

Learning to be sustainable (?)

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Last time around...

1. Data in search of question
2. Why learning?
3. Sustainability & Learning
4. What data do I need?

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Why learning?

Sustainability & Learning

Data

Objective

What I **am** doing

- ▶ Expand on last presentation
- ▶ Show my thinking
- ▶ Test out the argumentation of my thesis

What I am **not** doing

- ▶ Traditional paper presentation

Invitation to conversation!

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Why learning?

Sustainability & Learning

Data

Definitions¹

1. Reliability: is the learning outcome public, stable, and shared
2. Validity: does learning aid in understanding, prediction, and control

¹March et al. (1991)

Valid learning

Creation of quantitative/mental models that inform in advance or lead to desirable states.

- ▶ Robust climate models (Manabe & Wetherald, 1967; Forster, 2017)

vs. invalid learning

- ▶ Surprising, unpredicted arctic ice loss (Guarino et al., 2020)

Definitions¹

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Learning & Sustainability II

Reliable learning

Developing a mental or formal model that is widely accepted.

- ▶ Collective learning process (Wright & Nyberg, 2017)
- ▶ Bridging epistemic communities (Aronczyk & Espinoza, 2019)
vs. unreliable learning
- ▶ Unintentional or deliberate rejection of learning (Hermwille & Sanderink, 2019; Koontz & Thomas, 2018)
- ▶ Persistent resistance or ignorance (Boudet et al., 2020)

What keeps valid knowledge from being reliable?

Learning & Sustainability III

Example of conflicts

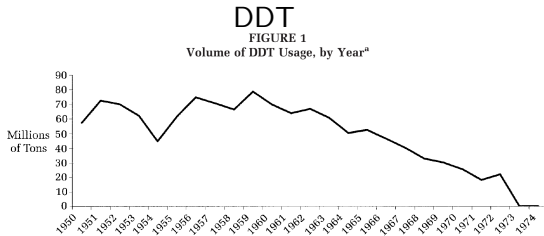
- ▶ Biases (e.g., Makov & Newman, 2016)
- ▶ After building coalition, validity of knowledge in doubt (e.g., Aronczyk & Espinoza, 2019; Wright & Nyberg, 2017)
- ▶ Entrenched invalid learning (e.g., Boudet et al., 2020)
- ▶ Knowledge gap between layman and (relative) experts (e.g., Camilleri et al., 2019)
- ▶ Self-interest (Rerup & Zbaracki, 2021)

Example 1

Maguire and Hardy (2009)

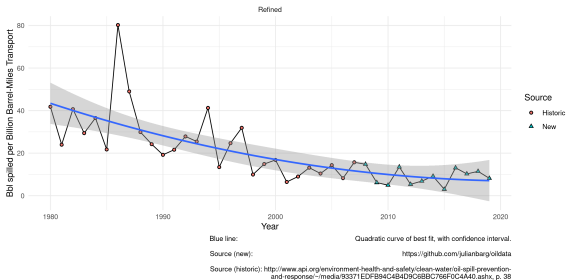
1. 1950s: DDT is most used pesticide
2. 1963: Rachel Carlson problematizes DDT adverse impacts in *Silent Spring*
 - Human health
 - Environmental impact
3. 1960s: Cost-benefit discussions in *Science*, *Ecology* etc.
4. 1972: EPA investigates, bans DDT nationwide
 - DDT use already down 67%

Examples



^a Source: EPA (1975), page 149.

vs. Pipeline spills



Definitions¹

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Example 2

Pipeline industry²

1. Mid-century enthusiasm for oil & pipelines
Consensus—engineering epistemology reliable & valid
2. Problematization
Prominent spills (e.g., Exxon Valdez)
Environmental movement
3. Industry offers partial response
Pipeline safety technology
Advertisement & lobbying
4. Tension persists
Coexistence of two epistemic communities
Limited communication

²Estes (2019)

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Why learning?

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Why should we (sustainability researchers) care about reliability & validity?

Sustainability theory I

Validity– Environmental management

1. Organizational level narratives
2. Technology & clean-up
3. Rationality & bounded rationality
4. Learning diffuses horizontally

Reliability– Ecocentrism

1. Organizational level and above
2. Greenwashing & pollution
3. Social constructivism
4. Learning meets counterforce

3

⇒ Underlying models of change & collective learning

³For now borrowing terminology from Purser et al. (1995)

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Exemplary phenomena

1. Industry-driven deregulation in Texas/Louisiana
2. Pipeline spill into Houston River 94'
3. Public/private differences

Thanks!

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