

The Sustainability and Conservation Leadership Program at ODU



Learning Sustainability and Conservation by Experience
2023 Orientation Workshop, May 11, 2023

Sustainability and Conservation Leadership

Sustainability and Conservation Leadership

- Minor and Grad. Certificate
 - 466W/566 Mitigation and Adaptation Studies
 - 467/567 Sustainability Leadership
 - 369/669 Internship Conservation Leadership

- Minor:
 - two electives

- Grad. Certificate:
 - 668: Participatory and Agent-Based Modeling, Simulation and Visualization
 - one elective



Interdisciplinary Minor in Conservation Leadership

The Interdisciplinary Minor in Conservation Leadership focuses on conservation solutions in the context of our quickly changing planet. A goal of this new program is to develop the next generation of conservation leaders with the ability to critically review underlying paradigms and to initiate paradigm shifts where they are needed to address the challenges of sea level rise and climate change in conservation roles, such as in local, state and federal agency and non-profit sectors. The core of this 15 credit minor is built around two courses on Adaptation Studies and Sustainability Leadership. The Sustainability Leadership course is a Service Learning course that requires travel for fieldwork. Two additional courses are electives, which can be selected across disciplines to suit a wide-range of conservation interests. An Internship is the capstone of this minor.

Program Structure:

Fifteen (15) credits; five 3-credits courses

I. Core Courses

- IDS466W Mitigation and Adaptation Studies
- IDS467 Sustainability Leadership (Service Learning)

II. Electives

- Two elective Courses from the list

III. Internship

- IDS 369 Internship in Conservation Leadership

Learning Outcomes:

Graduates of this interdisciplinary minor will understand uncertainties in projection of climate and sea level and be able to develop foresight. They will possess the ability to identify assumptions and paradigms that are the basis of decision making, and to initiate shifts in those paradigms if needed, using a systems approach to address the complex challenges posed by climate change and sea level rise.

Interested in this minor? Please contact:

Dr. Tatyana Lobova,
Department of Biological Sciences,
Interdisciplinary Minor Coordinator, tlobova@odu.edu

For more information see http://www.mari-odu.org/academics/cl_minor



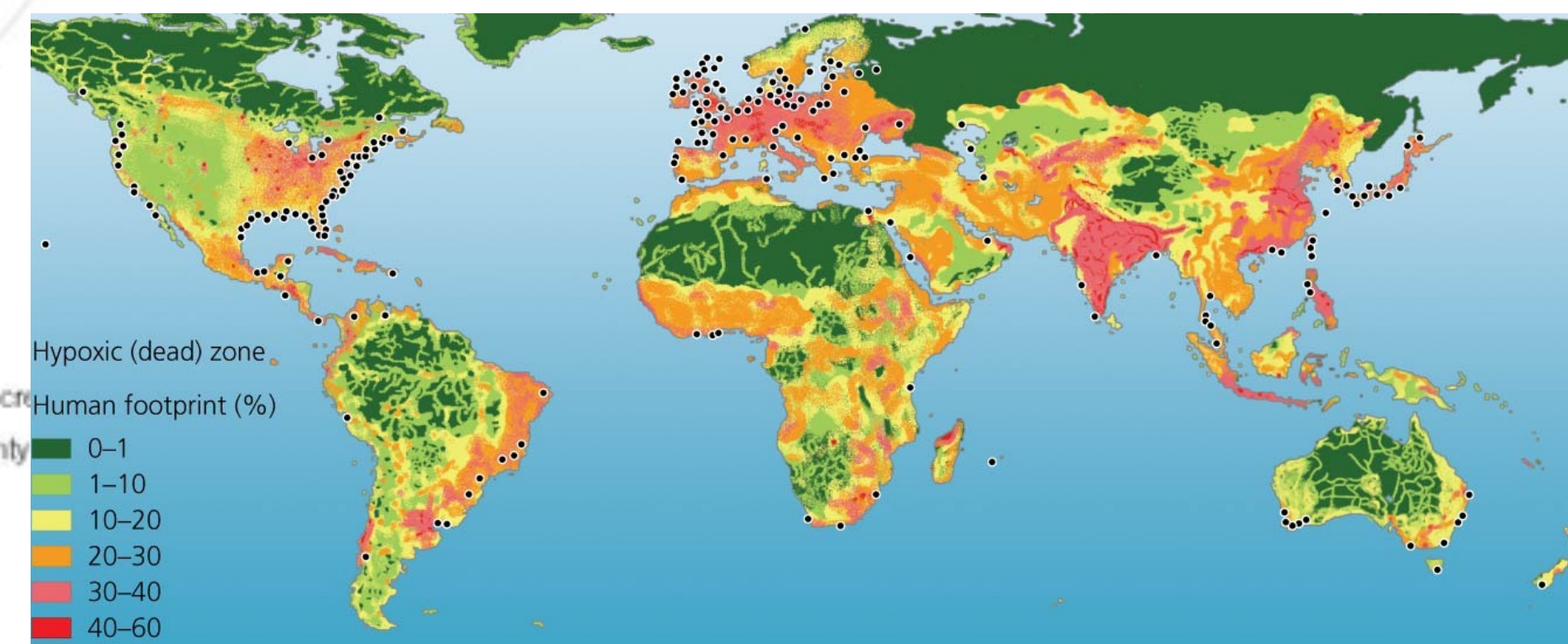
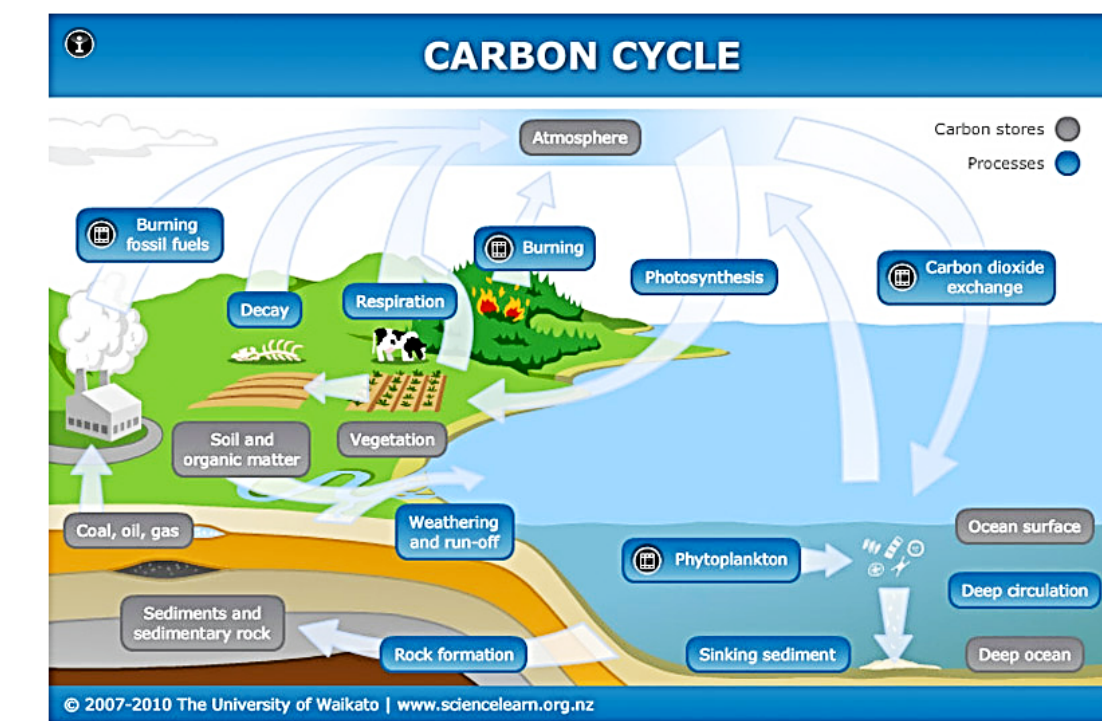
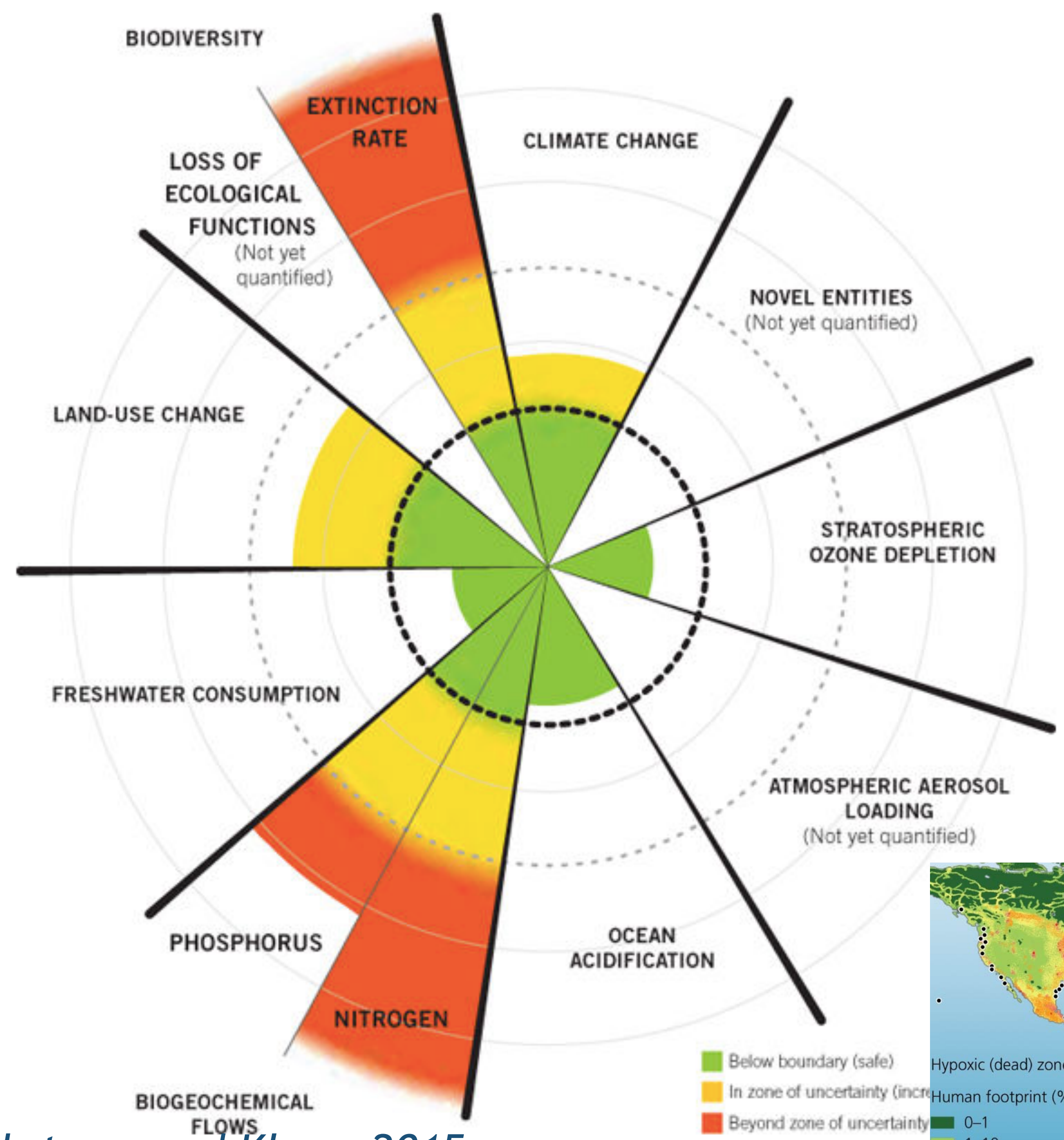
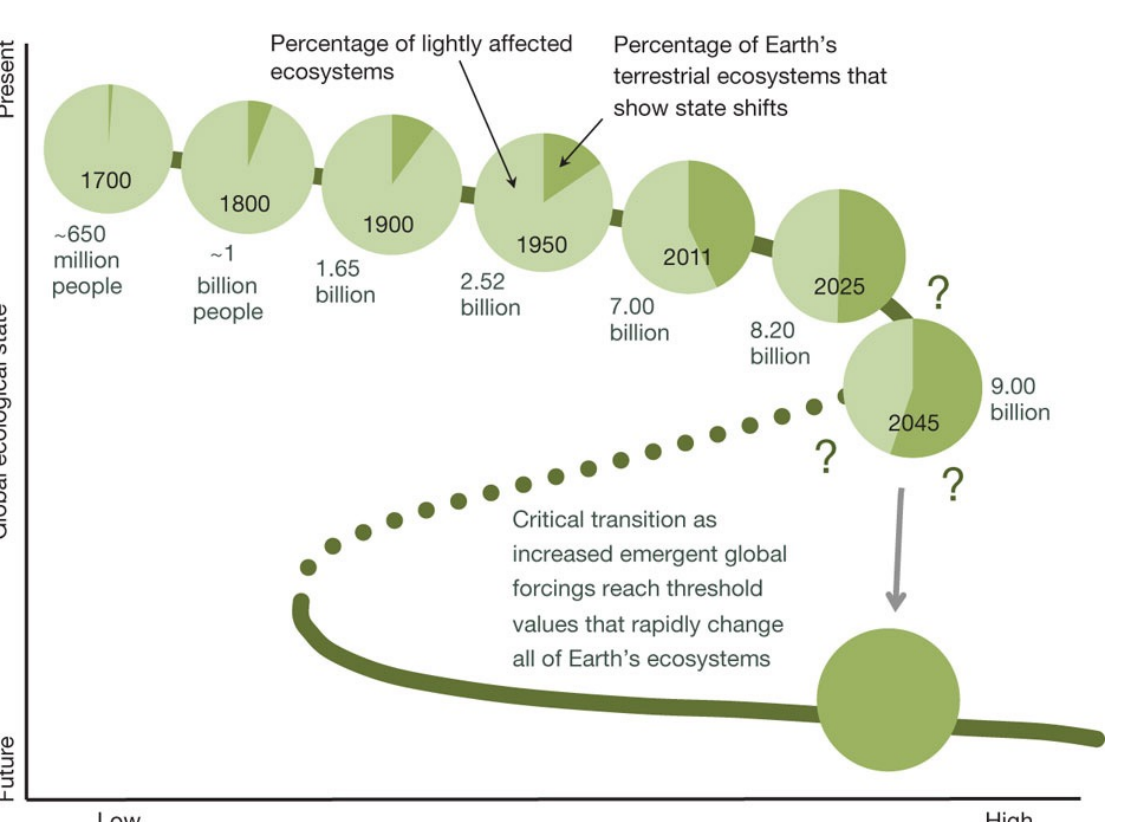
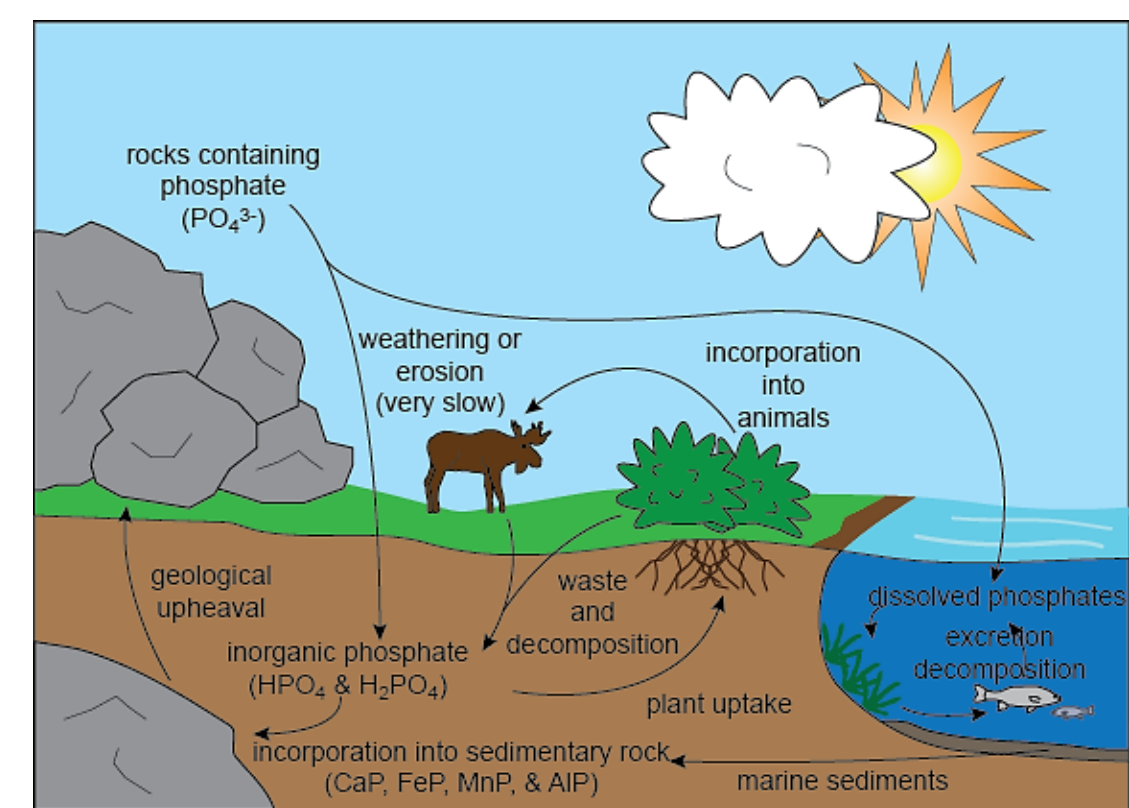
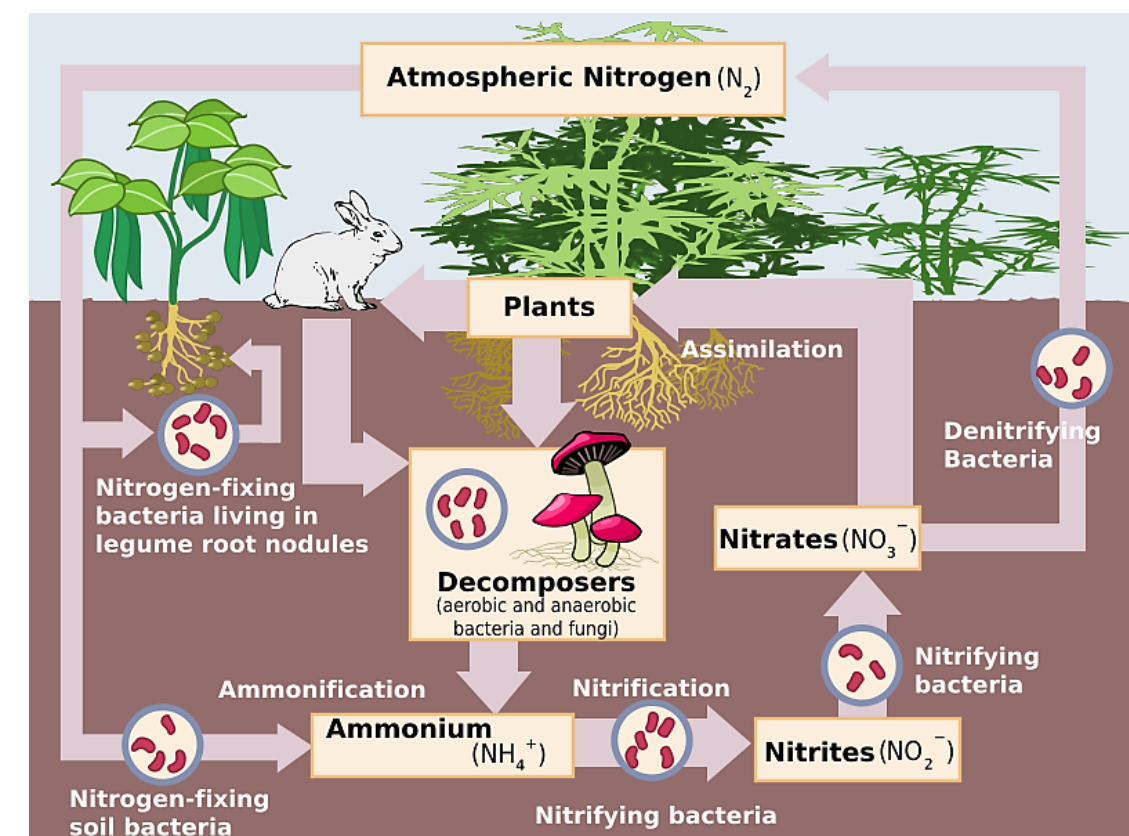
Elective Courses:

