The Conservation Leadership Program at ODU: A Collaboration of the U.S. Fish and Wildlife Service and Old Dominion University

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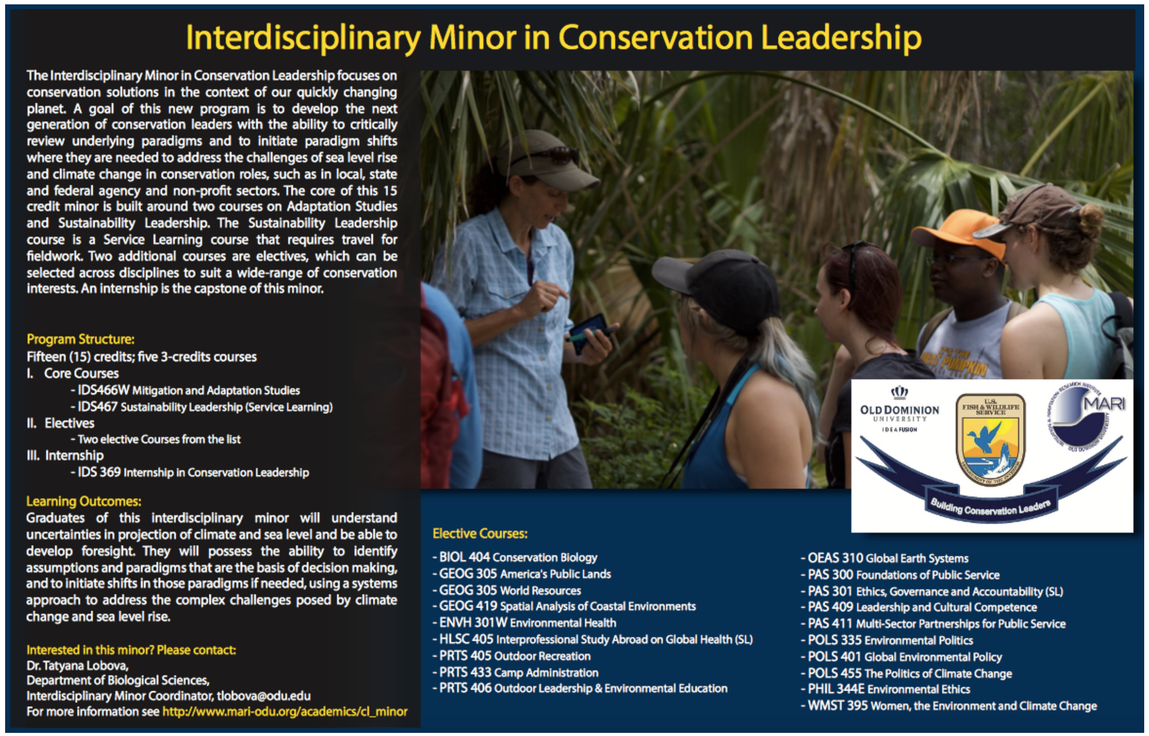
Conservation Leadership



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:
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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

Conservation Leadership

- Minor and Grad. Certificate
  - 466/566 Mitigation and Adaptation Science
  - 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

Main Concepts

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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The importance of flows

Main Concepts

Planetary Physiology

Main Concepts

Planetary Physiology

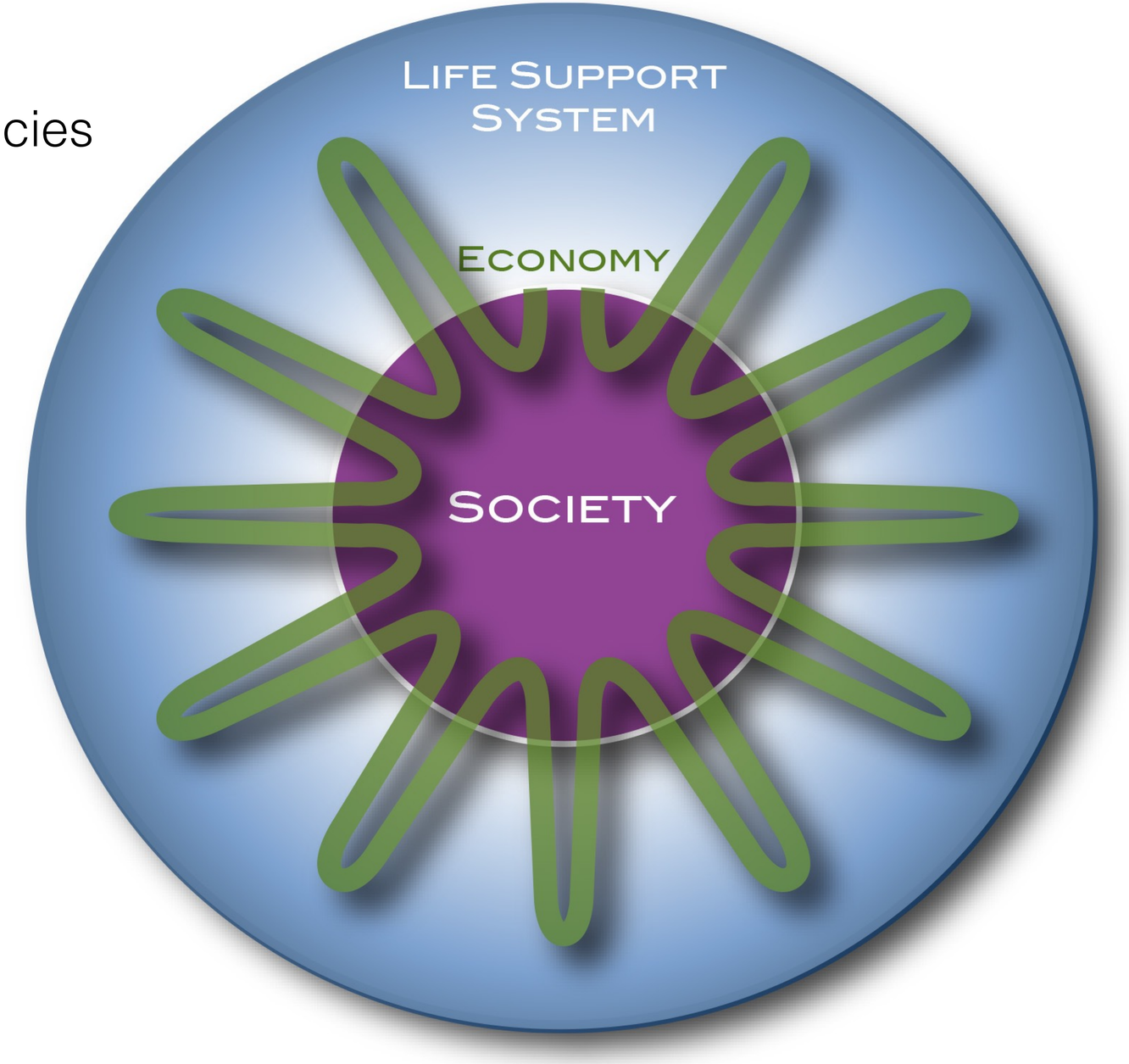
Earth is a Life-Support System for many species

