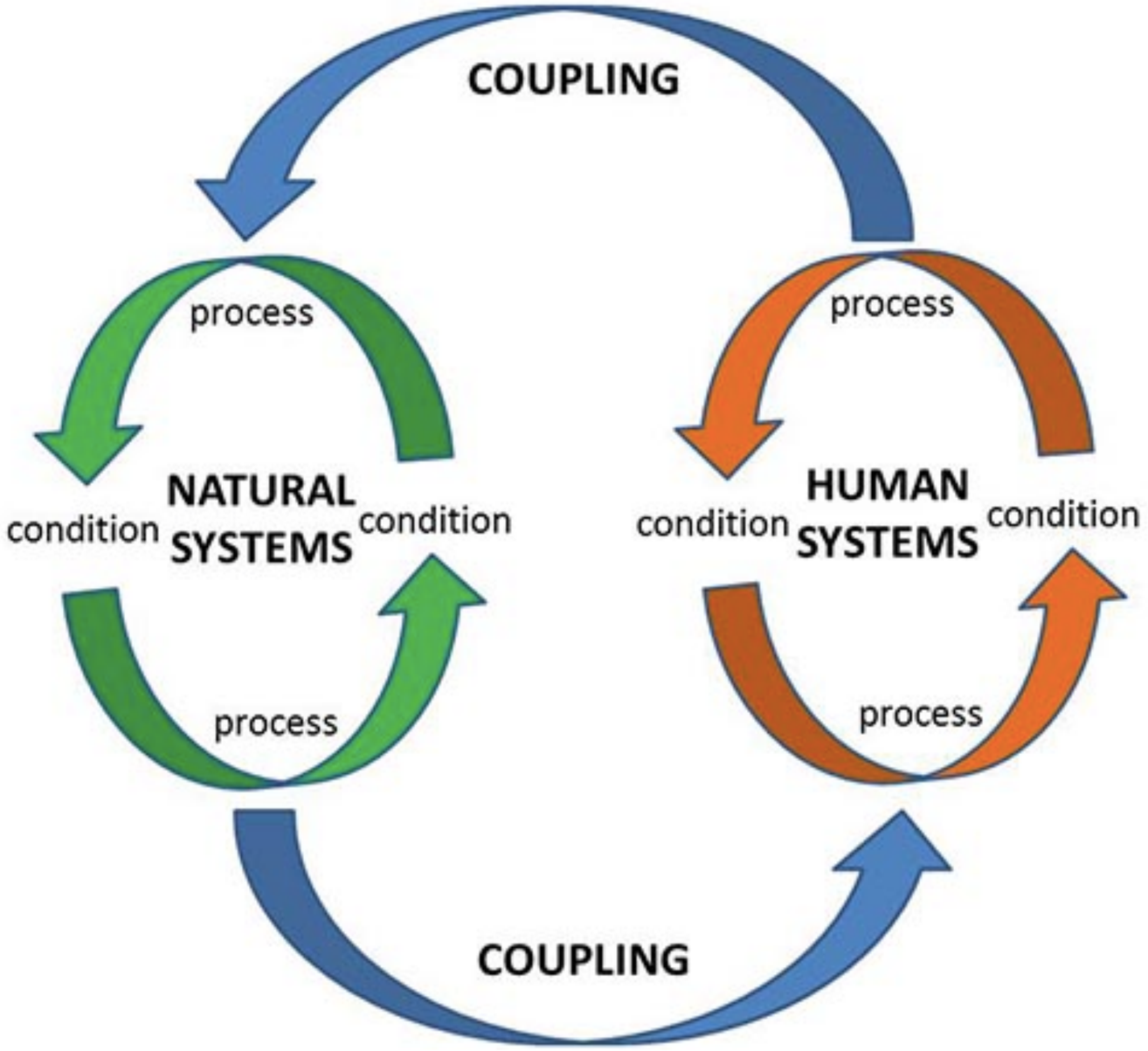
Figure 1 | Six universal Sustainable Development Goals cutting across economic, social and environmental domains.

The Economic Context

The Economic Context

"Sustainable Development is a development that meets the needs of the present while safeguarding Earth's life support systems, on which the welfare of current and future generations depends." (Griggs et al., 2013)

The Economic Context



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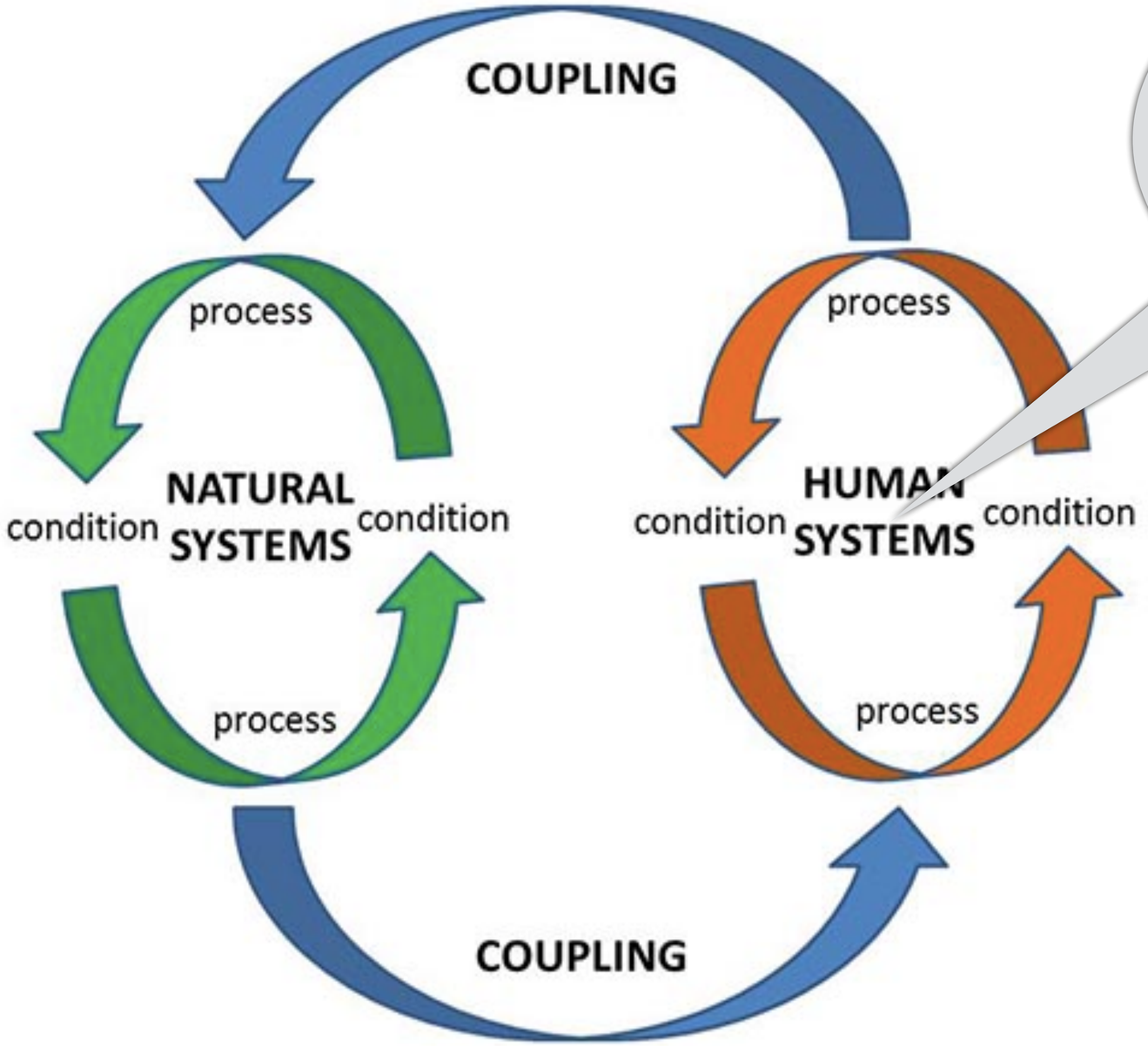