- BIOL 404 Conservation Biology
- GEOG 305 America's Public Lands
- GEOG 305 World Resources
- GEOG 419 Spatial Analysis of Coastal Environments
- ENVH 301W Environmental Health
- HLSC 405 Interprofessional Study Abroad on Global Health (SL)
- PRTS 405 Outdoor Recreation
- PRTS 433 Camp Administration
- PRTS 406 Outdoor Leadership & Environmental Education
- OEAS 310 Global Earth Systems
- PAS 300 Foundations of Public Service
- PAS 301 Ethics, Governance and Accountability (SL)
- PAS 409 Leadership and Cultural Competence
- PAS 411 Multi-Sector Partnerships for Public Service
- POLS 335 Environmental Politics
- POLS 401 Global Environmental Policy
- POLS 455 The Politics of Climate Change
- PHIL 344E Environmental Ethics
- WMST 395 Women, the Environment and Climate Change



The Challenge

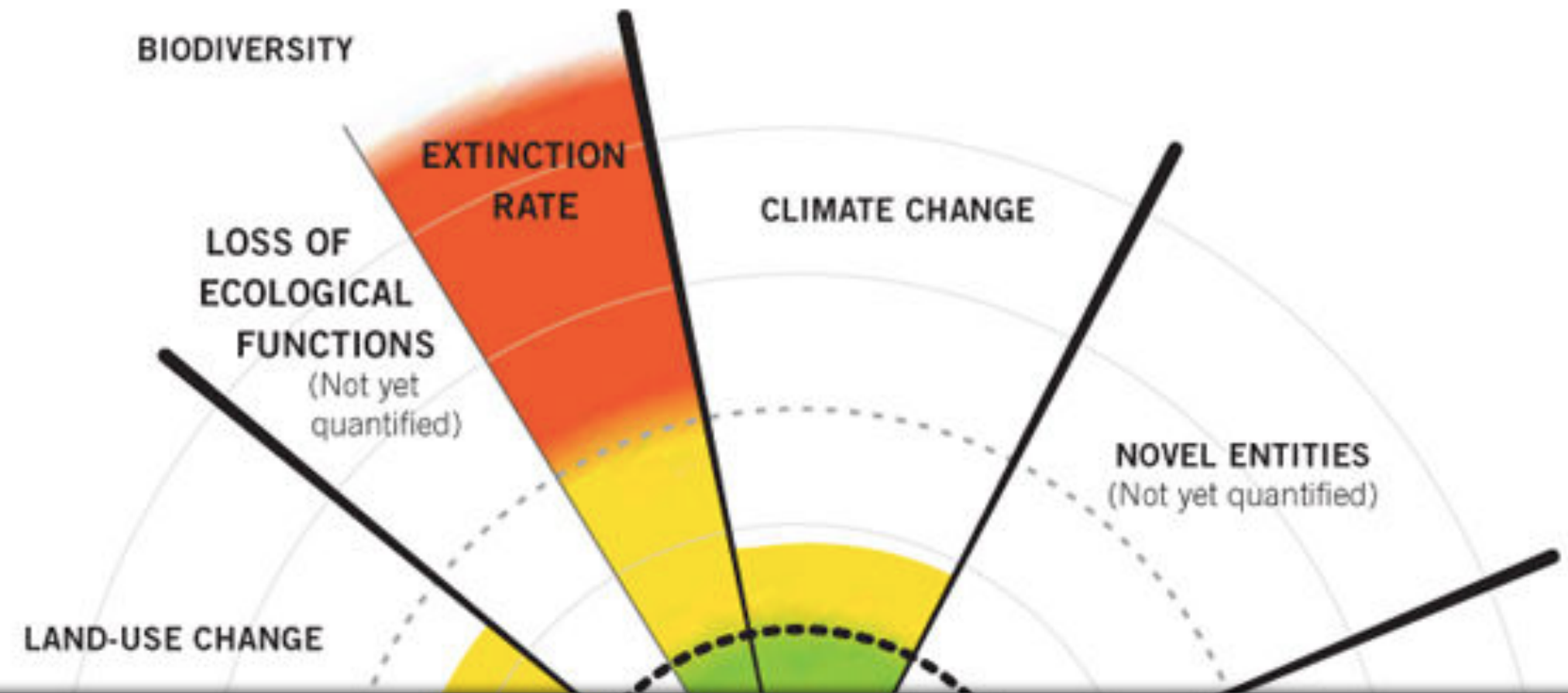
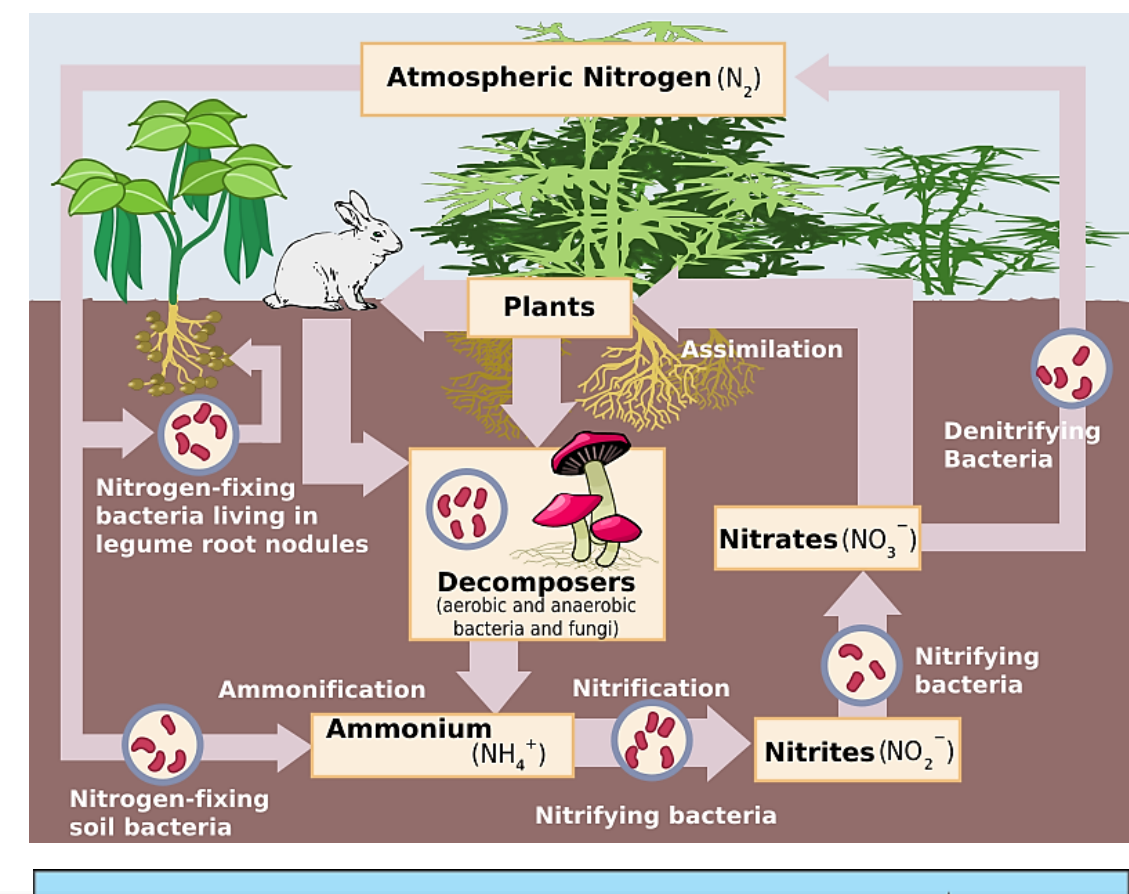
The syndrome of modern global change: what is the prognosis, and is there a therapy?