Main Concepts

Planetary Physiology

Earth is a Life-Support System for many species

Everything is about Flows



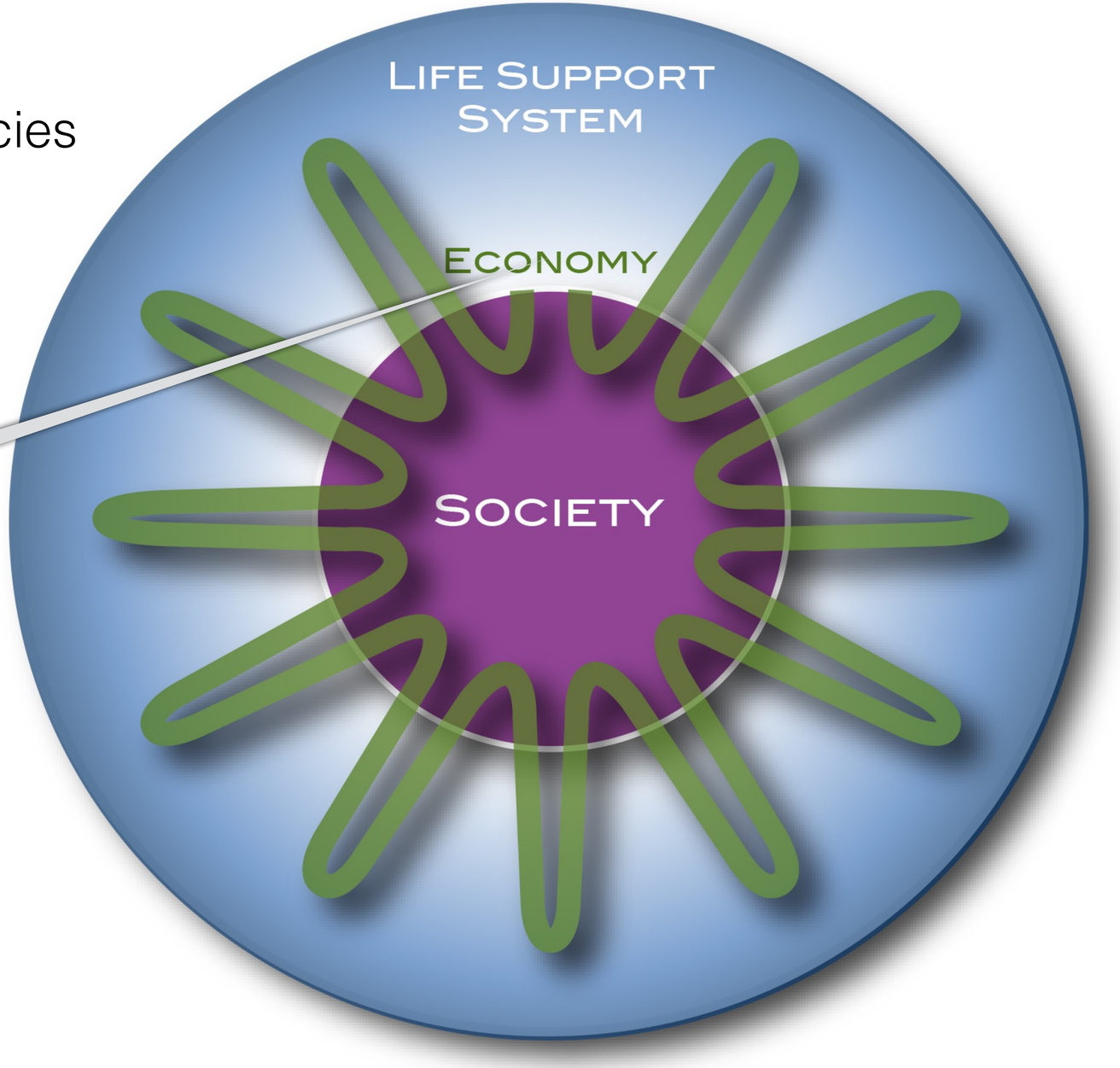
Main Concepts

Planetary Physiology

Earth is a Life-Support System for many species

Everything is about Flows

Limitations in the flows between a community and its