Ethics and Morality,
Social Norms,
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The Economic Context

The Economic Context

Earth: Our Life-Support System

Our connection to the Life-Support System is economic

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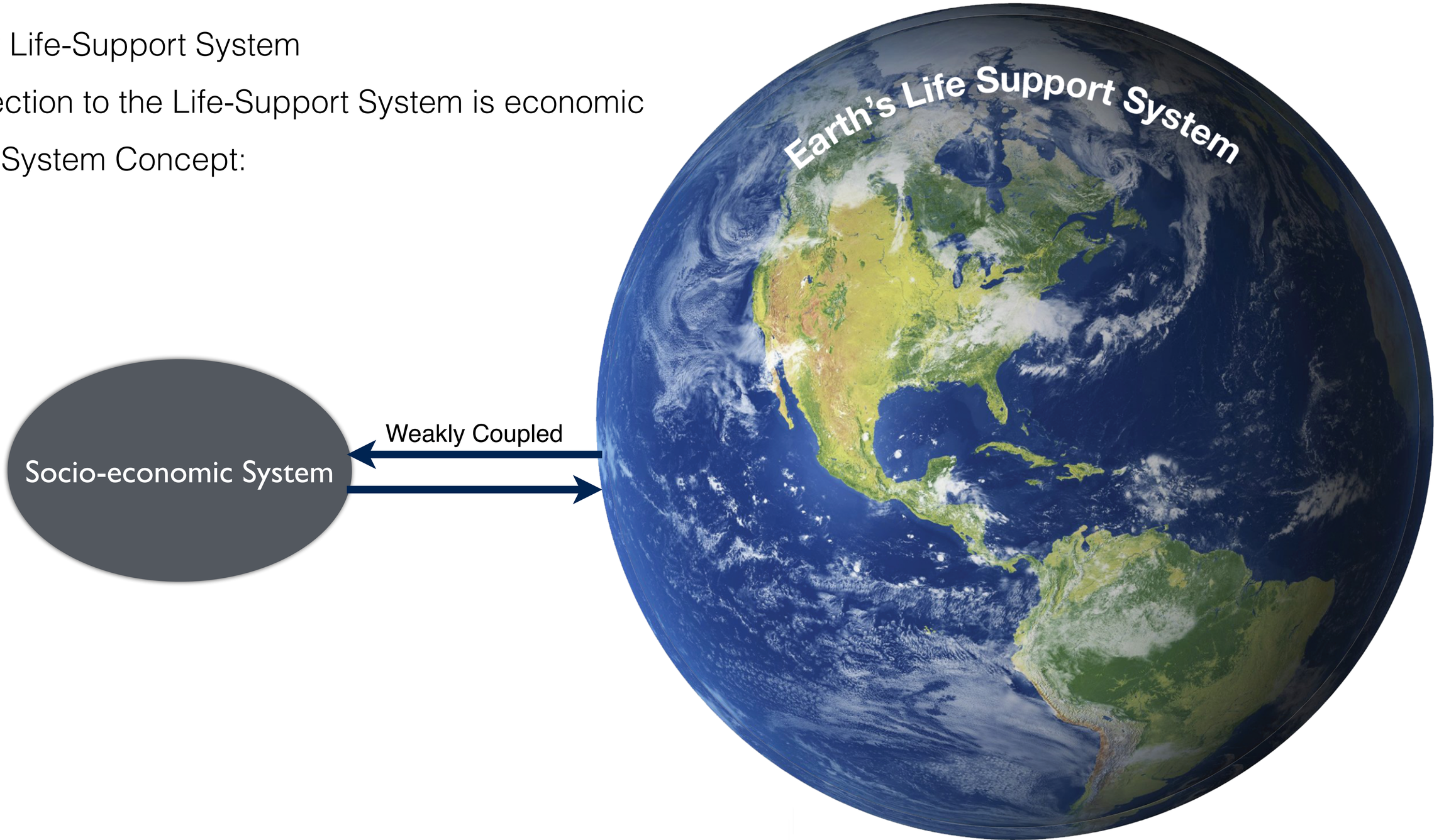

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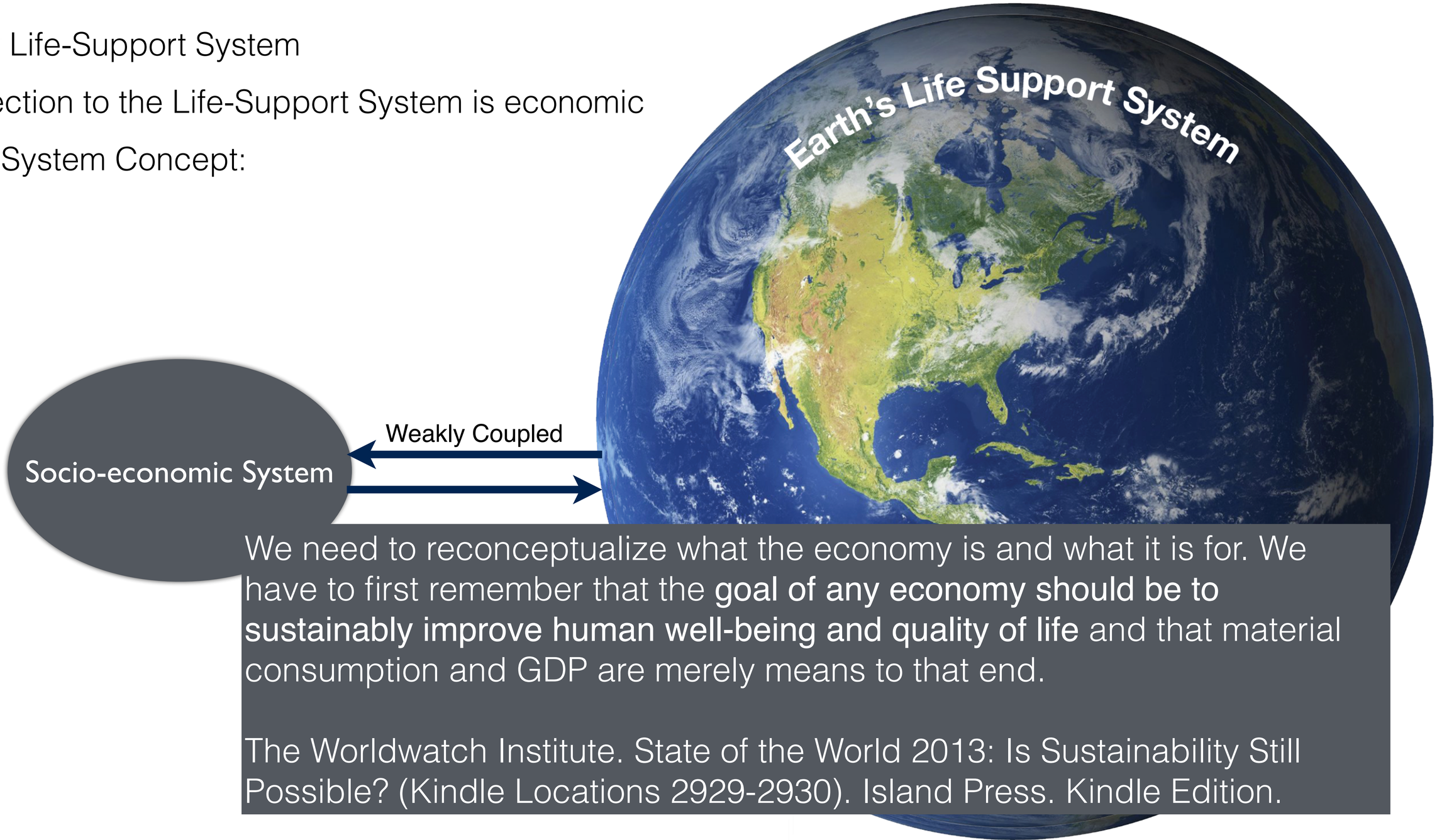

We need to reconceptualize what the economy is and what it is for. We have to first remember that the **goal of any economy should be to sustainably improve human well-being and quality of life** and that material consumption and GDP are merely means to that end.