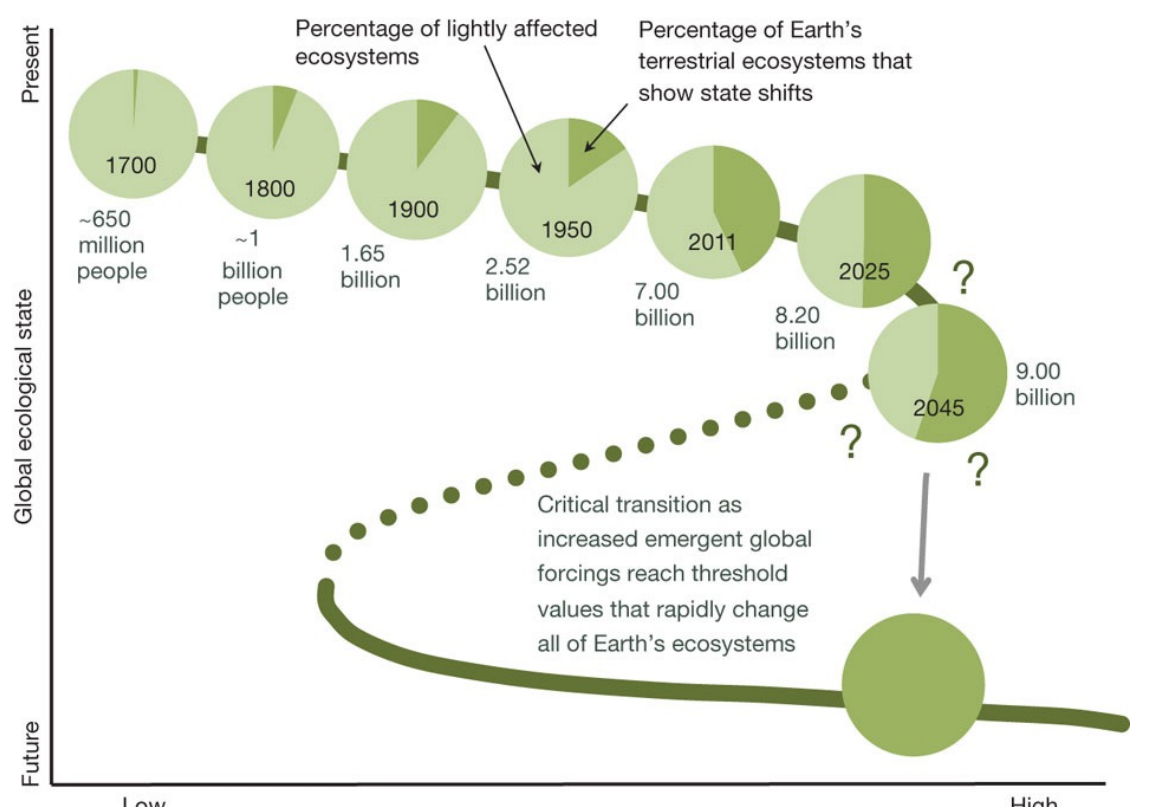
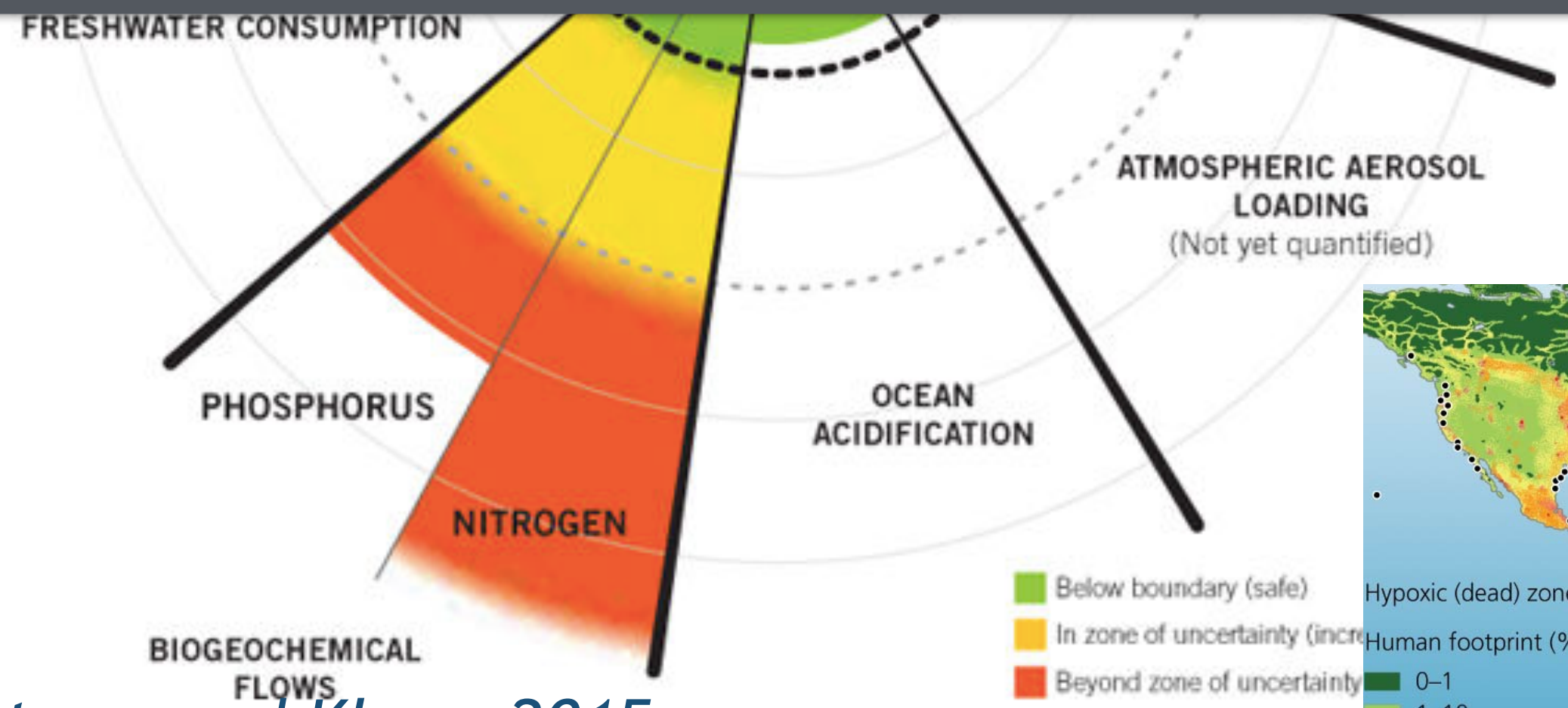
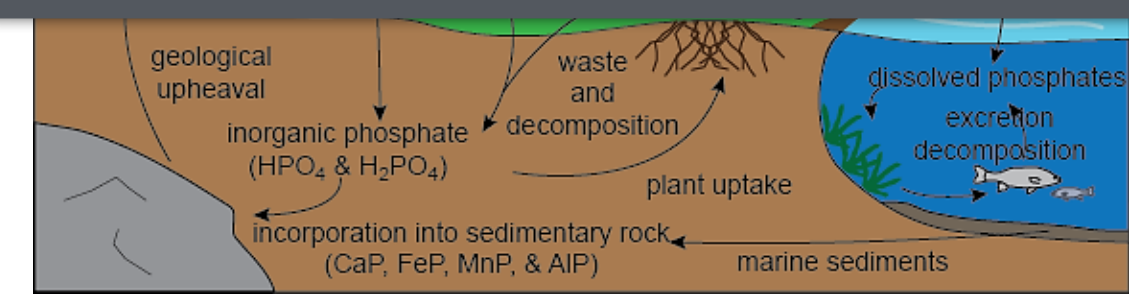
Rockstrom and Klum, 2015

The Challenge

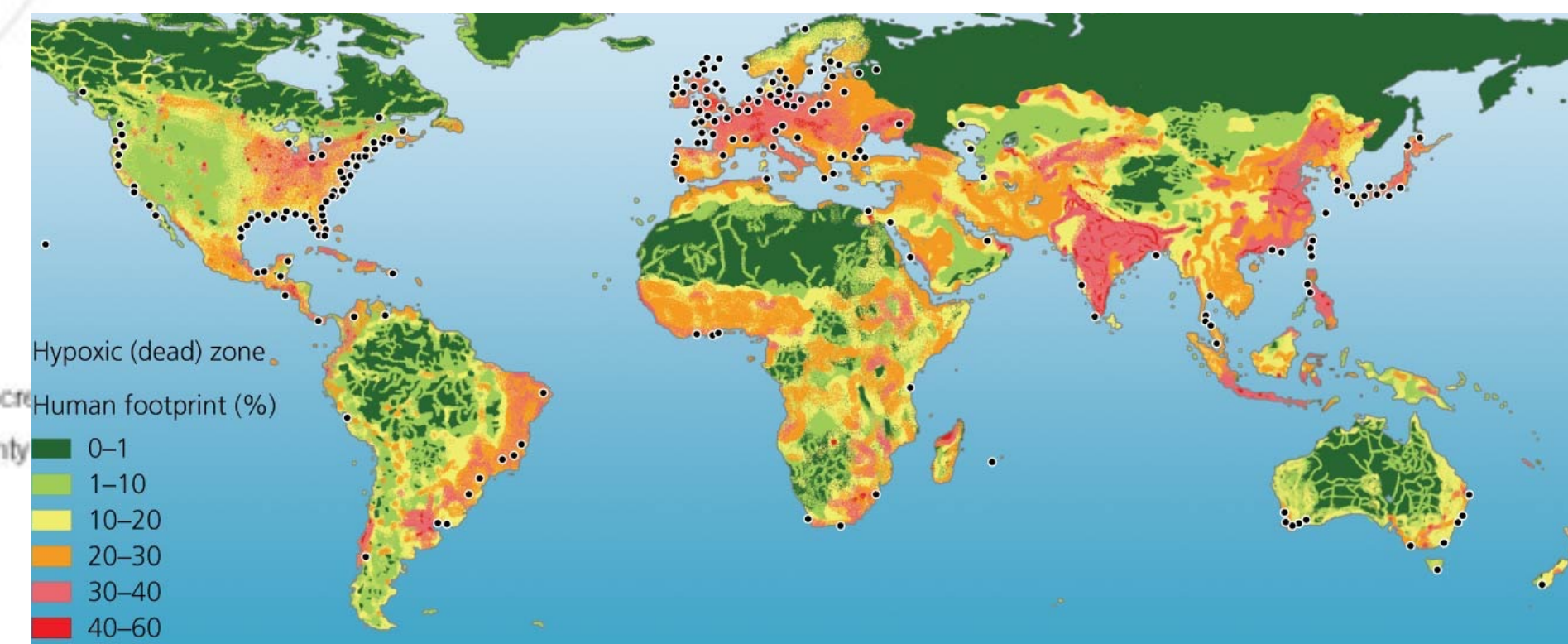
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Triple Challenge of Climate Change, Loss of Biodiversity and Wildlife, Pollution



Rockstrom and Klum, 2015



The Challenge

Viewpoint

World Scientists' Warning to Humanity: A Second Notice

WILLIAM J. RIPPLE, CHRISTOPHER WOLF, THOMAS M. NEWSOME, MAURO GALETTI, MOHAMMED ALAMGIR, EILEEN CRIST, MAHMOUD I. MAHMOUD, WILLIAM F. LAURANCE, and 15,364 scientist signatories from 184 countries

Twenty-five years ago, the Union of Concerned Scientists and more than 1700 independent scientists, including the majority of living Nobel laureates in the sciences, penned the 1992 "World Scientists' Warning to Humanity" (see supplemental file S1).

deforestation, and reverse the trend of collapsing biodiversity.

On the twenty-fifth anniversary of their call, we look back at their warning and evaluate the human response by exploring available time-series data. Since 1992, with the exception

the urgent steps needed to safeguard our imperilled biosphere.

As most political leaders respond to pressure, scientists, media influencers, and lay citizens must insist that their governments take immediate action as a moral imperative to current and



clubofrome.org/impact-hubs/climate-emergency/



IMPACT HUBS

PUBLICATIONS

NEWS

ABOUT US



HOME / IMPACT HUBS / PLANETARY EMERGENCY

Planetary Emergency

The Planetary Emergency Impact Hub aims to raise awareness of the need for integrated responses to the interconnected challenges humanity faces such as climate change, biodiversity loss and growing social inequality. It highlights the need to reform our governance structures and identifies opportunities and tangible pathways to reshape our finance system, rethink our economic models and reimagine our communities to allow us to emerge from emergency.

Preamble:

We humans are ruling the planet! The future of humanity and the planet is in our hands. While we have created a life of prosperity and abundance for many, many more are suffering and the Earth's life-support system is in a planetary emergency. To overcome the emergency and have more of us share in the benefits of our achievements, we all need to come together to face the challenge. Only if we face the planetary emergency can we avoid a dystopic future. Together we need to engage in the urgent actions to change the paths we are on, and together we can develop the pathways to a future where Earth remains a place for all of us..

We recognize: The Earth's life-support system is ailing and the impacts on humanity are increasingly catastrophic.

We understand: The Prognosis for the Earth's life-support system and humanity's future is very dire.

We acknowledge: Many efforts have been made at all levels to save the Earth's life-support system and humanity.

We realize: These efforts are so far failing in that our situation continues to get worse at an ever faster pace.

Therefore: WE, THE CONCERNED CITIZENS OF PLANET EARTH, DECLARE A PLANETARY EMERGENCY.

We pledge to: Unite and engage in urgent actions and longterm transformation to ensure Earth remains a place for us, the human race and all other life.

We will address the immediate urgency through: A number of actions intended to keep our planet a safe operating space for humanity and nature.

To bring us out of the emergency, we will: Facilitate a global agreement on the future we want for humanity and our planet and develop pathways to that future.

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What new leaders are required to help society tackle the Triple Challenge and the Planetary Emergency?