life-support system limit the growth of the community



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Planetary Physiology

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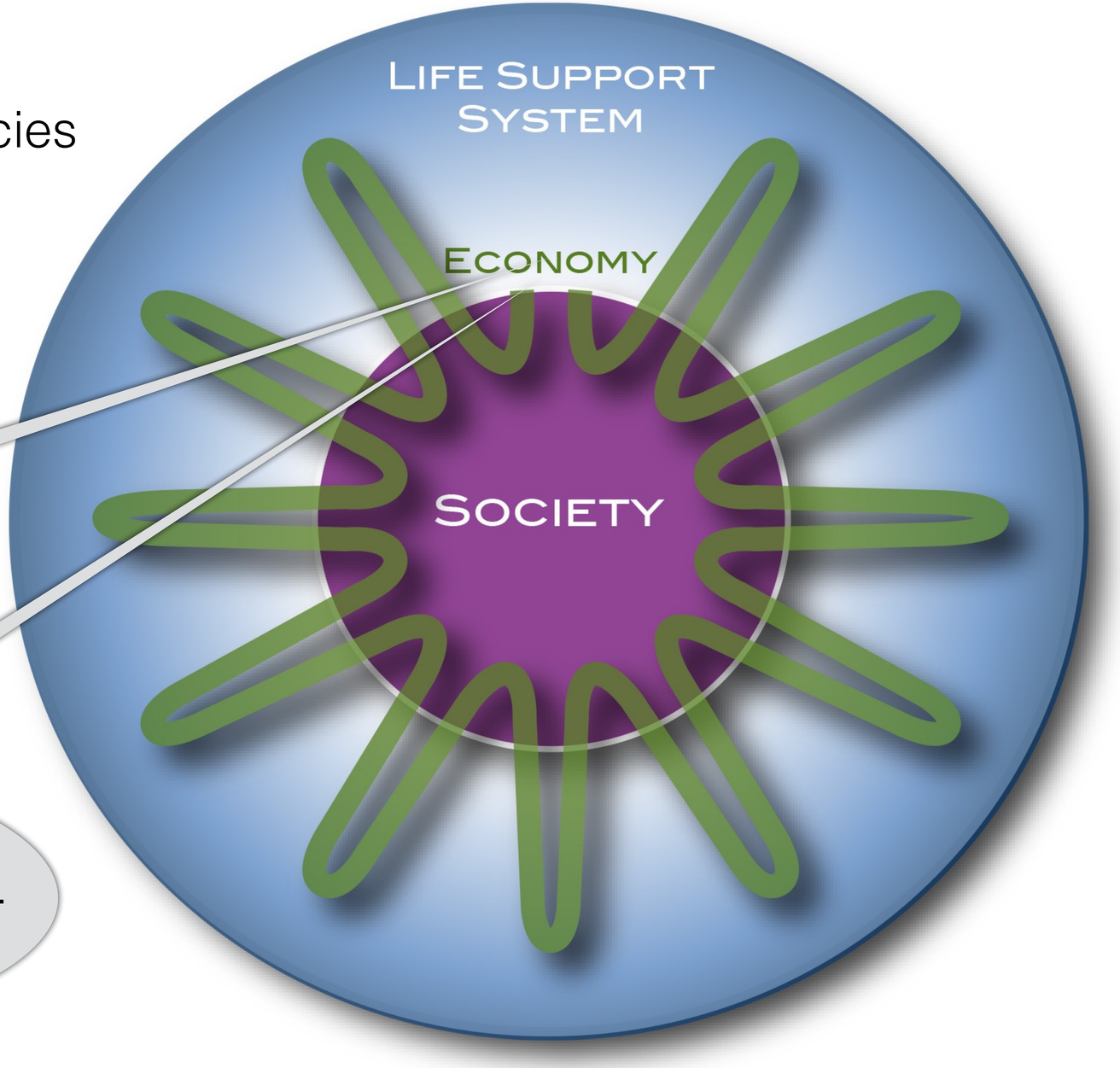

Limitations in the flows between a community and its life-support system limit the growth of the community