The Worldwatch Institute. State of the World 2013: Is Sustainability Still Possible? (Kindle Locations 2929-2930). Island Press. Kindle Edition.

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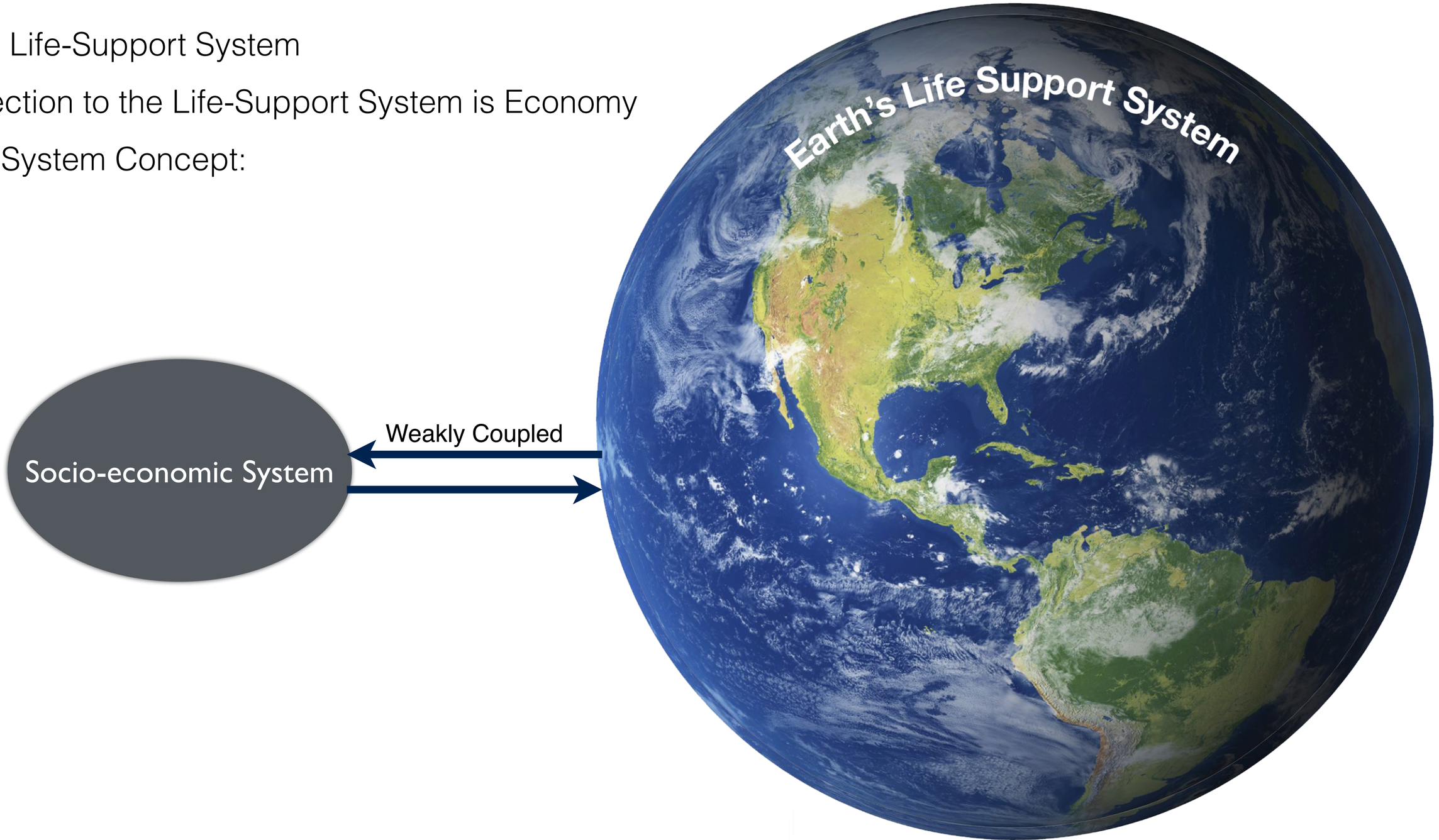

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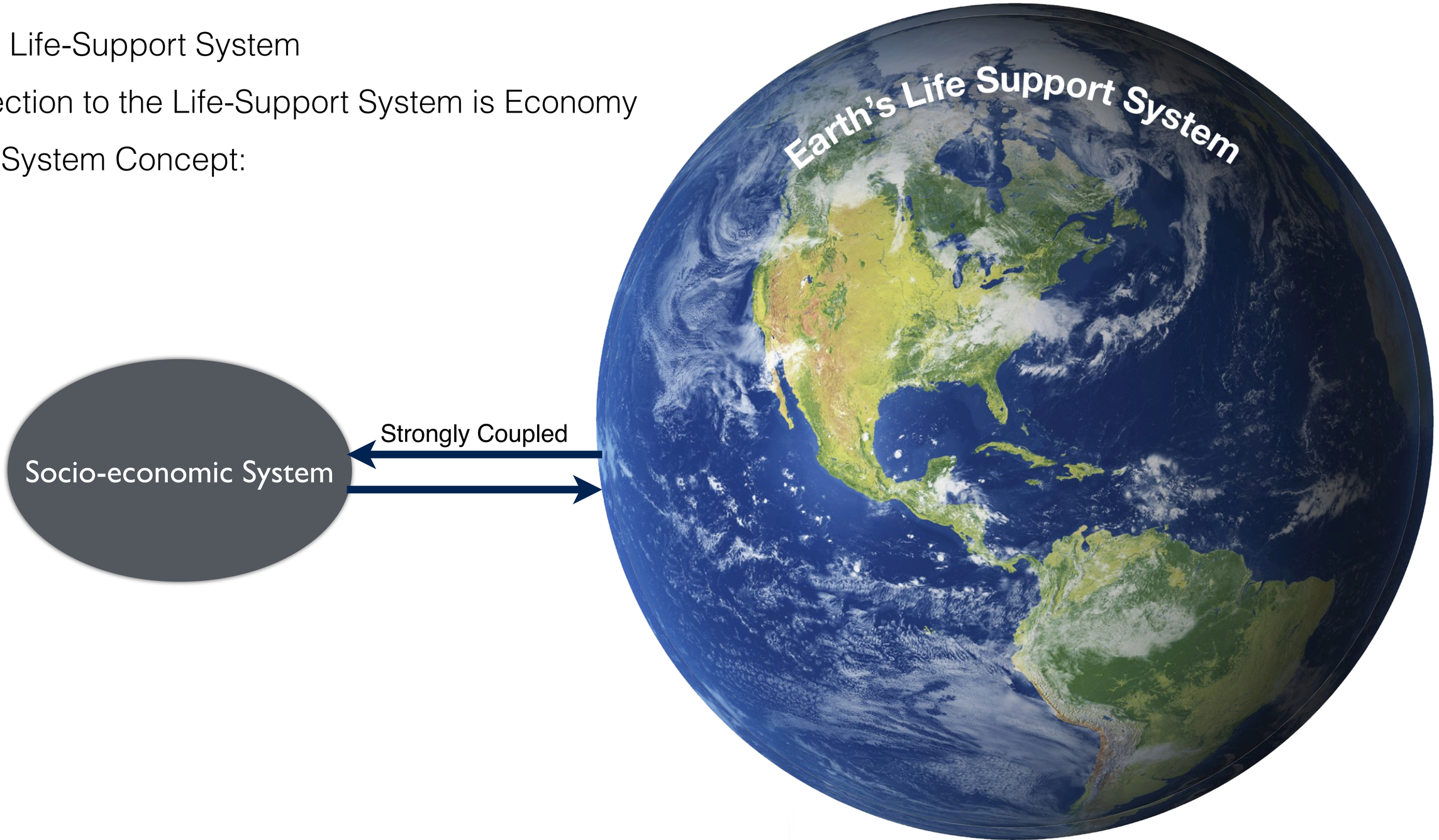