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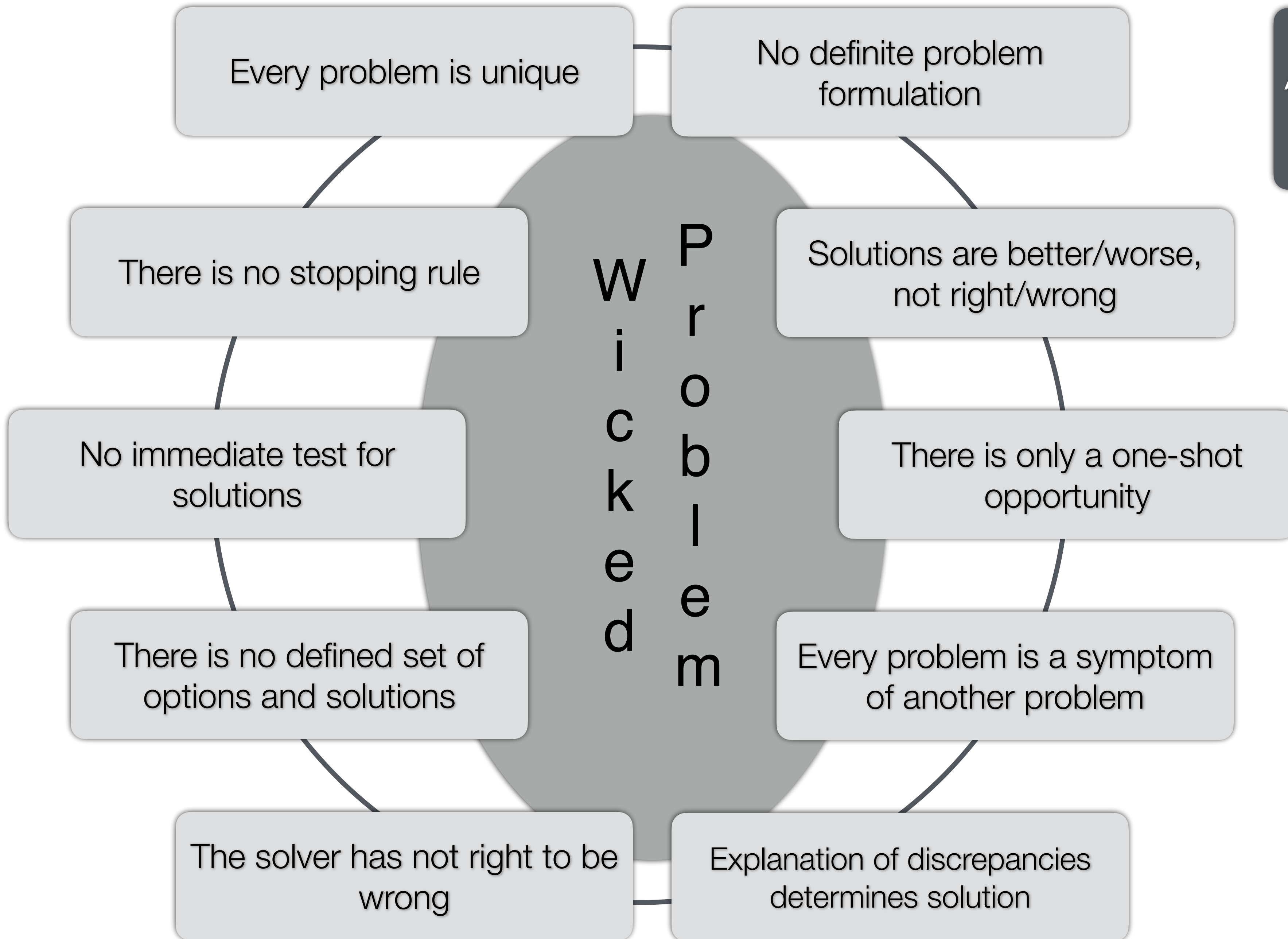
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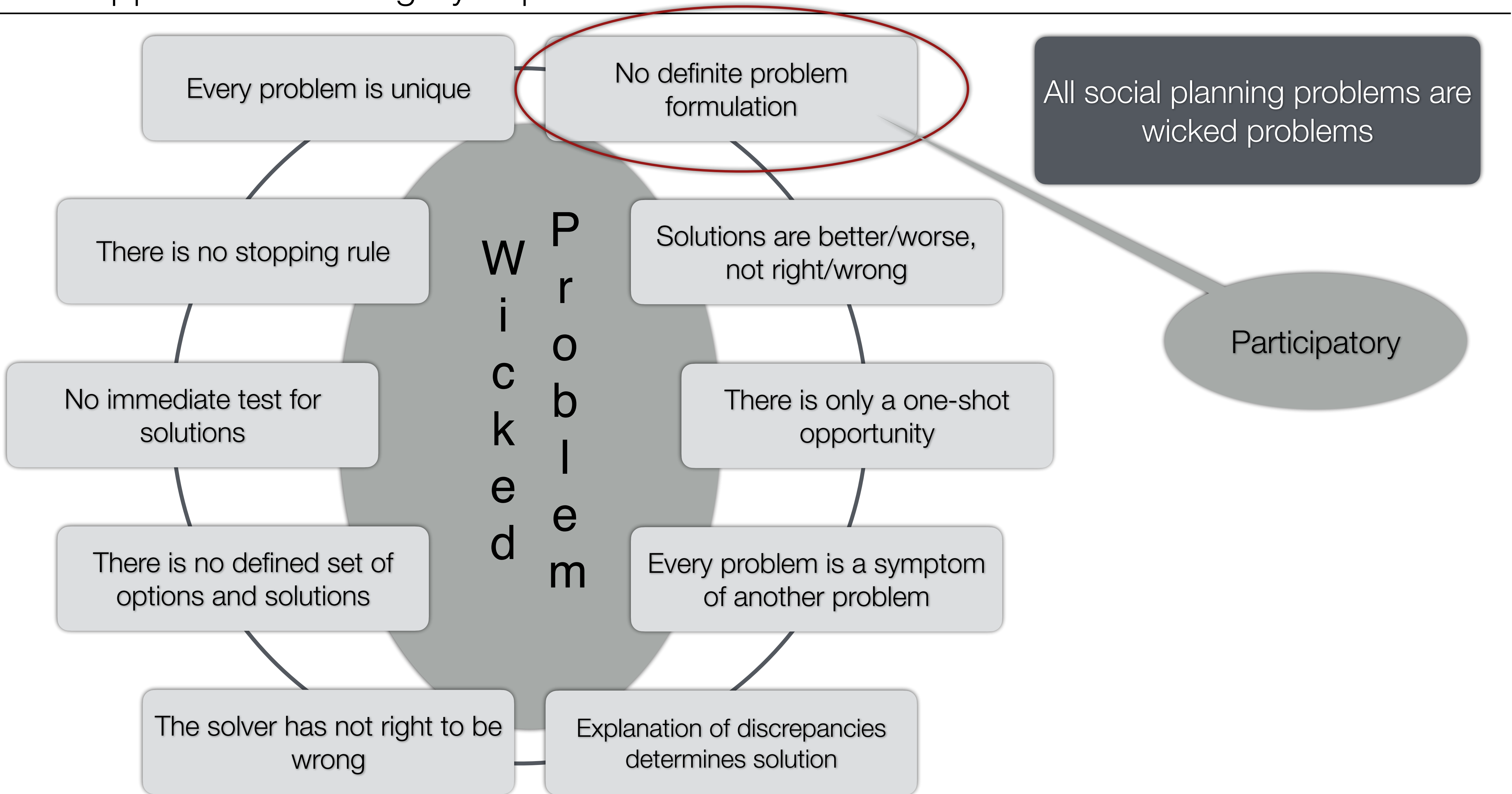
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The Approach: Learning by Experience

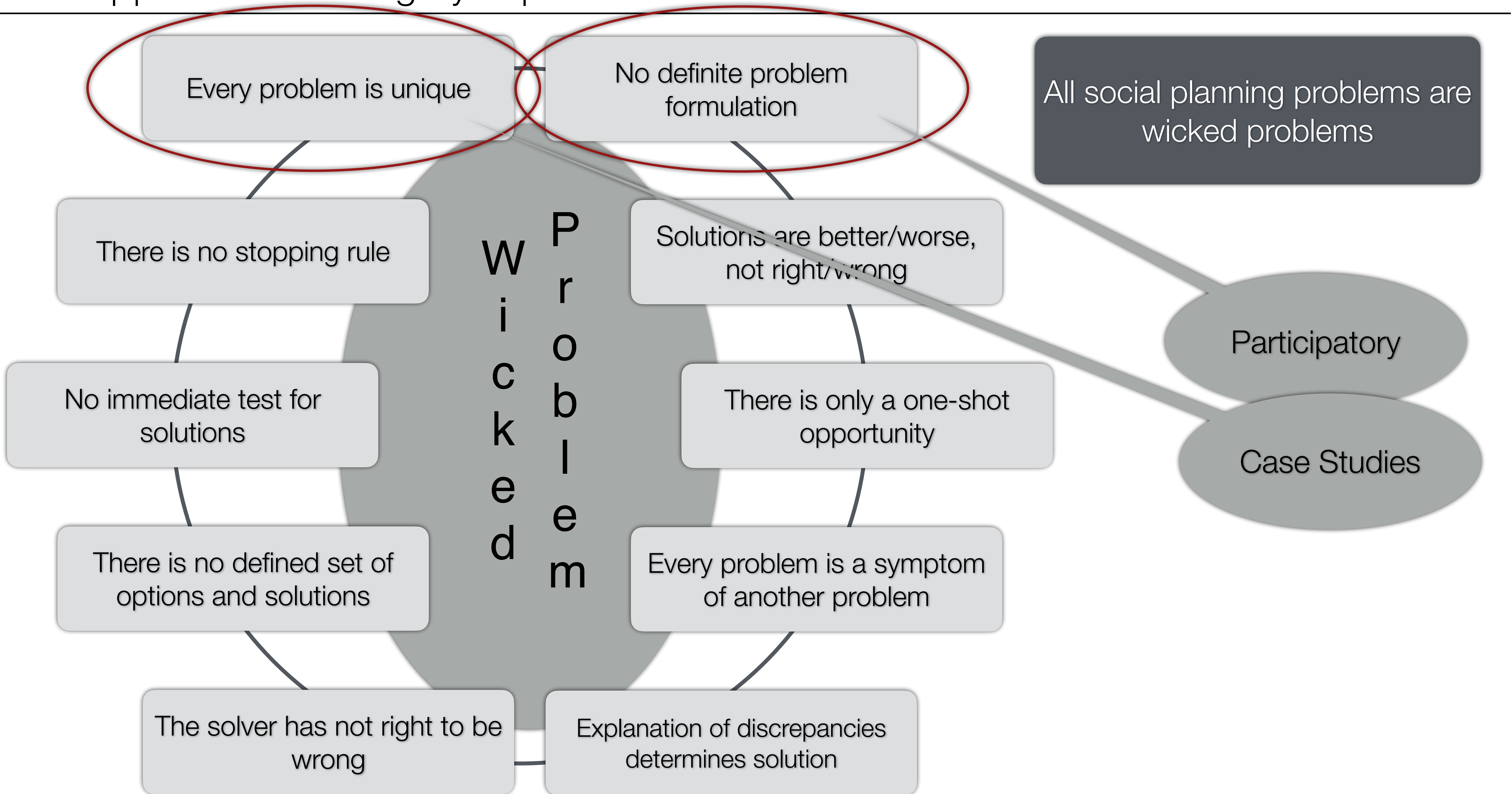


All social planning problems are wicked problems

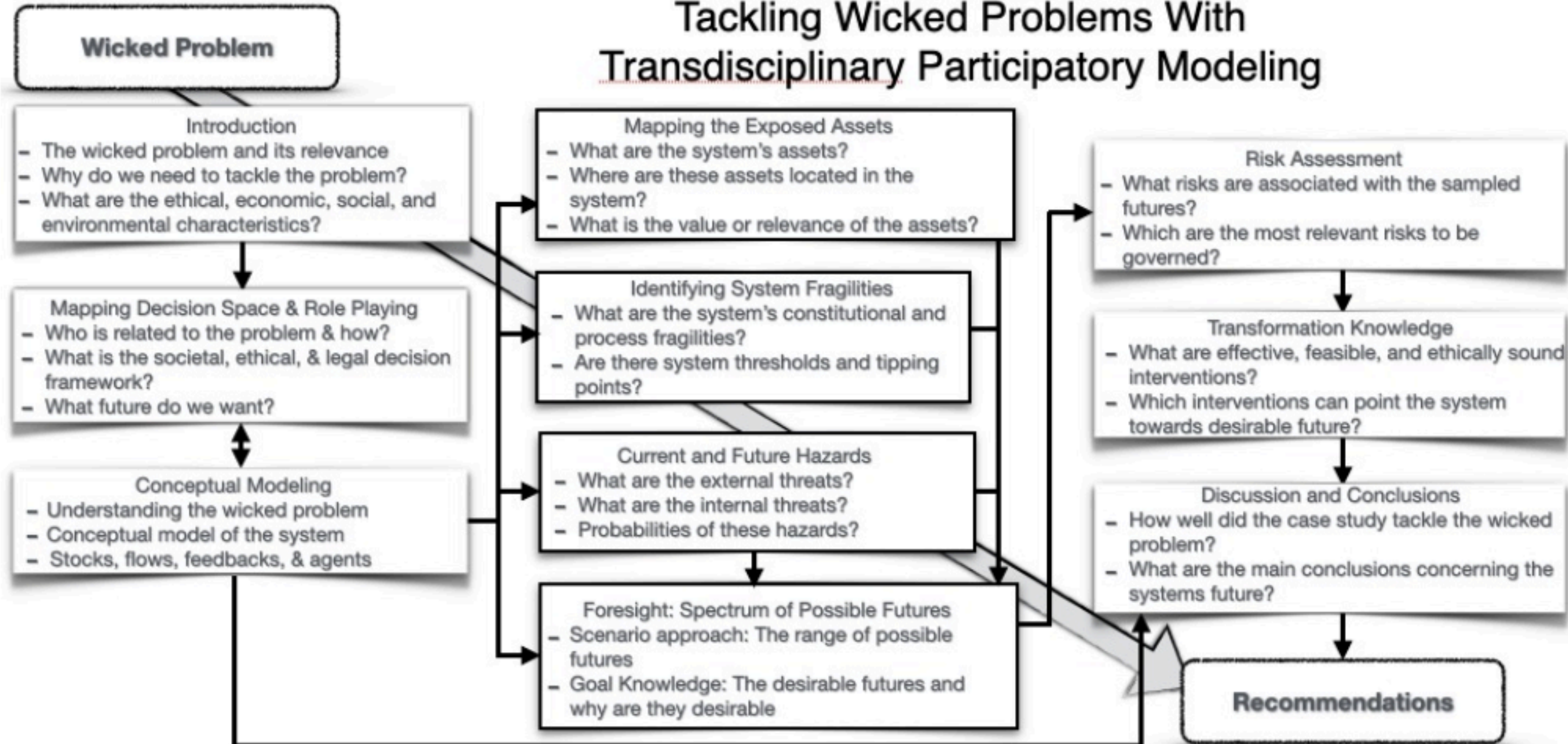
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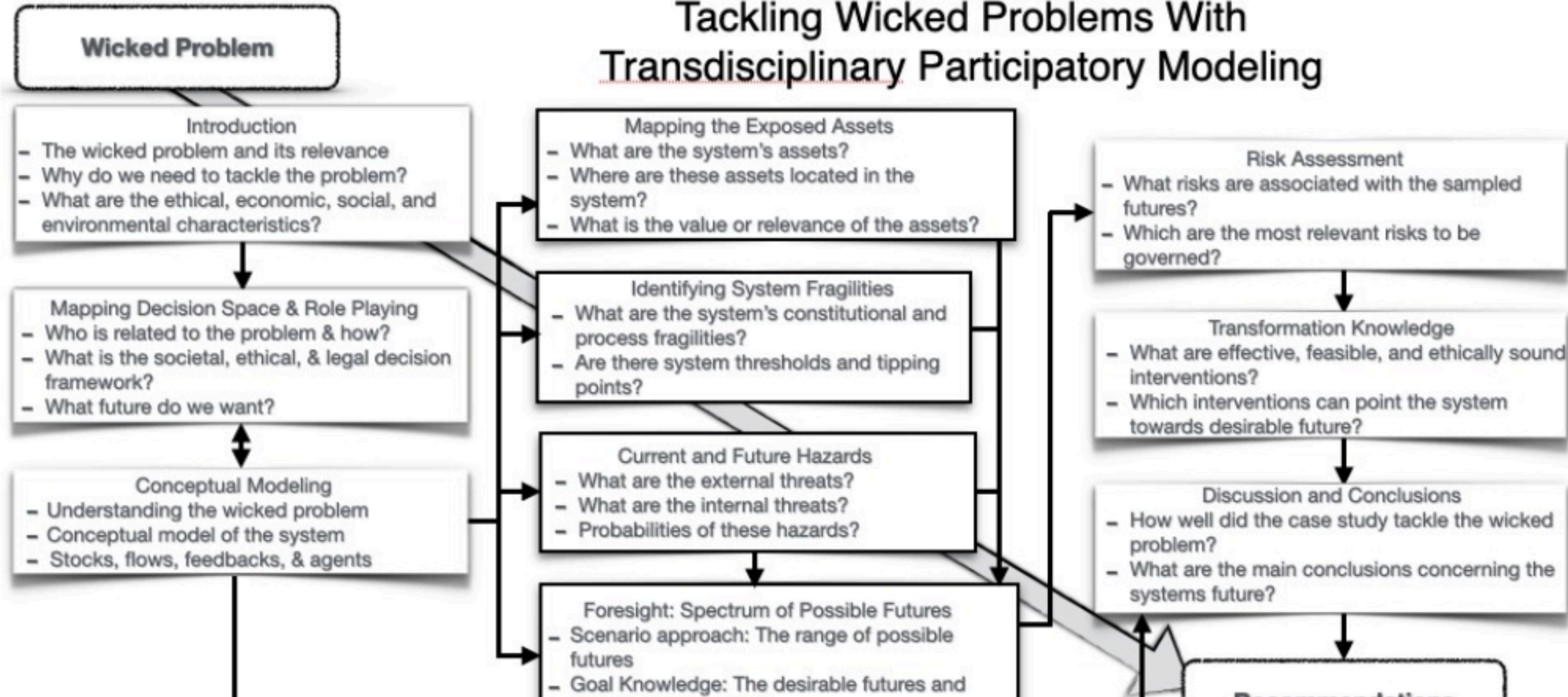
The Approach: Learning by Experience