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

Main Concepts

Planetary Physiology

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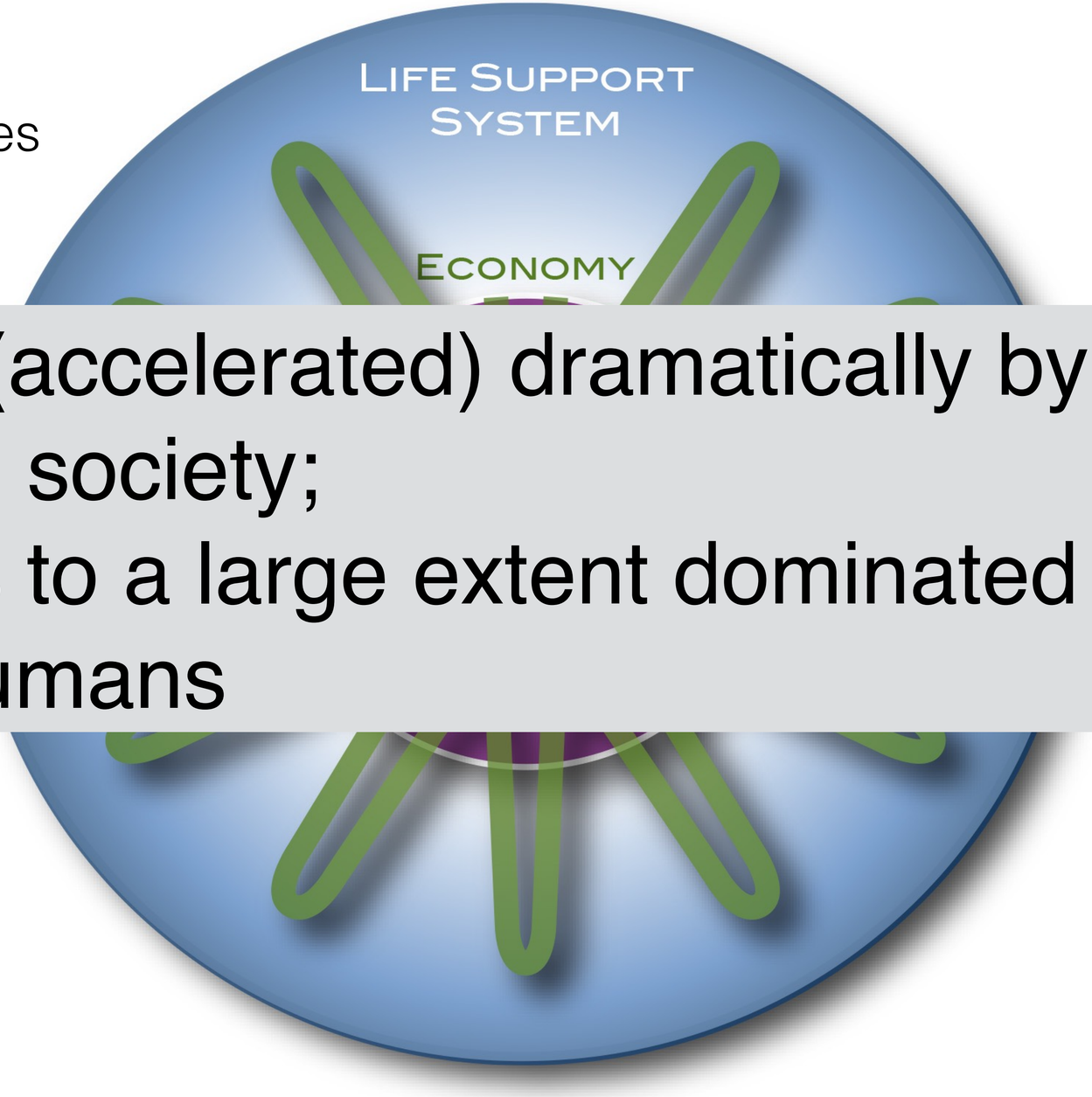
Everything is about Flows