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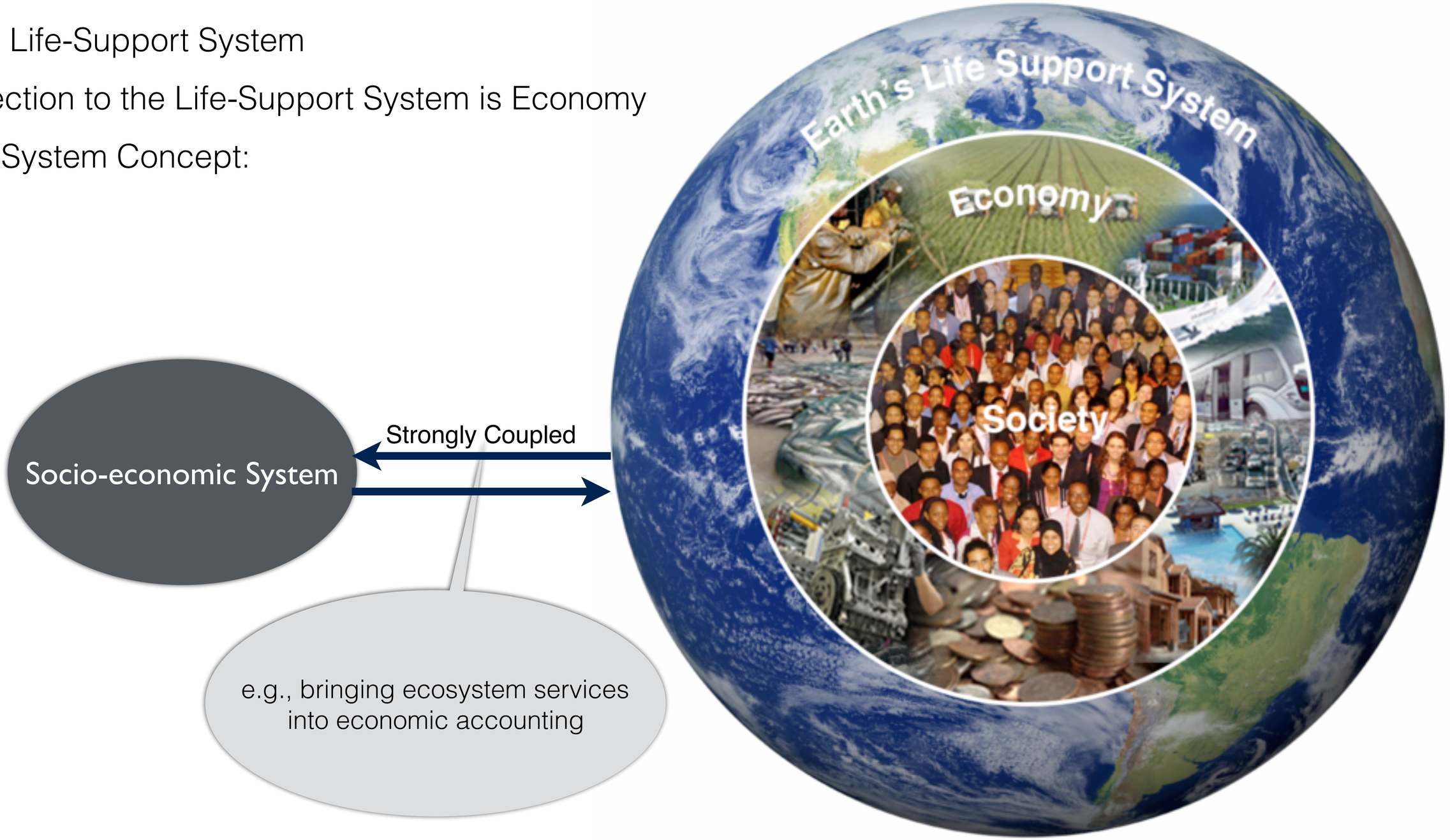