Tackling Wicked Problems With Transdisciplinary Participatory Modeling

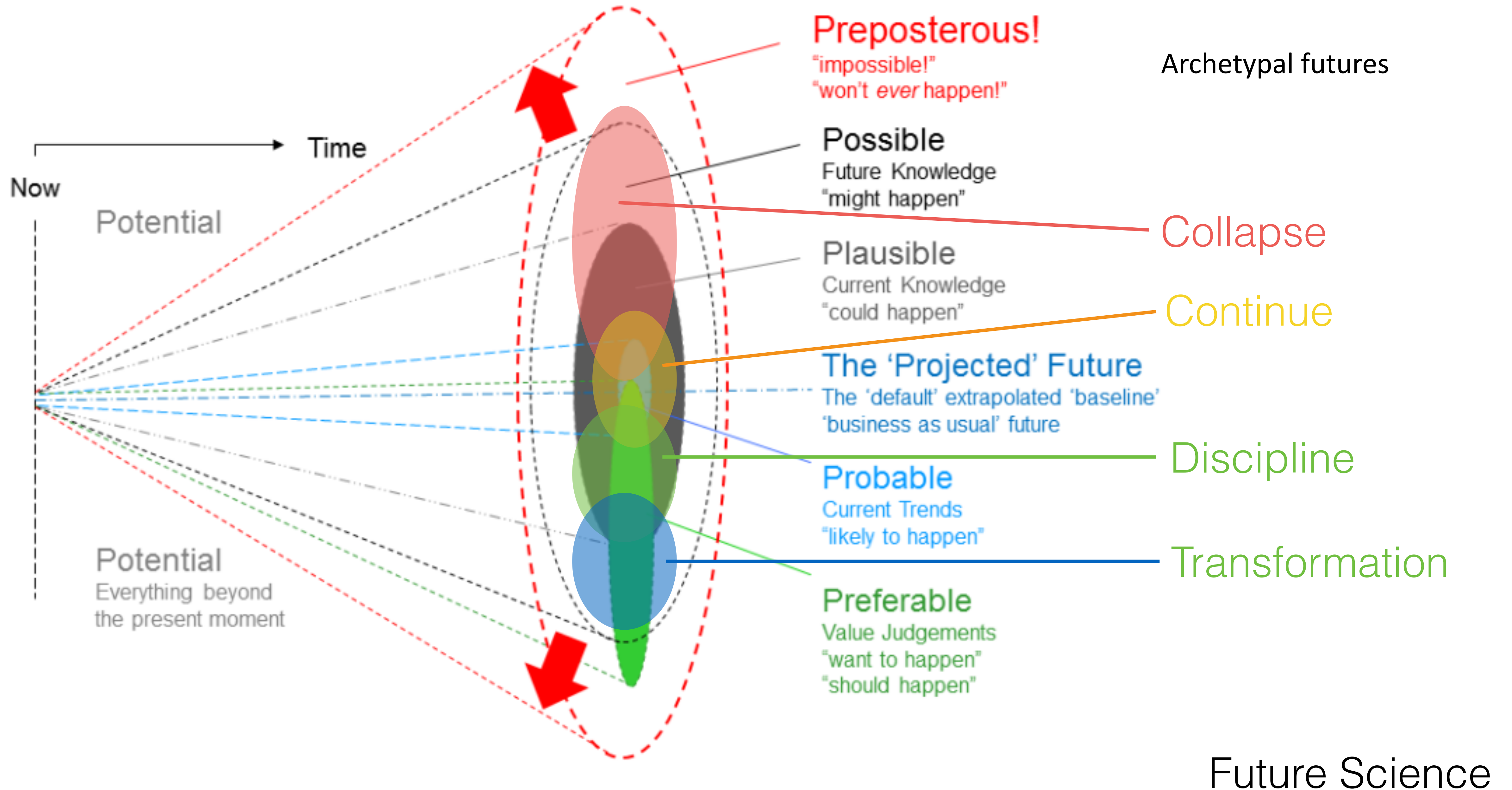


Tackling Wicked Problems With Transdisciplinary Participatory Modeling

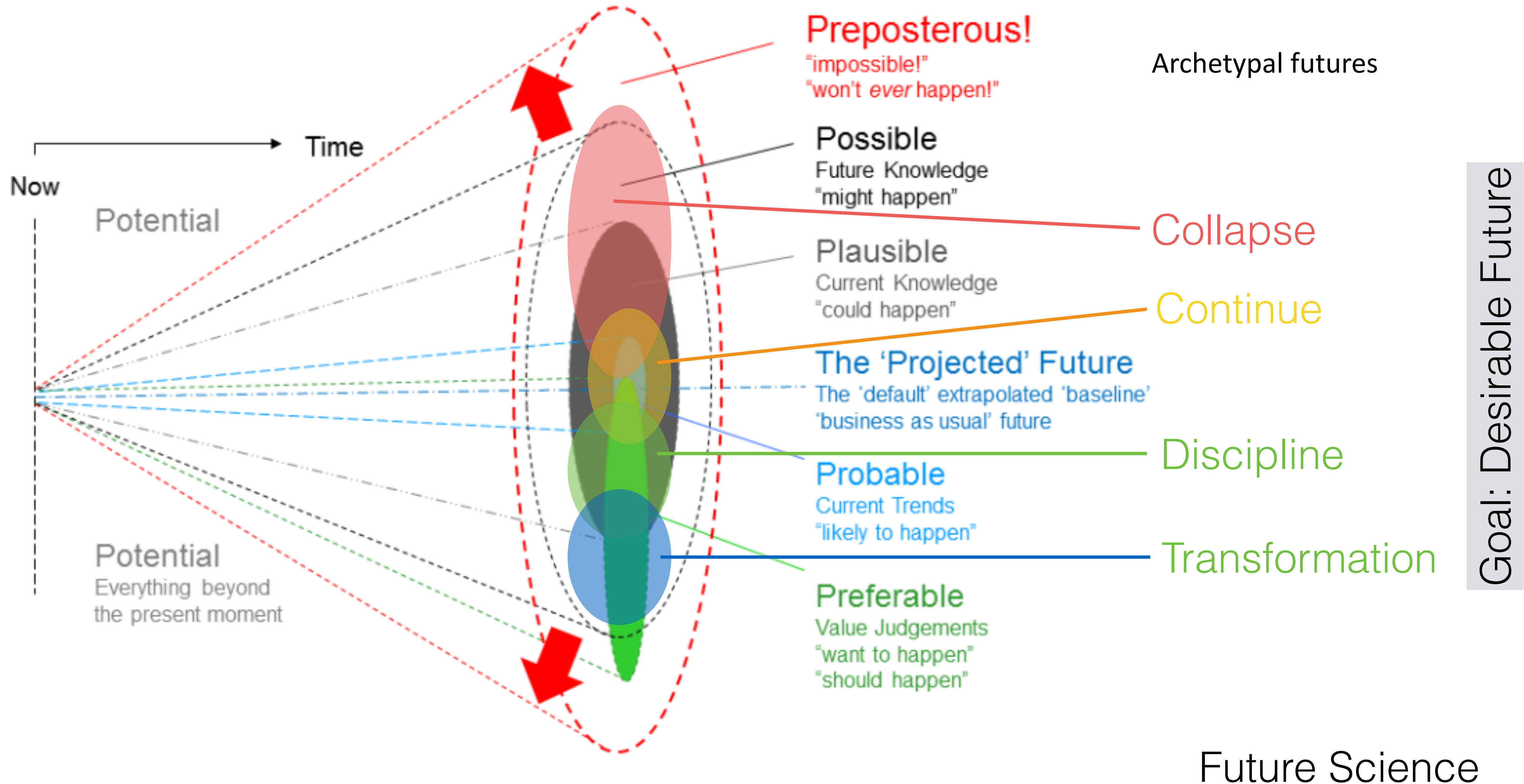


All Case Studies focus on Real-World Problems

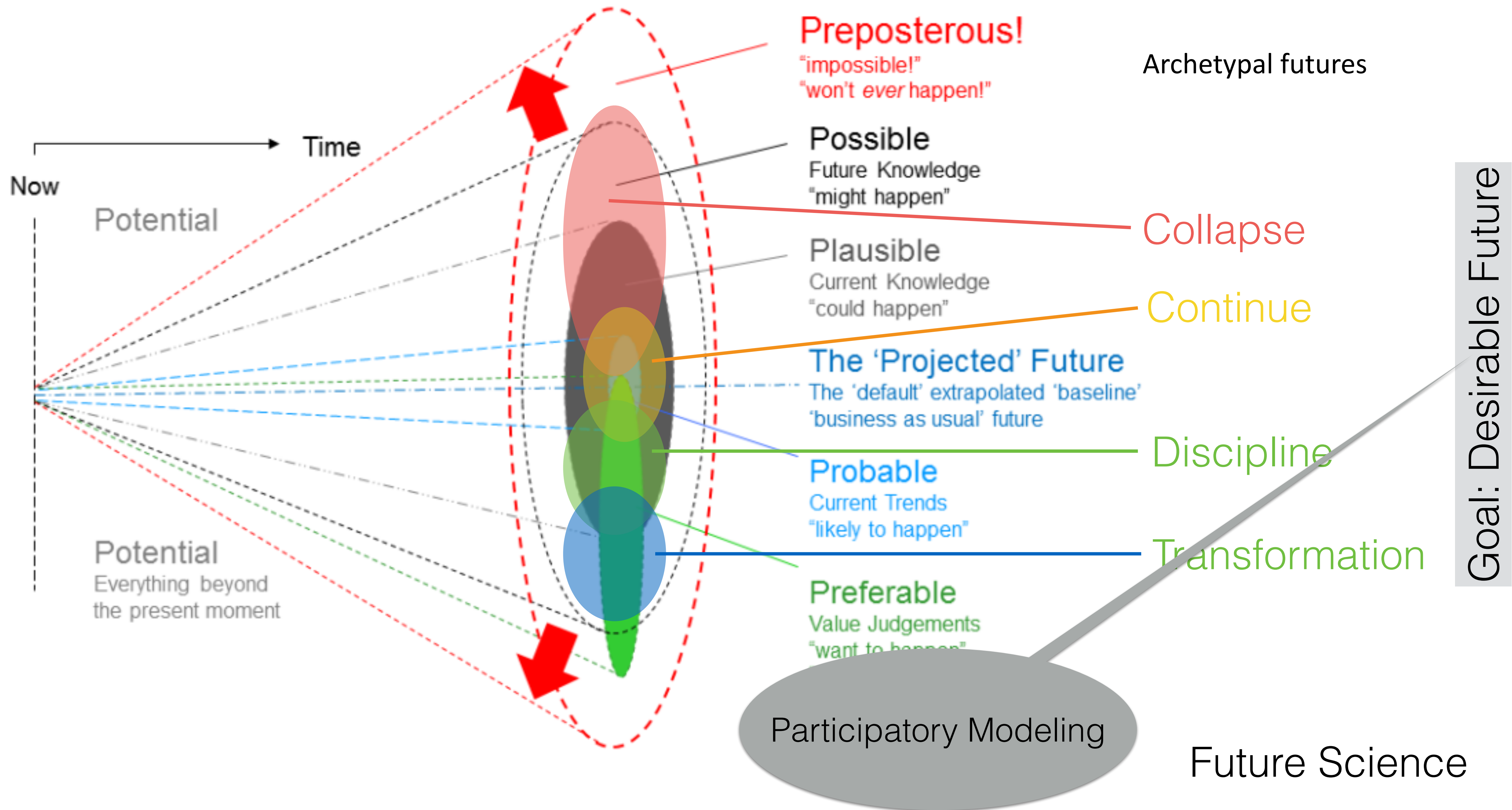
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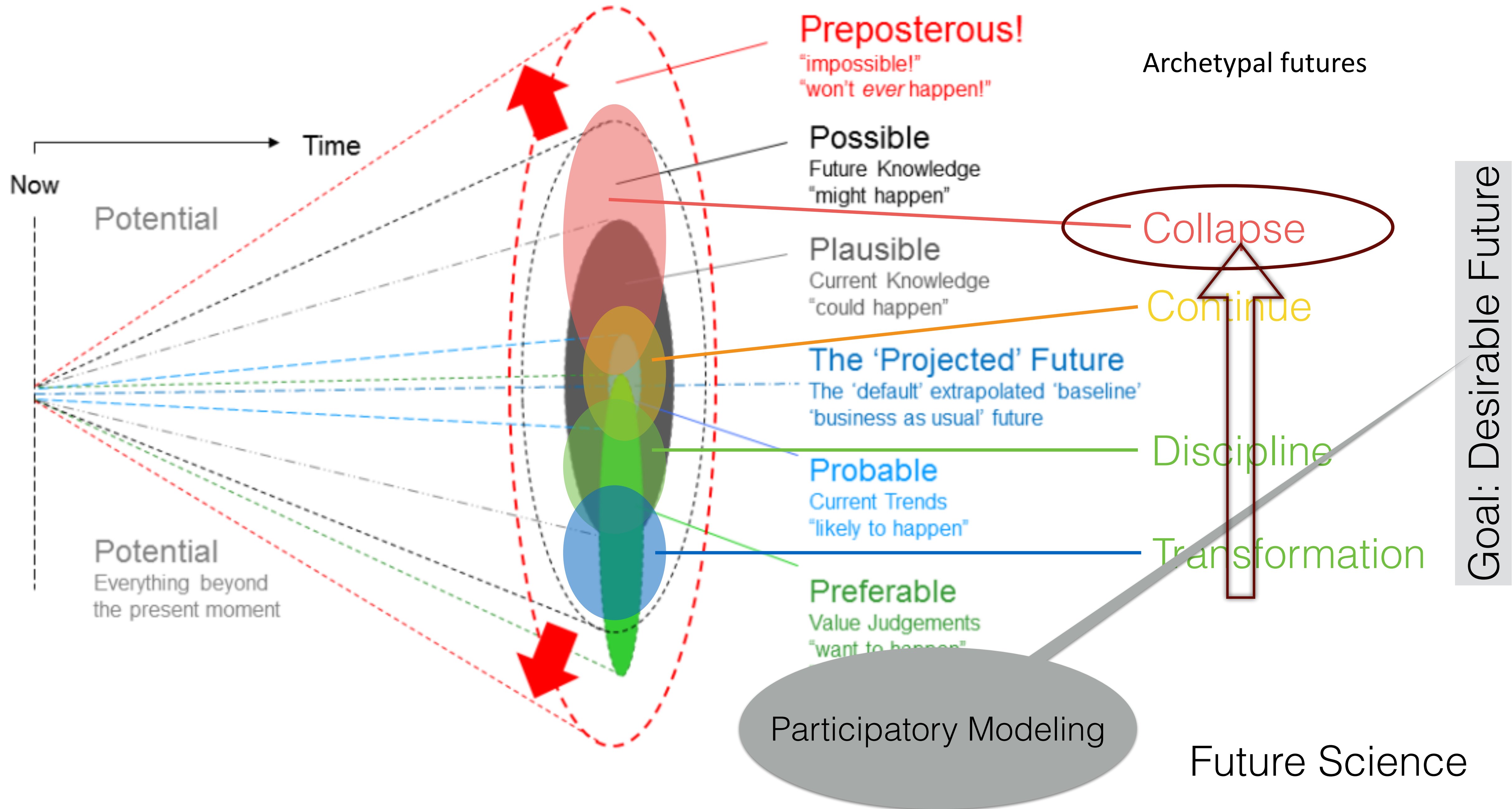
The Approach: Learning by Experience



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The Approach: Learning by Experience

Sustainability and Adaptation Science

Sustainability and Adaptation Science

- What might happen?
- Possible threats and hazards
- Knowing the system trajectory

} System Knowledge

System knowledge
Current state and trends

The Approach: Learning by Experience

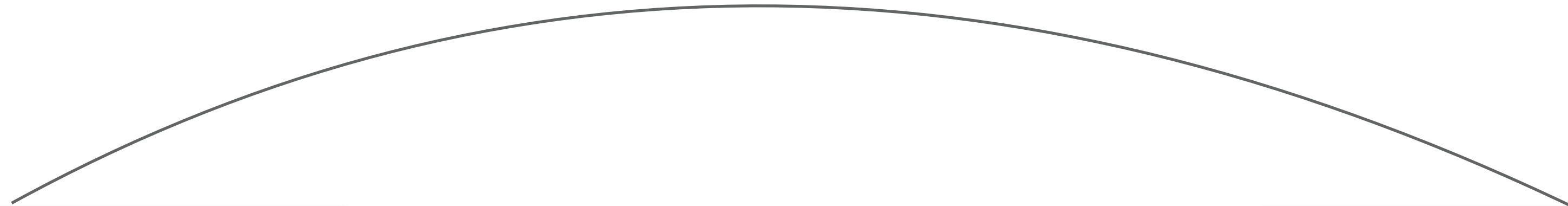
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- What do we want to happen?