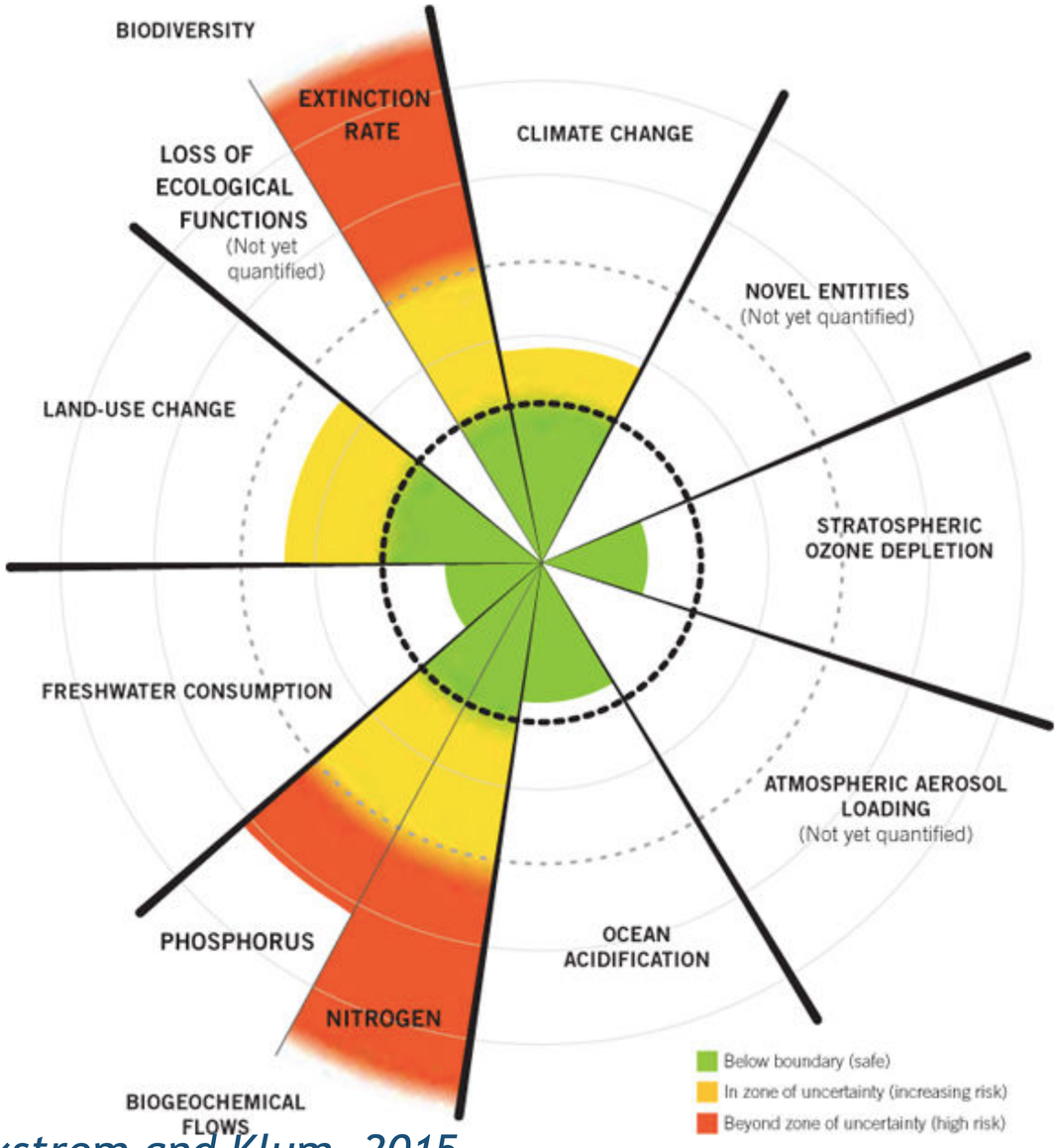


Flows have been changed (accelerated) dramatically by modern society;
The planetary physiology is to a large extent dominated by humans

Main Concepts

Main Concepts

The Holocene was a “safe operating space for humanity”



Rockstrom and Klum, 2015

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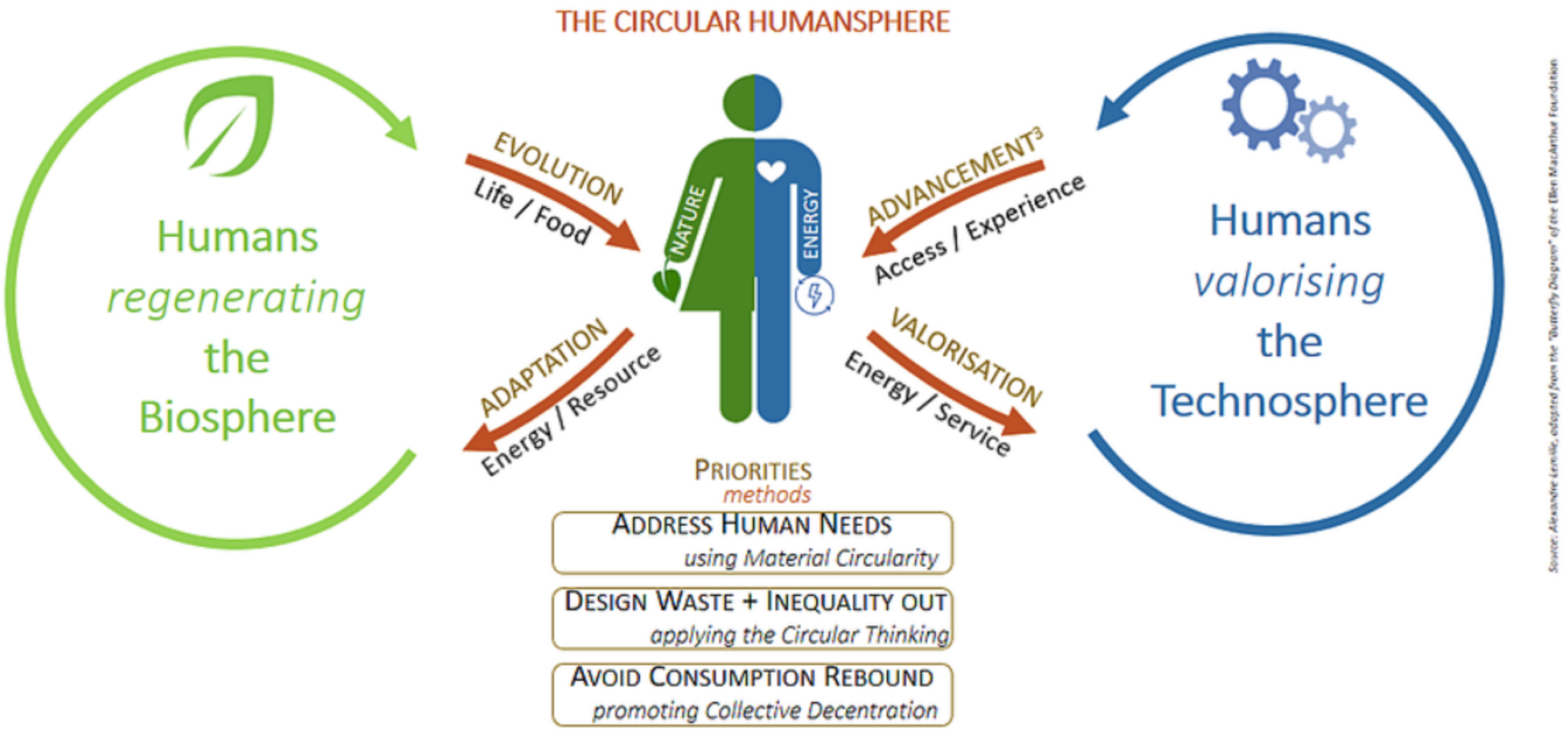
The importance of flows