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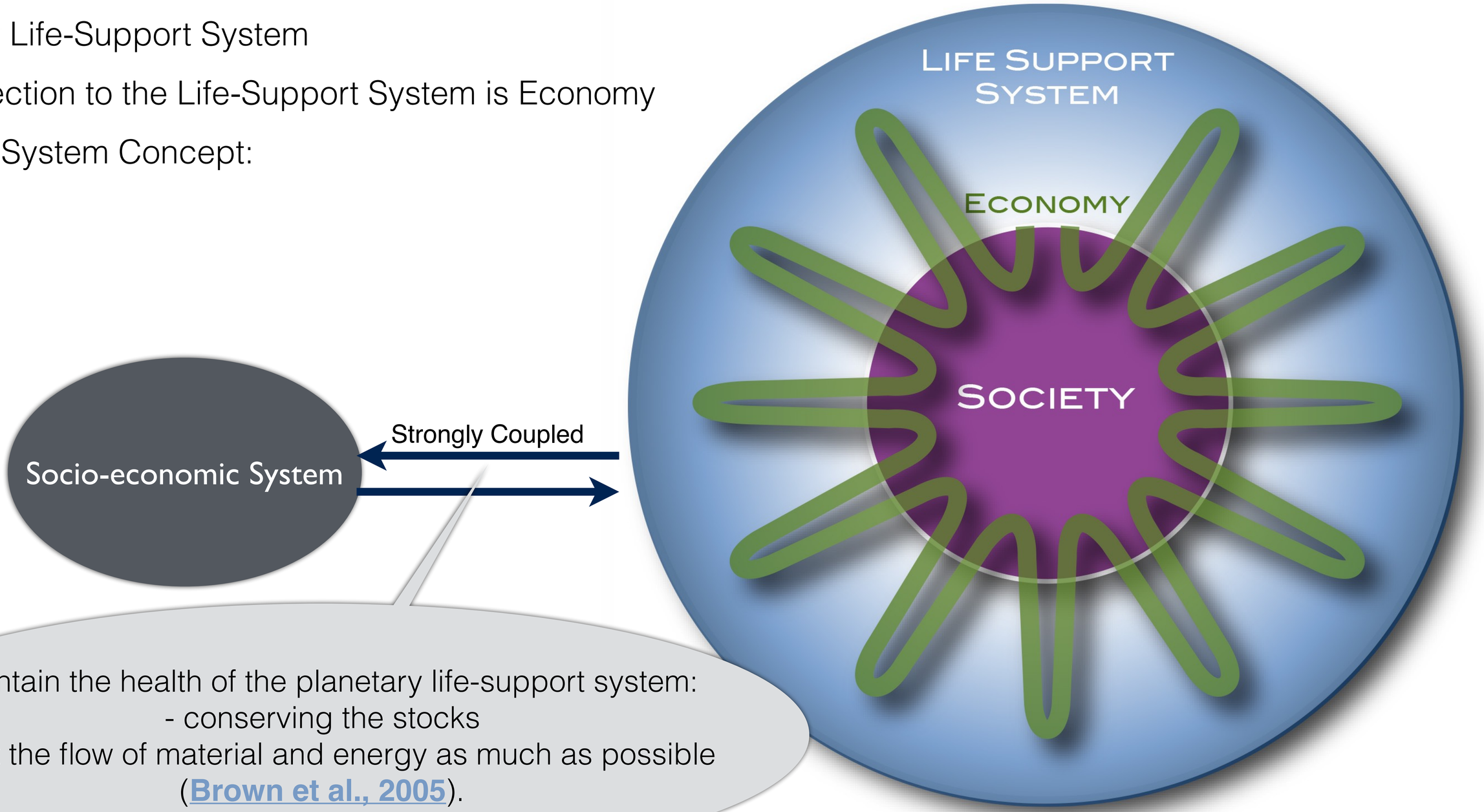
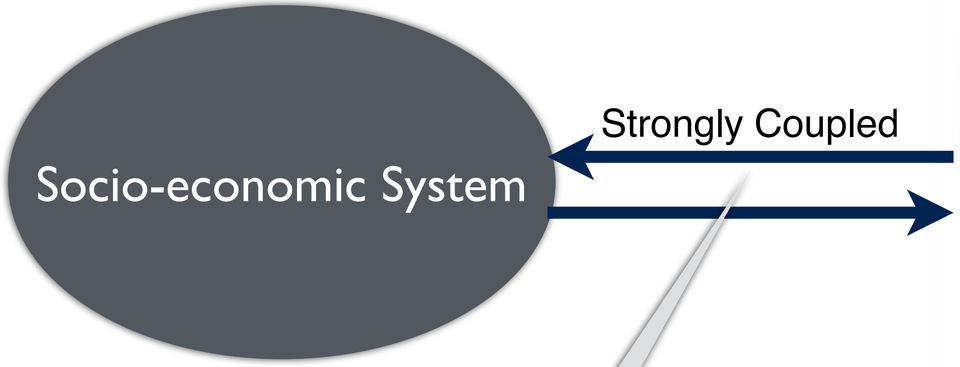
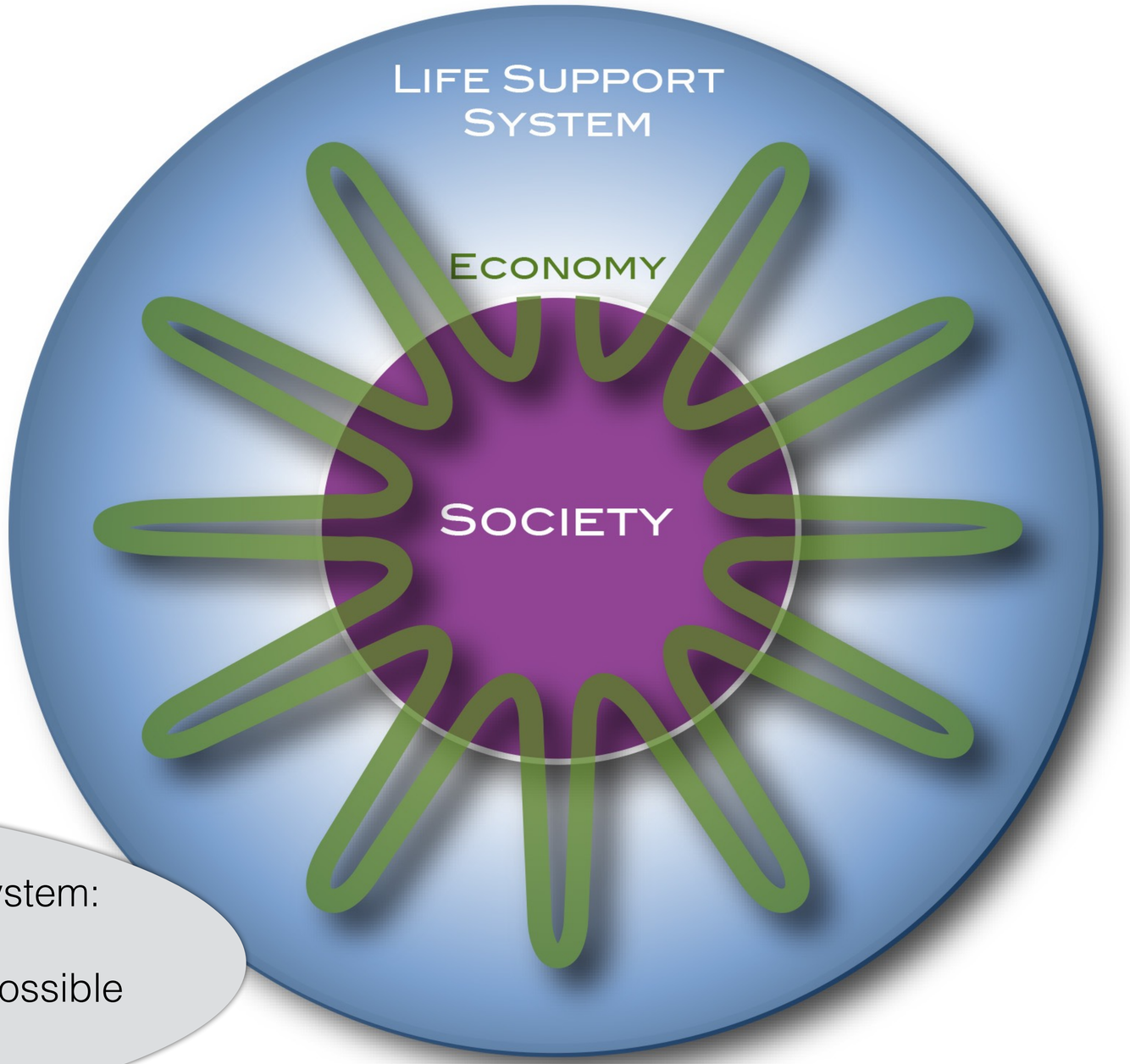


Maintain the health of the planetary life-support system:
- conserving the stocks
- limit the flow of material and energy as much as possible
(Brown et al., 2005).

The Economic Context

An new economy that meets the needs of the present while safeguarding Earth's life support systems, on which the welfare of current and future generations depends.





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Mitigation and Adaptation Studies

Class 21: Decision-Making: Economic, Social, and Political Context

Contents

- Decisions and Human Nature:
  - Biases
  - Overcoming Biases
  - Fast and Slow Thinking - Enigma of Reason
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- Economic Context
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Social and Political Context

Ethics, value systems, norms

Ethics, value systems, norms

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- Normative: discover truth about morality - what rules should be promoted?
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Social and Political Context

Ethics, value systems, norms

https://truthout.org/articles/in-the-face-of-extinction-we-have-a-moral-obligation/