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System knowledge
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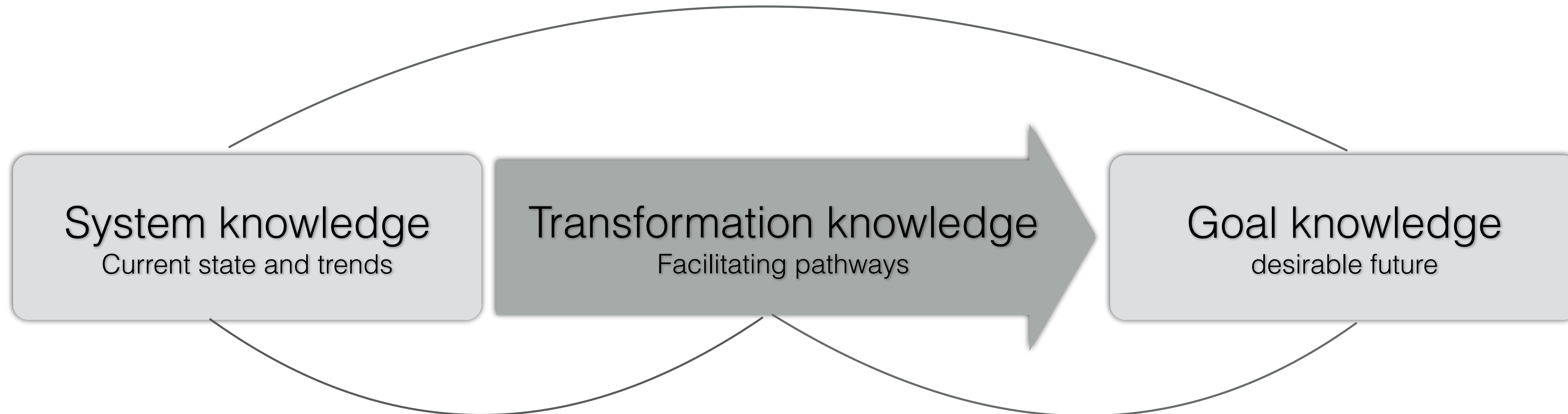
Goal knowledge
desirable future



The Approach: Learning by Experience

Sustainability and Adaptation Science

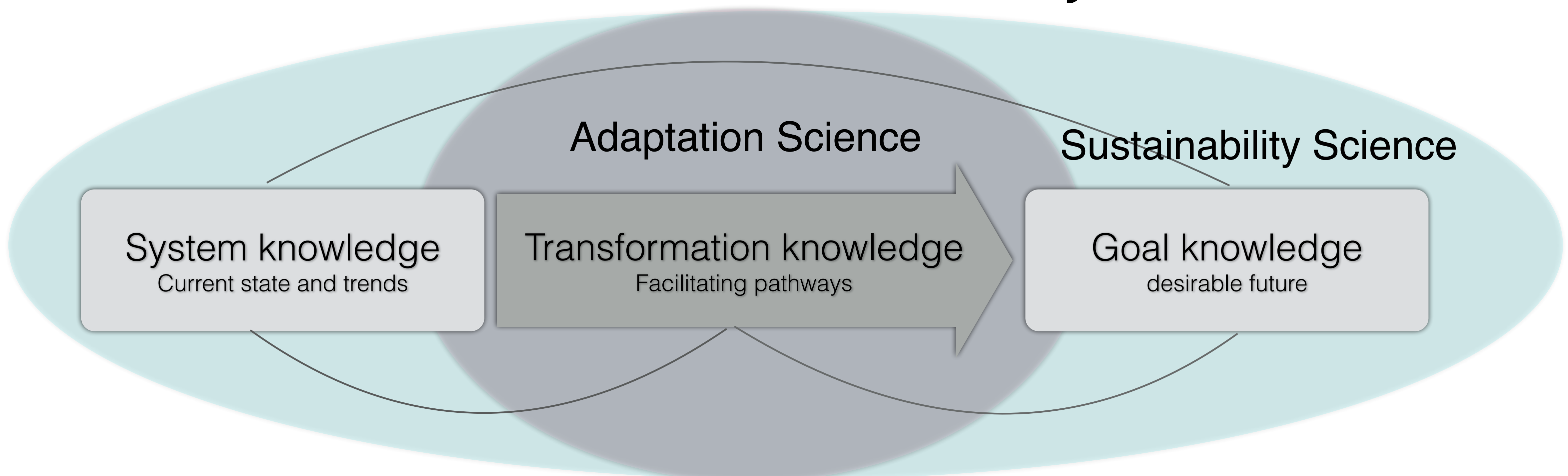
- What might happen?
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 - What do we want to happen?
 - How can we impact the system trajectory?
- } System Knowledge
- } Goal Knowledge
- } Transformational Knowledge



The Approach: Learning by Experience

Sustainability and Adaptation Science

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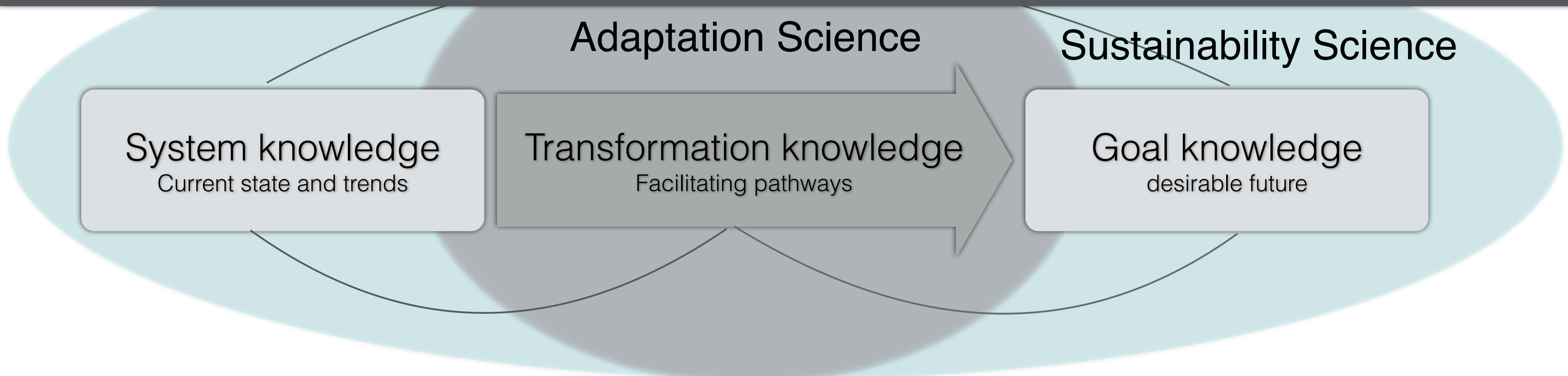
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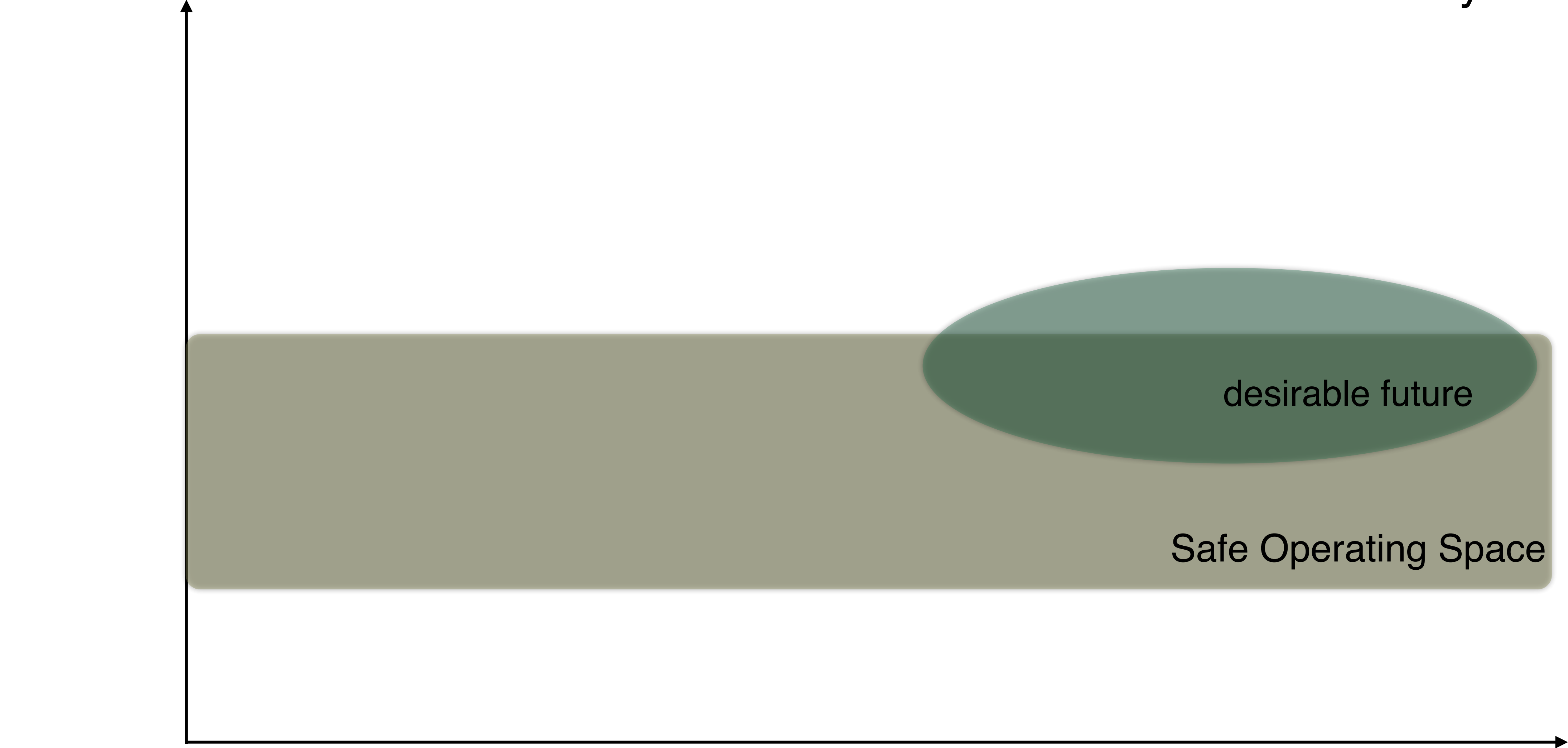
New leaders can develop transformative pathways to the future we want.