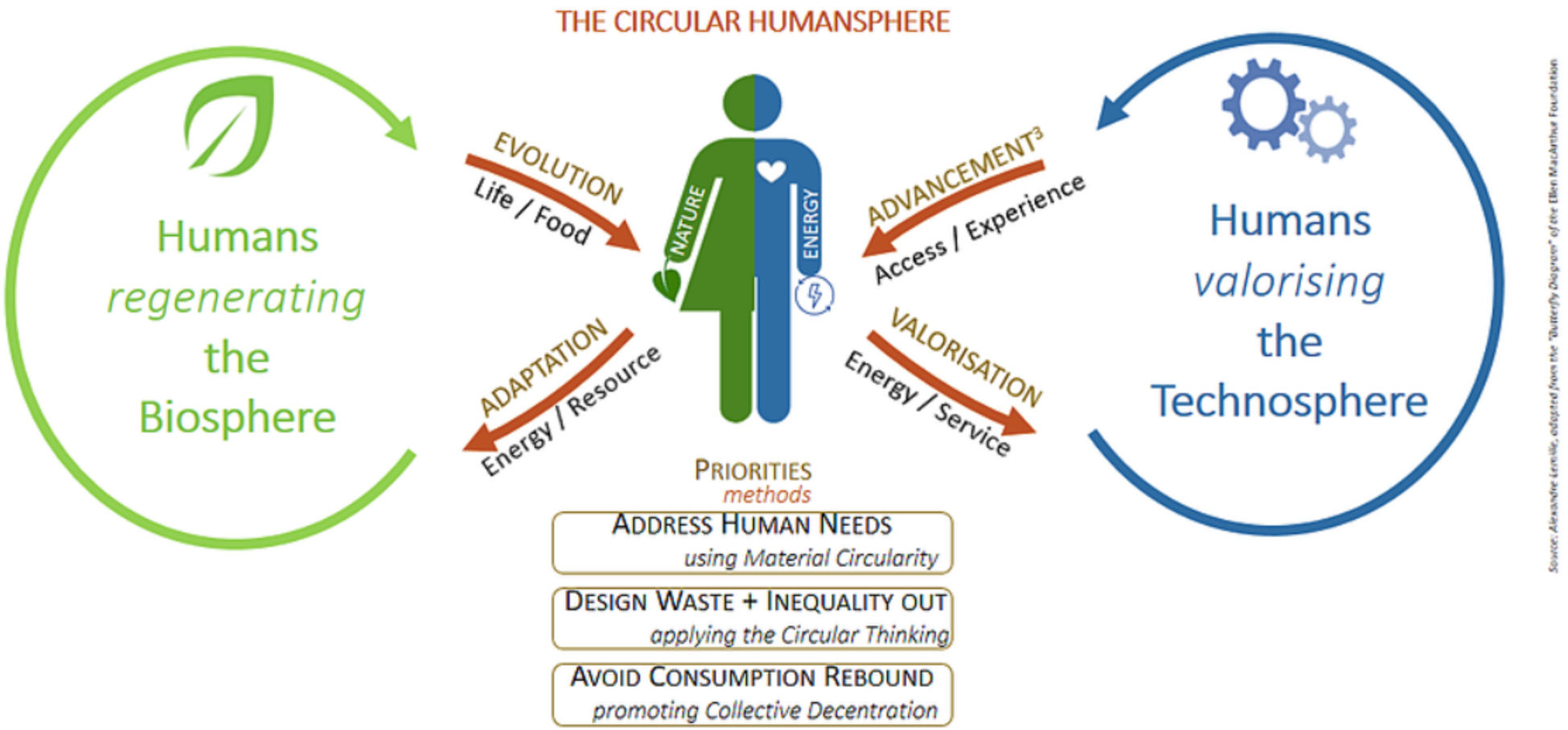
Importance of Mainstream Economic Model

Main Concepts



https://www.alexandrelemille.com/optimising-circular-value

Main Concepts



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Economy is a tool to address Human needs (Priority 1).
In a **service-based economy**, we - for the first time - stand a chance to create a versatile model designing waste and inequality out of our system (Priority 2).