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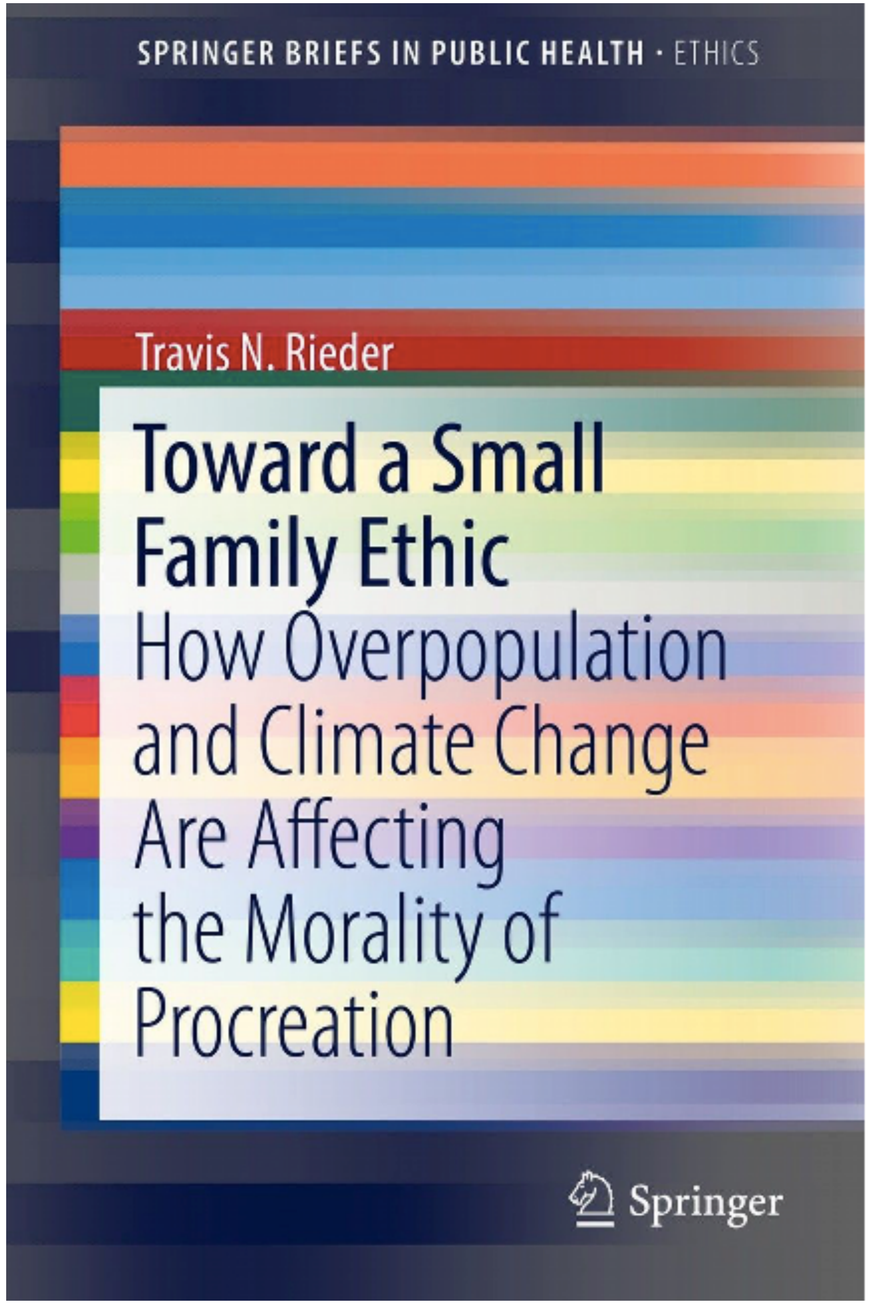
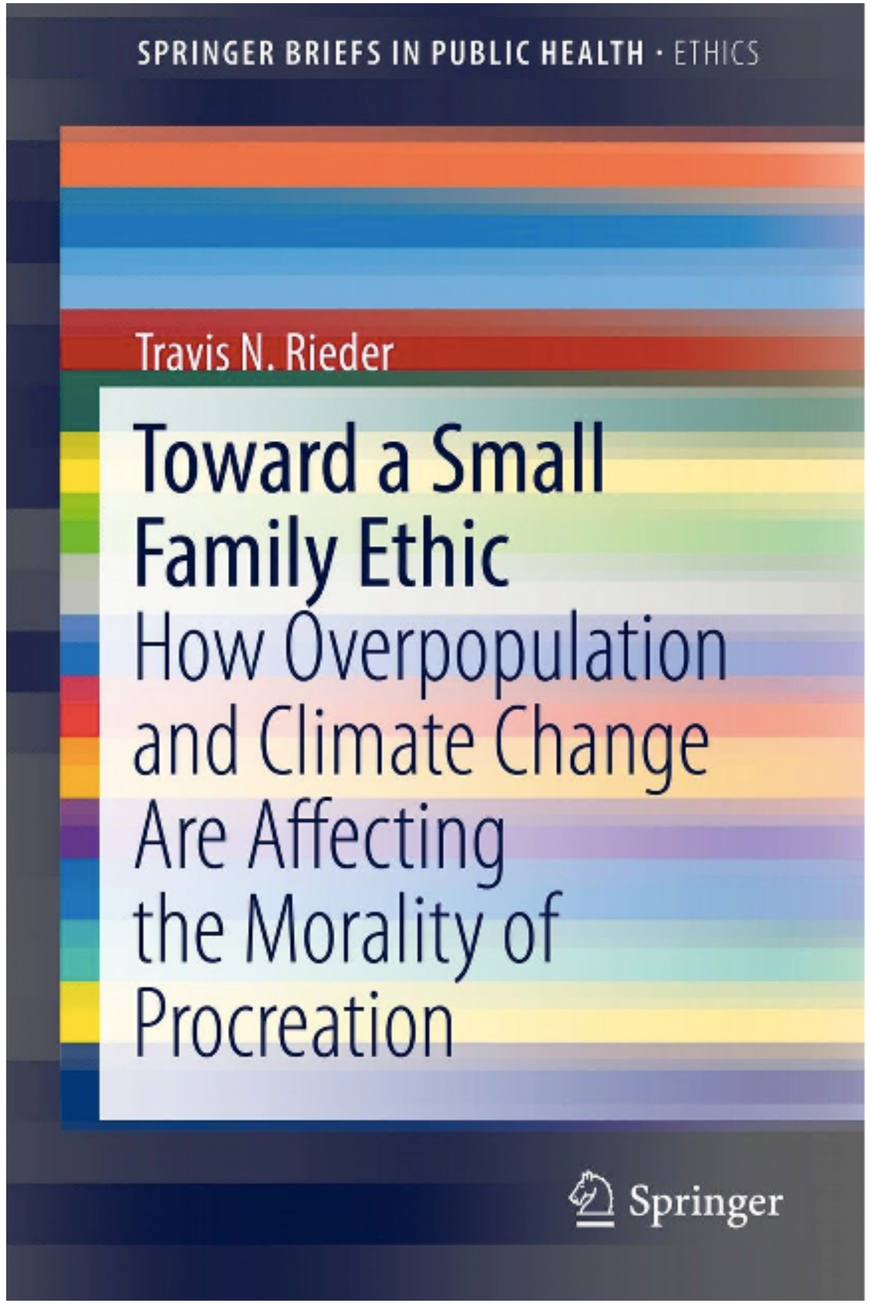


years. Our population is growing so fast that anyone alive today who was born prior to the mid-1960s has seen the population *double*.[1] In other words: we humans have made a lot of people very quickly. The concern that will occupy me in the rest of this short book is that we now have very good evidence that we made too many.