The Approach: Learning by Experience

System State

Foreseeability and Foresight



desirable future

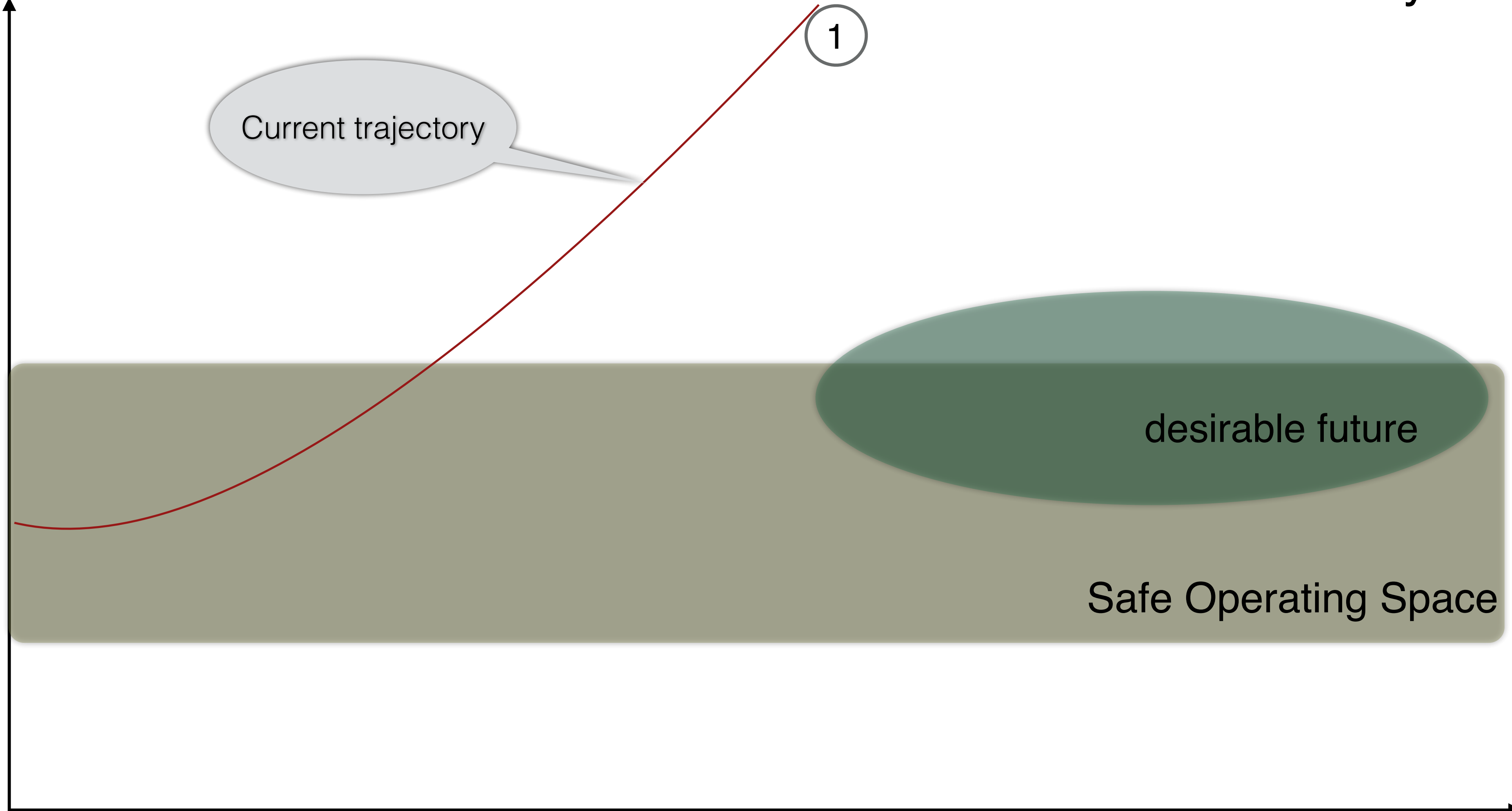
Safe Operating Space

Time

The Approach: Learning by Experience

Foreseeability and Foresight

System State



Current trajectory

1

desirable future

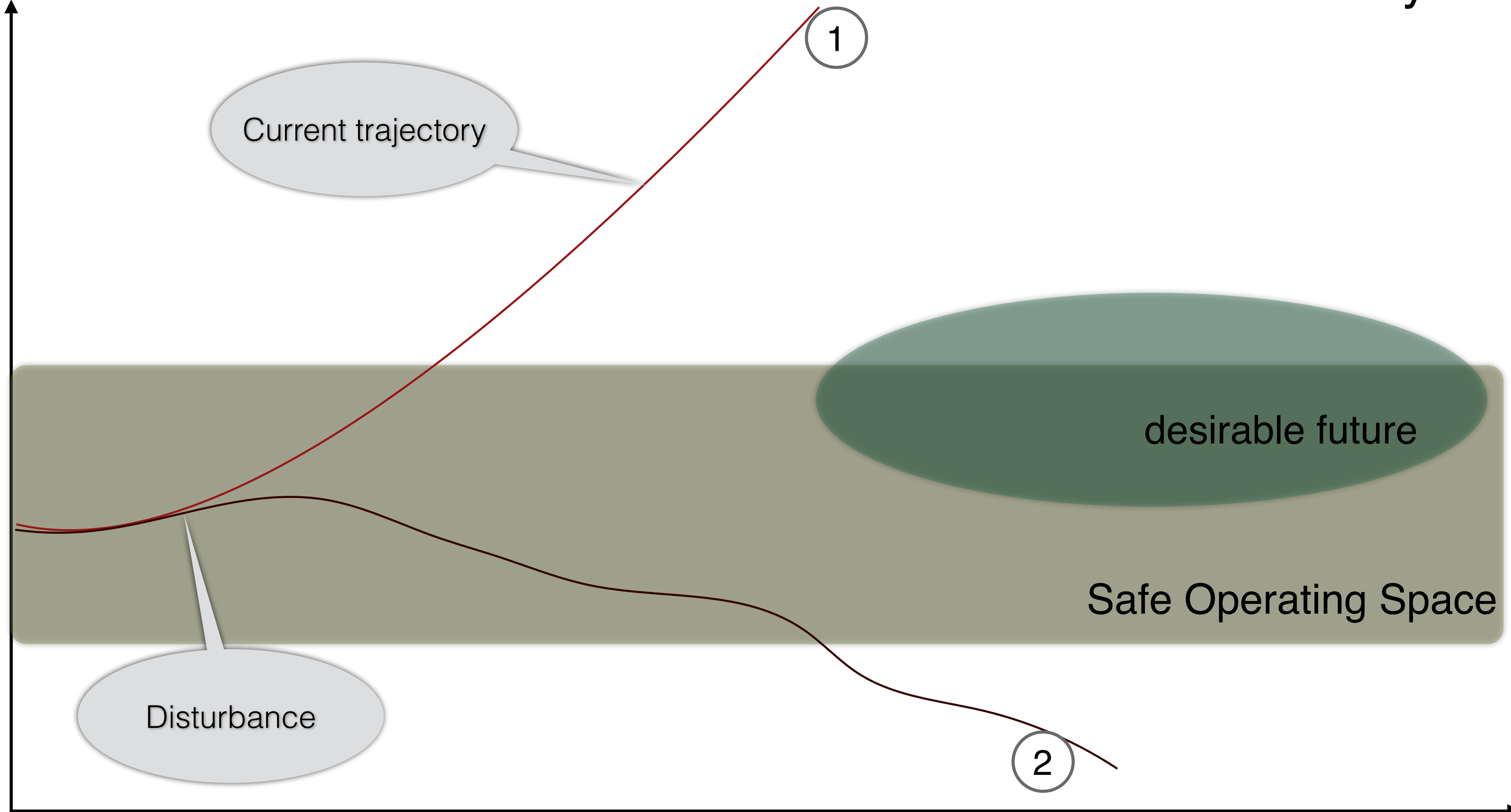
Safe Operating Space

Time

The Approach: Learning by Experience

Foreseeability and Foresight

System State



Current trajectory

1

desirable future

Safe Operating Space

Disturbance

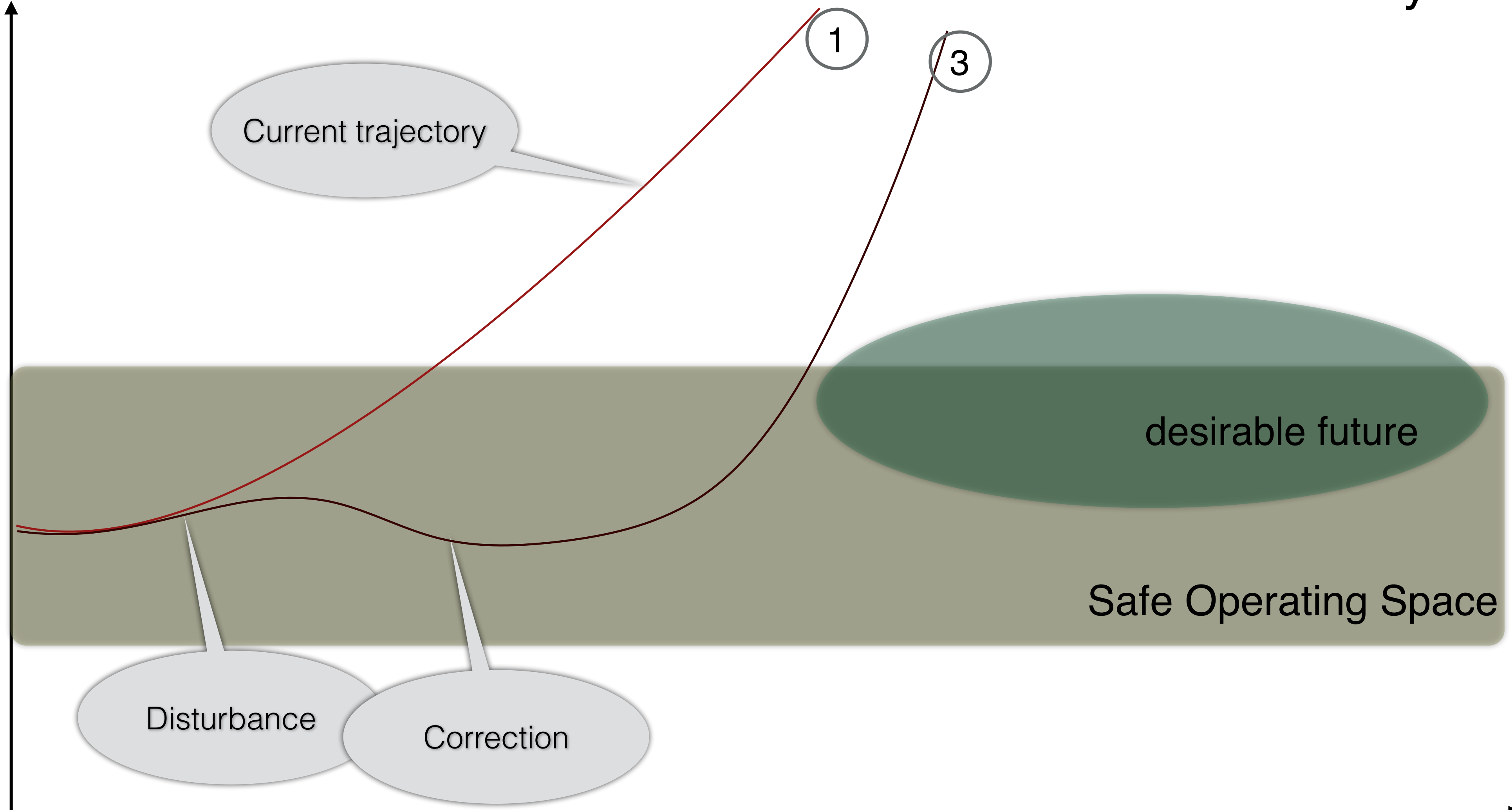
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Time