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Importance of Mainstream Economic Model

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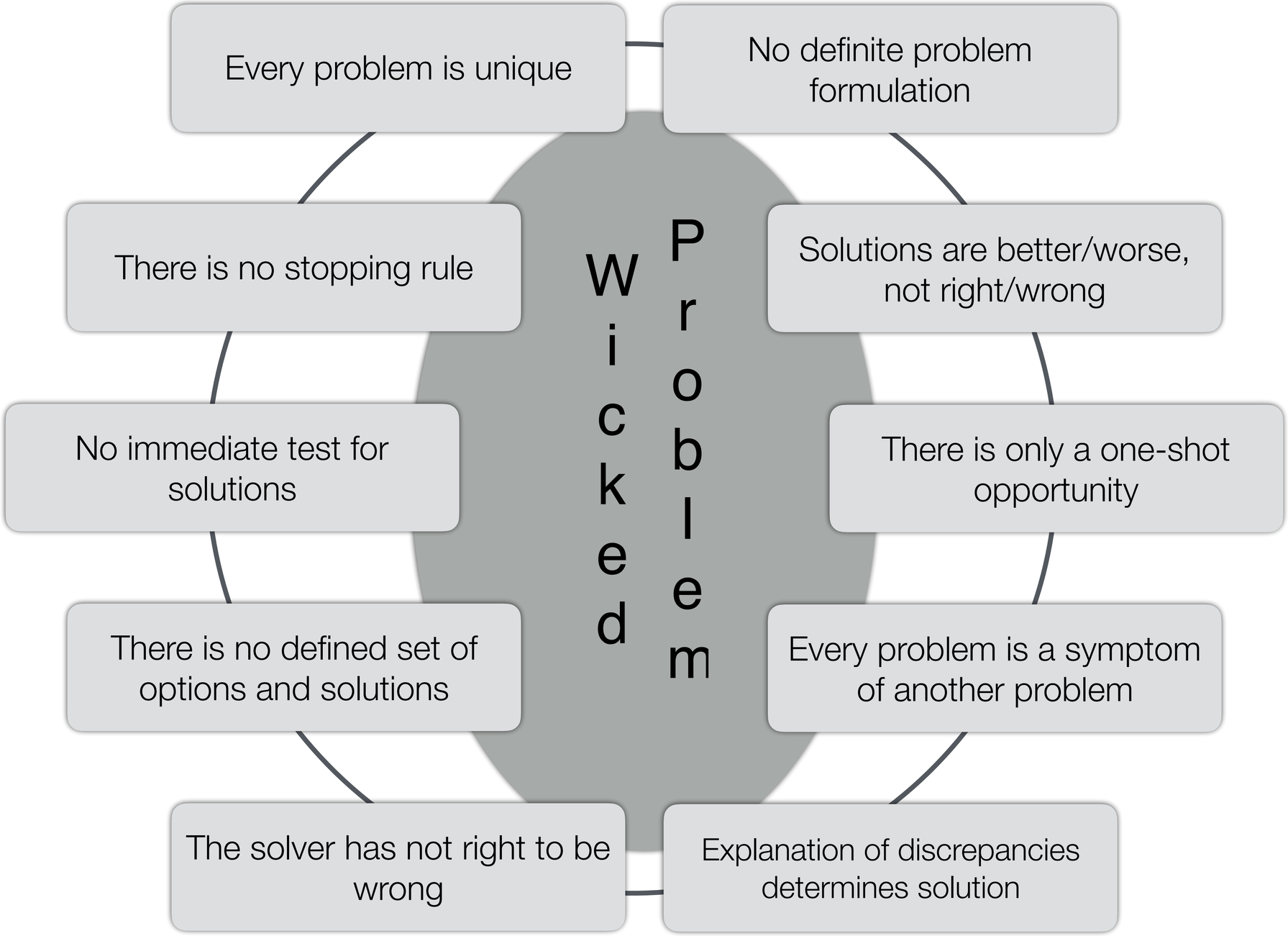
Importance of Mainstream Economic Model

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

Main Concepts

Wicked Problems



Wicked Problems

Examples

- Global Climate Change ← super wicked
- Involuntary migration ← super wicked
- Natural Hazards
- Global Change ← super wicked
- Social injustice
- Data security ← super wicked
- Conservation ← super wicked
- Pandemics
- Healthcare
- Inequality
- Nuclear ← super wicked

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Strategies and approaches to tackle wicked problems

Learning Concept

Learning by Experience in a **triple loop** framework:

- active learning supported by “learning assistants”
- problem-based: 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

Learning Concept

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All case studies:

- focus on a wicked problem;
- are participatory;
- consider ethical, social, economic, and environmental aspects;
- require systems thinking and transdisciplinary approach;
- involve modeling;
- have a leadership component with a novel participatory leadership style;
- are in principle dynamic resource allocation problems.

Learning Concept

Case Study Template

V3.0

Wicked Problem

Introduction
- The challenge
- Why is it important?
- What is causing the problem?
- Who is trying to solve it?

The Wicked Problem
- The underlying system
- Conceptual model
- Stocks, flows, & feedbacks
- Collaborative approach

Decision Making
- Who is impacted by the problem?
- What is the decision framework
- Who can implement interventions?