Social and Political Context

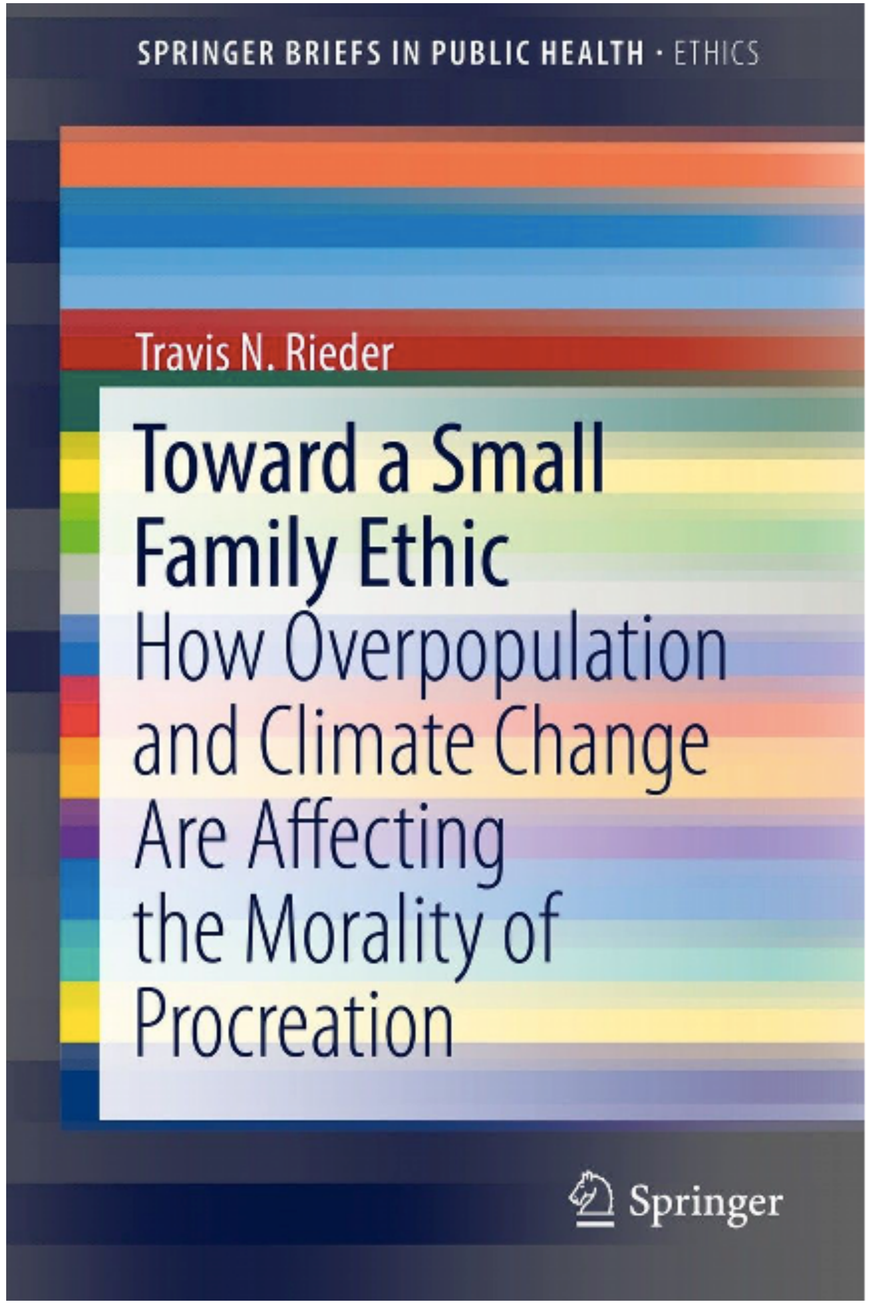


quickly enough. We are on track to be at nine or ten billion by 2050,[3] and so a question that gets asked a lot is whether the earth can sustain a population of ten billion people. However, the answer to that question is, in one sense, unequivocally 'yes'. If those ten billion people renounce all unnecessary greenhouse gas-producing activities, turn to a sustainable vegetarian diet, and live simple lives, then there is no reason to think that the world cannot support a population of ten billion. Call this fictional version of our future **Modest World**.

On the other hand, we might think both that such a conversion by the world's wealthy is unlikely, and that we have a duty of justice to pull some of the world's poorest people out of poverty, increasing their resource consumption. Can the earth support a population of ten billion people, some of whom are fantastically well-off, and the rest of whom are living decent lives? Let's call this case **Excess World**.

Finally, we can even consider what is likely to be the *actual* constitution of a population of ten billion people: a population much like ours, only bigger. Such a population has some fantastically wealthy people, who consume a vast majority of the planet's resources, and then very, very many poorer people, who live modest or desperate lives, and who consume far fewer resources. Perhaps this is the population that, as a matter of realism, we ought to be most concerned with, so let's call this one **Real World**. Can the earth sustain this version of our future selves?

Social and Political Context

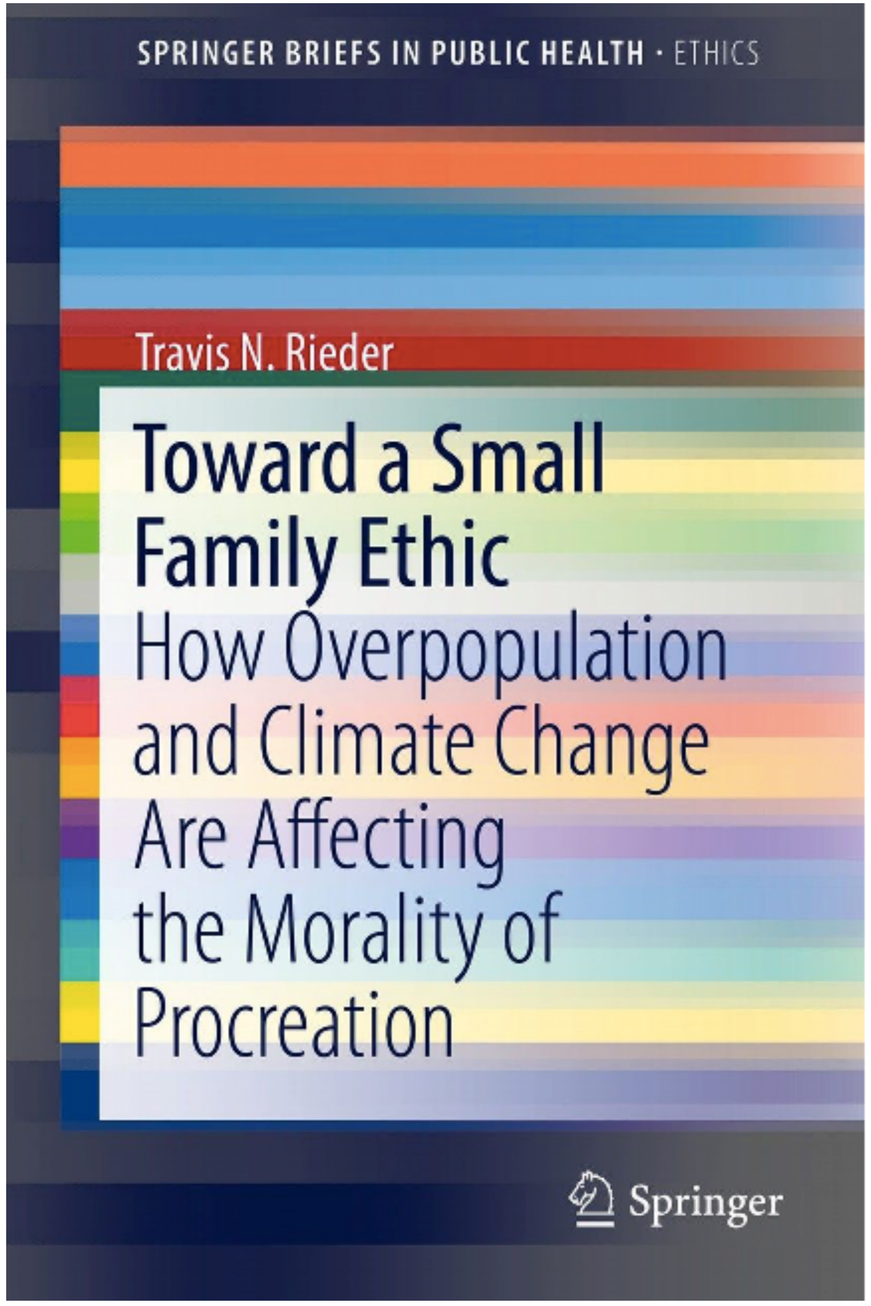


1.5 Conclusion: The Population Crisis is a Public Health Emergency

The main lessons of this first chapter are (1) that population is a major driver of climate change, in addition to raising concerns about other limited resources; and (2) that climate change is a morally urgent problem. As a result, it seems appropriate to say that we have a *population crisis*—that the size of our population generates a problem that is massive in scale and dire in consequence.

The final observation that I want to make here, then, is that the population crisis presents us with a particular kind of threat—namely, one in 'public health'. A failure to mitigate climate change is a failure to adequately protect the well-being of the population as a whole, albeit while allowing disproportionate harm to the poor and the weak. But who, exactly, fails the population? Who is responsible for the harms of climate change? It is difficult to say, but whatever the answer is, it

Social and Political Context



Significant Difference : If the consequences of an act make no significant difference to the extent or severity of a moral problem, then the agent is not morally required to refrain from acting in light of the moral problem.

Another comparison to help us see the fairly radical effect that procreation has on one's emissions is by comparing it to one's lifetime, non-procreative emissions. According to Murtaugh and Schlax's calculations, the fact of carbon legacy—that is, the fact that one's children will go on to live and emit, and perhaps procreate themselves—results in the rather strange implication that the activity of having a child raises one's lifetime carbon emissions *by several times*. In particular, on the same constant-emissions scenario, each child that an individual has adds about 9441 metric tons of carbon dioxide to her carbon footprint , which is *5.7 times the lifetime average emissions of an American's non-procreative activities* (2009, p. 14).