The Approach: Learning by Experience

Foreseeability and Foresight

System State

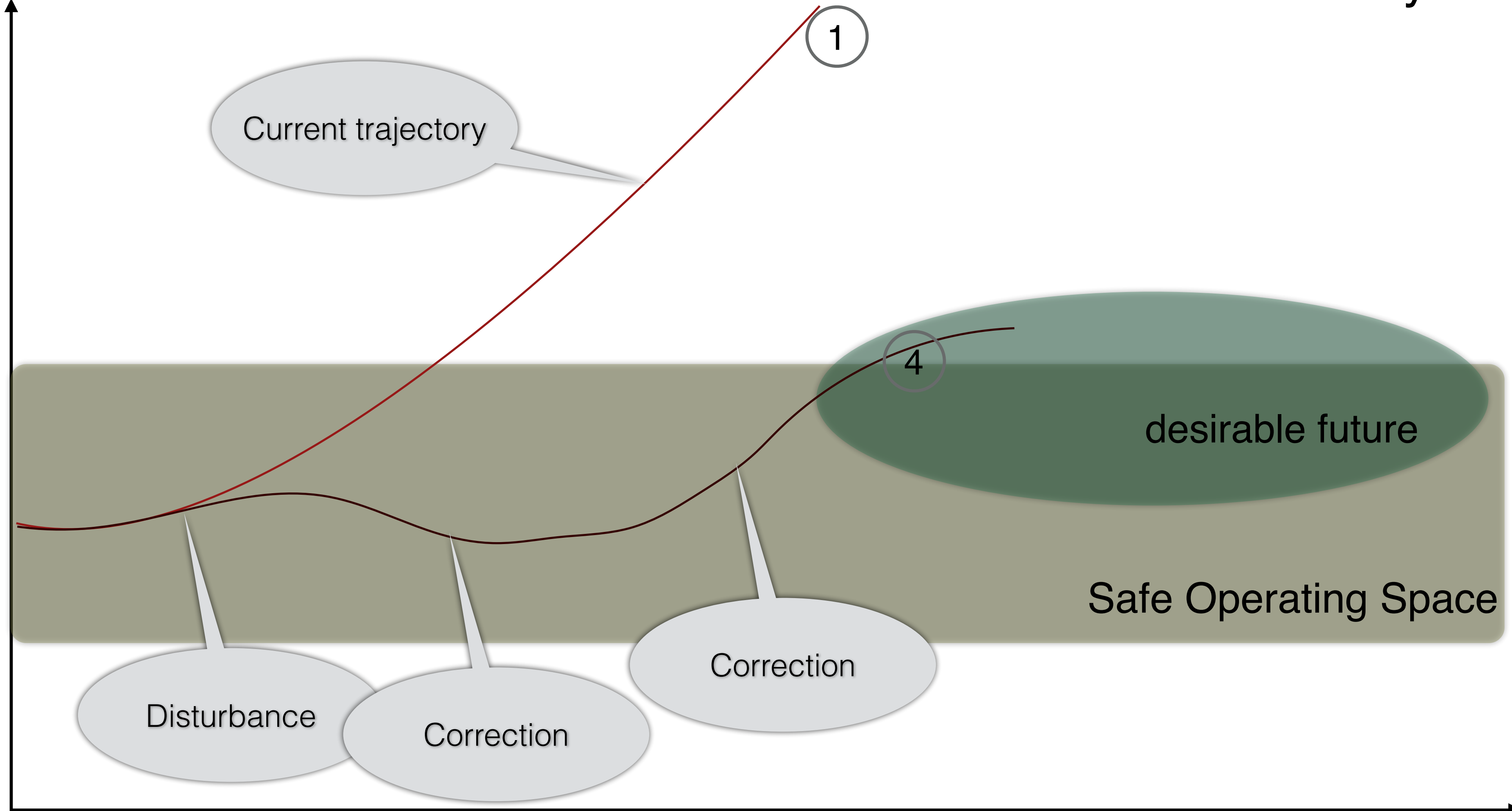


Time

The Approach: Learning by Experience

Foreseeability and Foresight

System State



Current trajectory

1

4

desirable future

Safe Operating Space

Disturbance

Correction

Correction

Time

The Approach: Learning by Experience

Planetary Physiology

The Approach: Learning by Experience

Planetary Physiology

Earth is a Life-Support System for many species

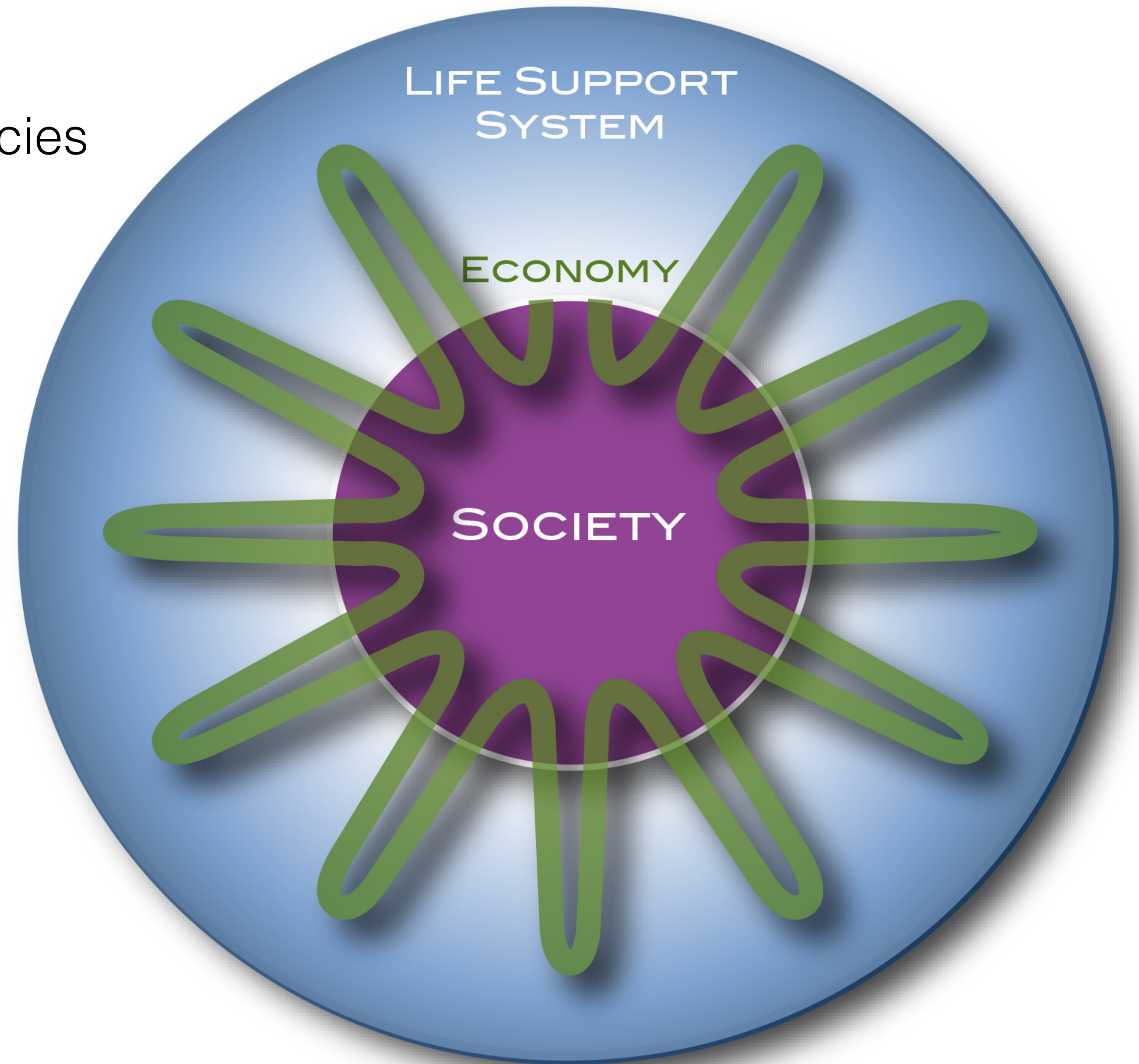


The Approach: Learning by Experience

Planetary Physiology

Earth is a Life-Support System for many species

Everything is about Flows



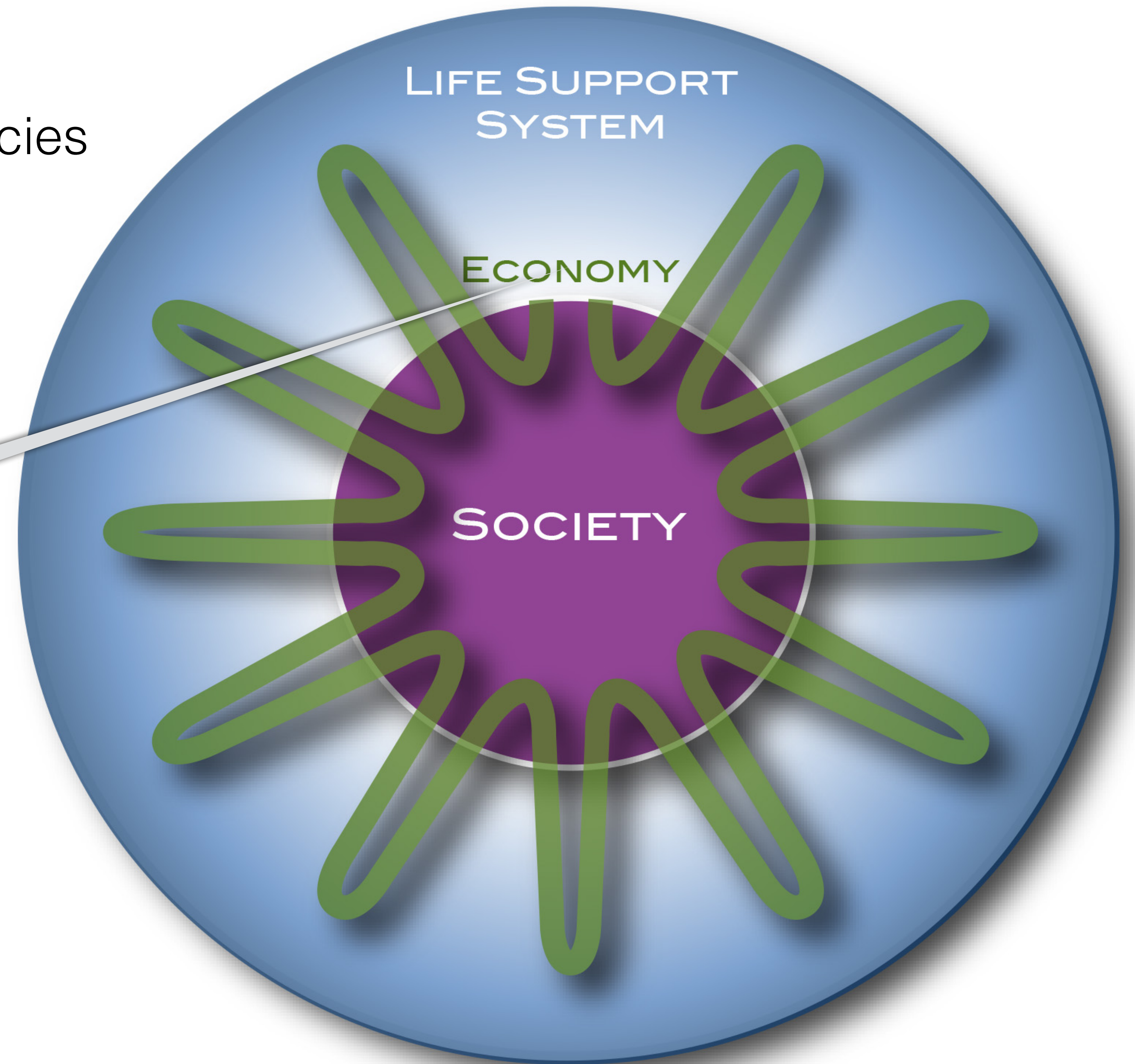
The Approach: Learning by Experience

Planetary Physiology

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Limitations in the flows
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The Approach: Learning by Experience

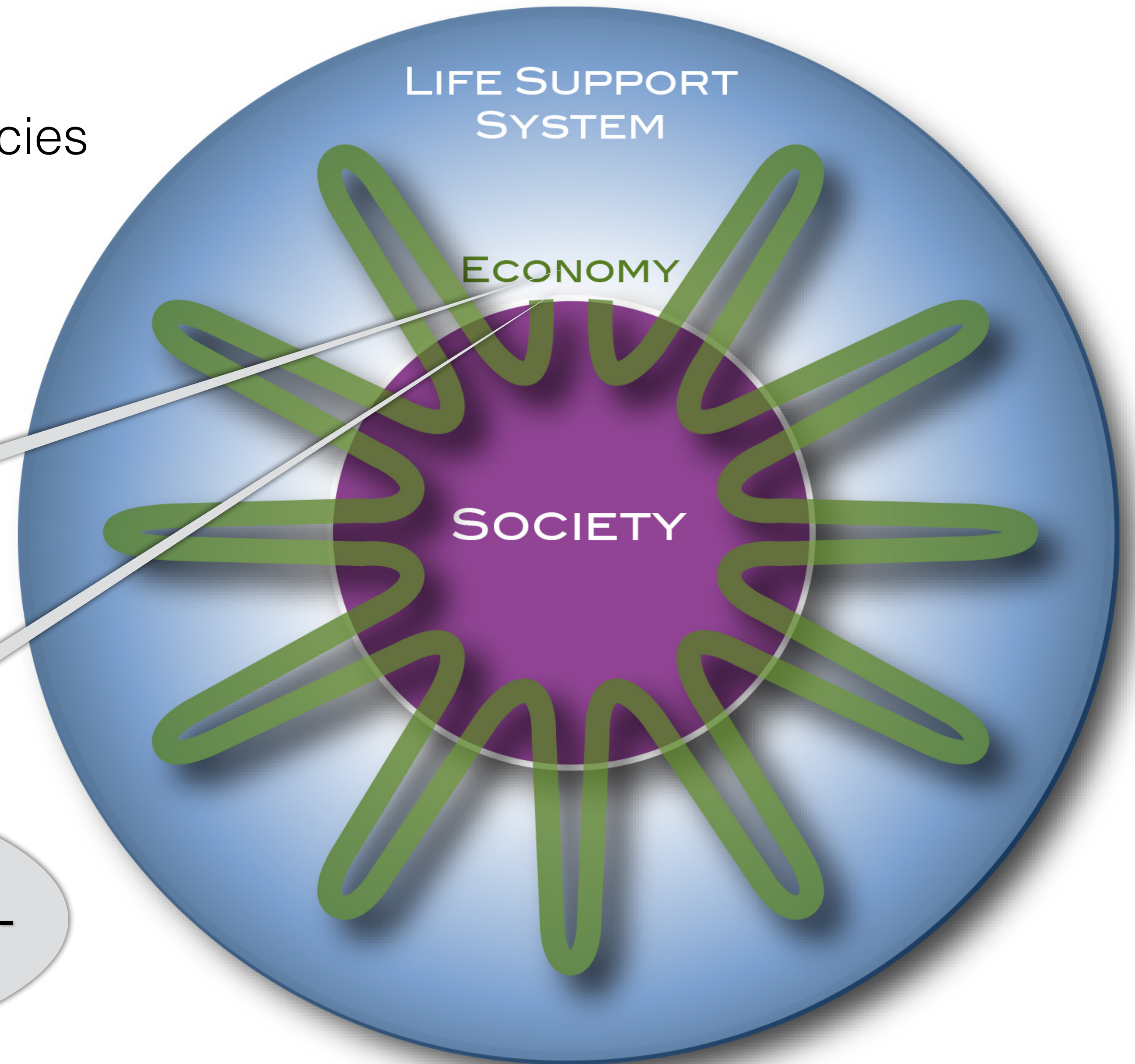
Planetary Physiology

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For Homo sapiens, the flows are regulated by ethical, social, and - recently - economic rules



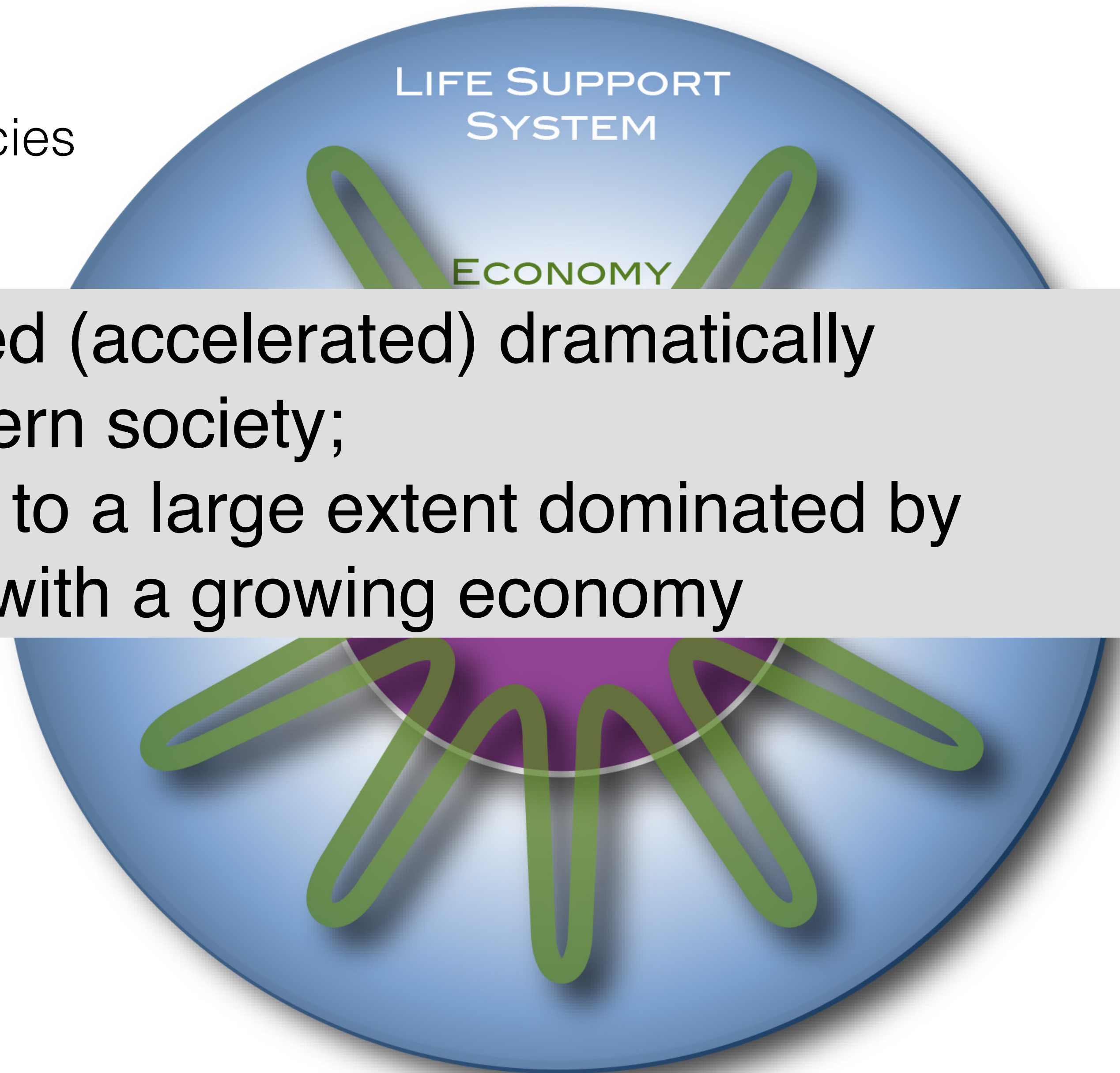
The Approach: Learning by Experience

Planetary Physiology

Earth is a Life-Support System for many species

Everything is about Flows

Flows have been changed (accelerated) dramatically
by modern society;
The planetary physiology is to a large extent dominated by
a growing humanity with a growing economy



The importance of flows

Strategies for Sustainability:

1. To consume nature's flows while conserving the stocks (that is, live off the 'interest' while conserving natural capital).
2. To increase society's stocks (human resources, civil institutions) and limit the flow of materials and energy.

Brown et al. (2004)

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Importance of Mainstream Economic Model

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Brown et al. (2004)

Importance of Mainstream Economic Model

Transition to an economy that meets the need of the present while safeguarding the Earth's life-support system

Active learning supported by learning assistants:

- problem-motivated: research case studies of real-world problems
- 1st course: individual studies based on literature
- 2nd course: group project in the real world (service learning)
- 3rd course: internship with an individual case study on a real-world problem

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All case studies:

- focus on a wicked problem;
- require systems thinking and transdisciplinary approach;
- involve modeling;
- are participatory;
- have a leadership component with a novel participatory leadership style.

Strengthening of the Service Learning Experience:

- projects that allow for field experience and contact with stakeholders
- extending to service learning abroad
- stronger links to the needs of state and federal agencies