System Science - Hazards
- What are the external threats?
- What are the internal threats?
- What are the probabilities of these hazards?

System Science - Vulnerabilities
- What vulnerabilities does the system have?
- What are the systems's thresholds and tipping points?

Goal Knowledge - Desirable futures
- Foresight and the system's spectrum of possible futures?
- What are the desirable futures and why are they desirable?

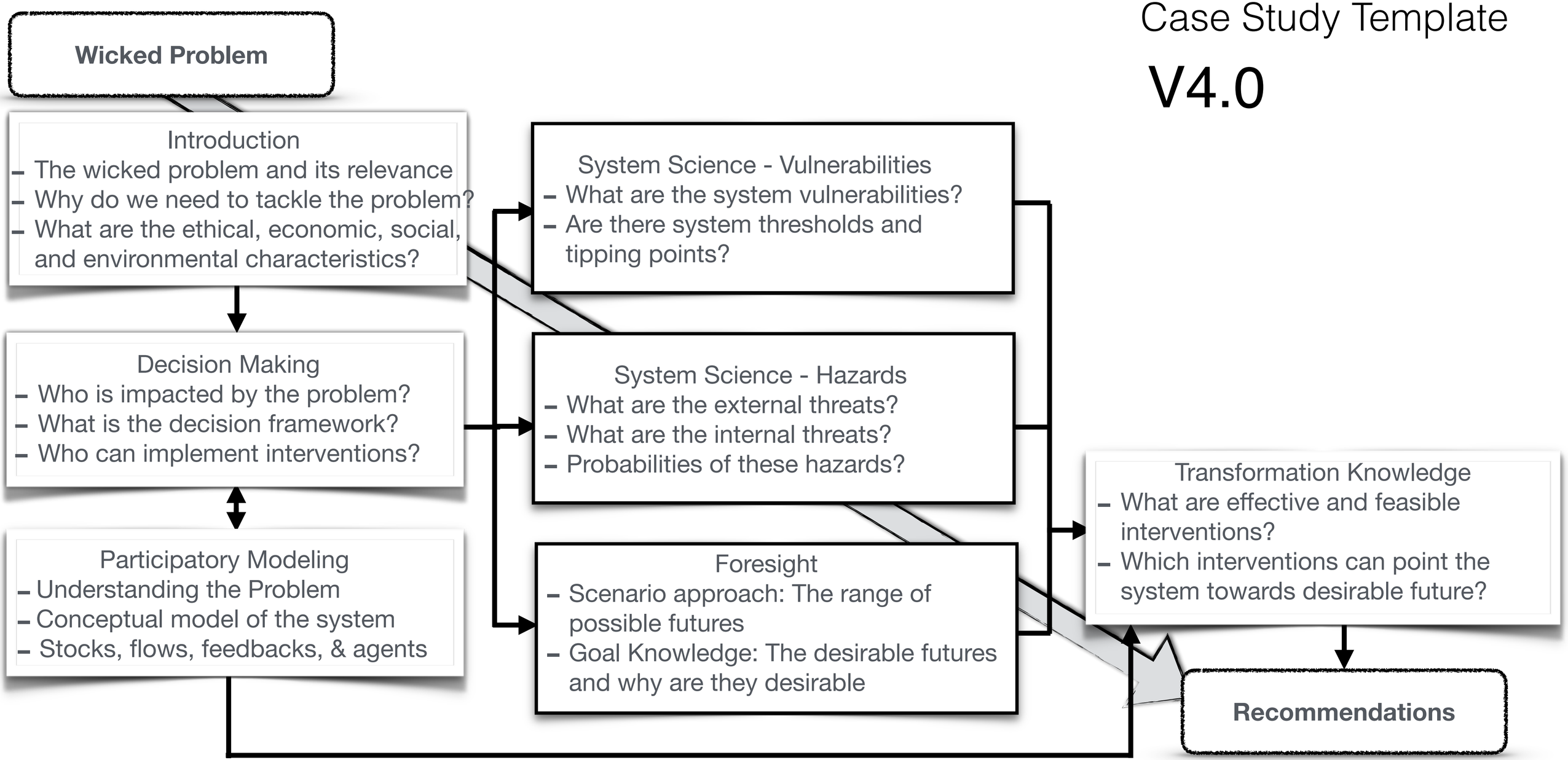
Transformation Knowledge
- What options are there for effective interventions?
- Which interventions can point the system towards the desired future?

Recommendations

Learning Concept

Case Study Template

V4.0



Learning Concept

Case Study Template

V4.0

Wicked Problem

Introduction
- The wicked problem and its relevance

and environmental characteristics?

System Science - Vulnerabilities

tipping points?

More than 80 Case Study since 2016

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Transformation Knowledge
- What are effective and feasible interventions?
- Which interventions can point the system towards desirable future?

Participatory Modeling
- Understanding the Problem
- Conceptual model of the system
- Stocks, flows, feedbacks, & agents

Foresight
- Scenario approach: The range of possible futures
- Goal Knowledge: The desirable futures and why are they desirable

Recommendations

Learning Concept

Case Study Template

V4.0

Wicked Problem

Introduction
- The wicked problem and its relevance

System Science - Vulnerabilities

More than 80 Case Study since 2016

Research on real-world problems in an out-of class room setting

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