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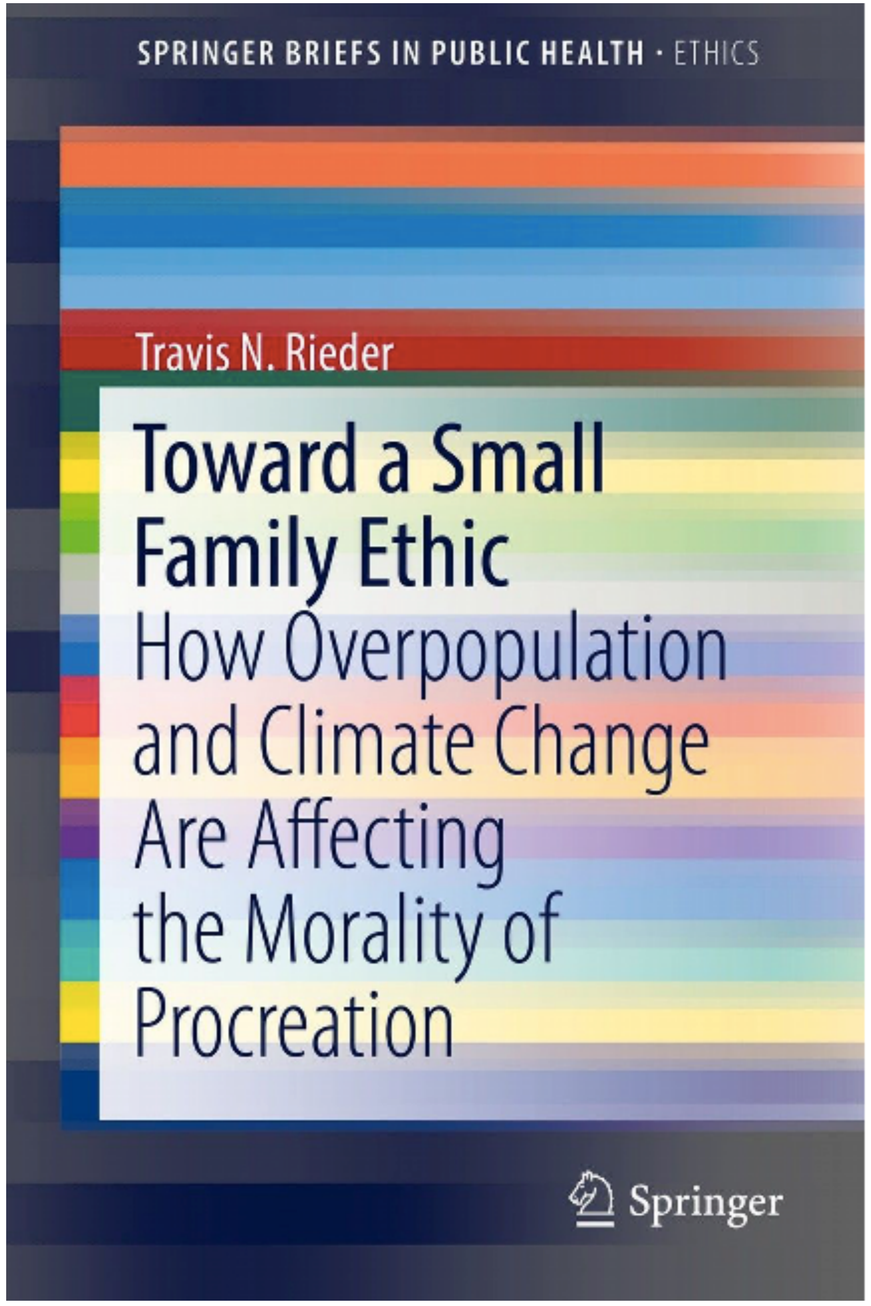

Principles in favor of limiting procreation :

- Duty not to contribute to harm - not to contribute to massive, systemic harm
- Duty to justice
- Obligation to our potential children

Jeff Mcmahon (1981):
The Asymmetry: Although the prospect of pain and suffering in the life of a child provides one with reason not to create that child, the prospect of happiness in the life of a child provides one with no reason to create that child.

Rieder, Travis N.. Toward a Small Family Ethic: How Overpopulation and Climate Change Are Affecting the Morality of Procreation (SpringerBriefs in Public Health) (Kindle Locations 952-953). Springer International Publishing. Kindle Edition.

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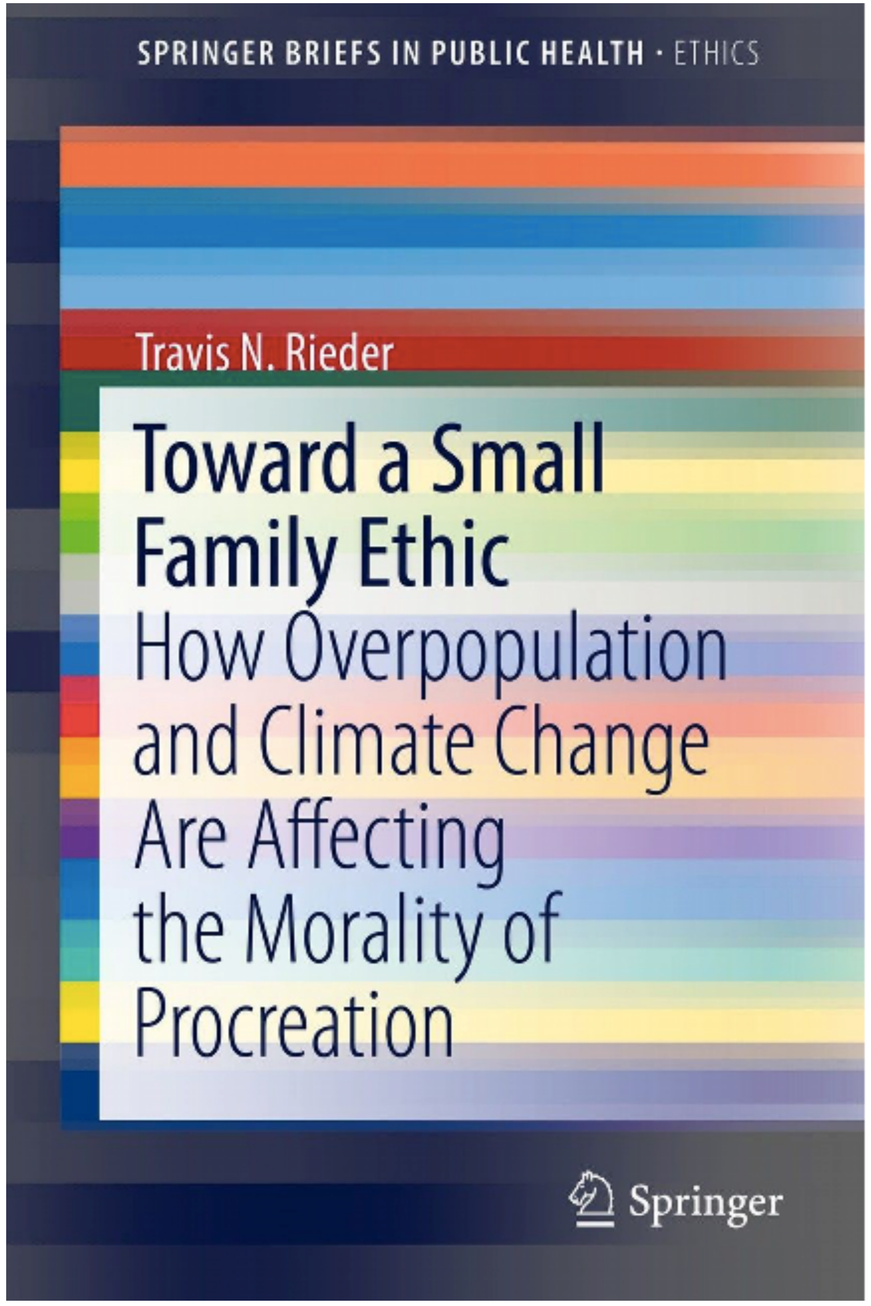

We are left, I think, with a moral burden to have small families. The powerful reasons in favor of limiting procreation generate a demand for justification; if one fails to meet this demand, then her procreative activity is morally unjustifiable. And meeting this demand, I think, becomes progressively more difficult as one has more children. Given the moral burden to have small families, having any children at all may well be unjustifiable for many people; for some of the rest of us, the case for having one child seems fairly compelling. Might some people be justified in having more than one? Perhaps. But the burden is on them to make the case. Morality has more in its arsenal than merely obligation , duty and rights; reason s can burden us, and acting justifiably looks, to me, to pressure us towards small families.

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