

Systems Thinking and Causal Loop Diagrams

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About Laura



What is a System?

- Different parts
- Connections between the parts
 An identifiable boundary
 Emergent behavior

Systems have behavior that derives from their structure, and which cannot be identified by looking at individual parts in isolation.

Systems Theory is flexible and has been used in many fields to address many kinds of problems





What are some signs you're dealing with a system?

- Problems that are persistent, despite repeated interventions
- Behavior that's the opposite of what the intervention intended (*perverse incentives; unintended consequences*)
- There is a pattern of behavior underlying an event
- People disagree about the root cause of a problem



examiner.com

Example: perverse incentives

 Subsidies to sustainable agriculture→ more forest clearing



worldwildlife.org

Feedback Loops

- Responsible for system behavior
- Define the system boundary (move exogenous to endogenous)
- Mutually causal structures
- Feedback
 - Positive (+) or **Reinforcing** (R)
 - Negative (-) or **Balancing** (B)

Feedback loops



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Tips for drawing causal loop diagrams

Keep variables neutral

Break apart concepts as much as possible

Try to uncover feedback

Arrows move from cause to effect