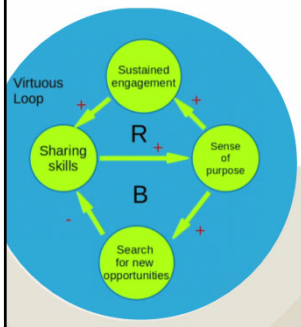


Week 6: Building Complexity

Systems Thinking Basics- Dr. Chris Skelly

VISUALINSIGHTS

Learning objectives

1) An approach to problem solving
2) Intersection with evaluation
3) Causal Loop Diagrams (CLDs)
4) Integrating Systems Thinking
5) Understanding the 'why' of systems thinking

What is it?

1) Problem solving approach
2) Complement to analytical
3) A 'system'

Analytical Thinking

1. Take the problem apart
2. Identify properties and behaviours of its parts
3. Aggregate the understanding of the parts into an understanding of the whole

"…provides knowledge, not understanding, not why they work the way they do. Explanations always lie outside of the system. Why questions about systems cannot be answered."

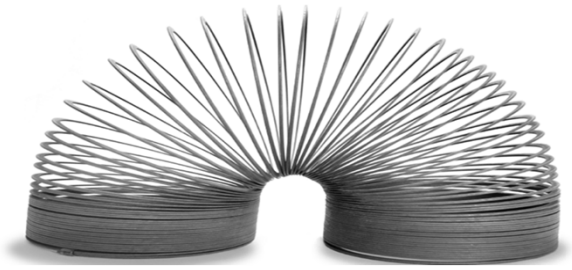
Russell Ackoff

Systems Thinking

1. Take the thing you want to understand and ask – “What is it part of?”
2. Explain the behaviour of the containing whole (system)
3. Disaggregate the understanding of the containing whole by identifying the role of functions within

Definition - A system

A set of elements… that is coherently organized and interconnected in a pattern or structure that produces a characteristic set of behaviours, often classified as its “function” or “purpose”.



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Definition continued - A system

1. More than the sum of its parts
2. Many interconnections are 'information flows'
3. System function – least obvious part of the system and most crucial determinant of behaviour
4. Structure – source of system behaviour

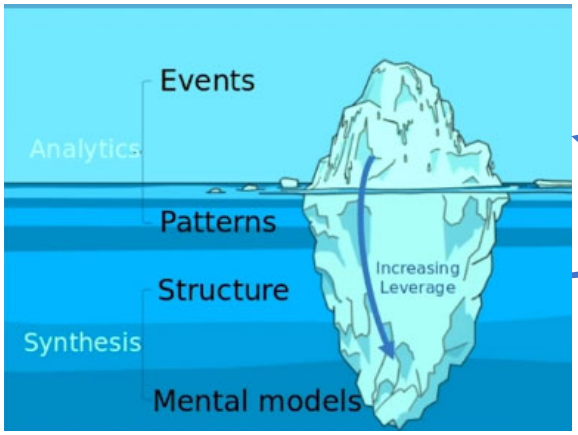
Donella Meadows

Systems Thinking
Connection with Evaluation

What does Systems Thinking have to do with Evaluation?

1. 'Problem solving' in complex settings
2. Developing shared-understanding
3. Capture complexity with your theory-of-change

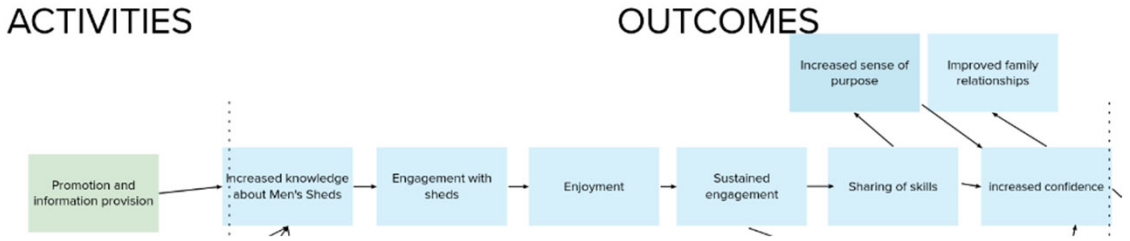
Iceberg model



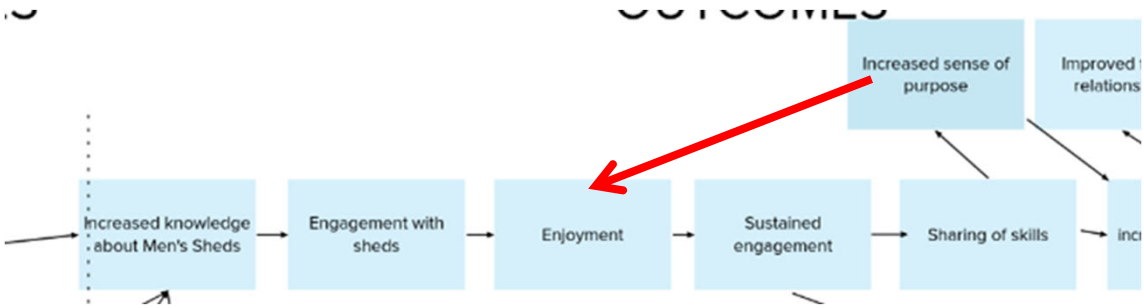
2. Analytics Foci – What, where, when and how.

1. Synthesis Focus - Why

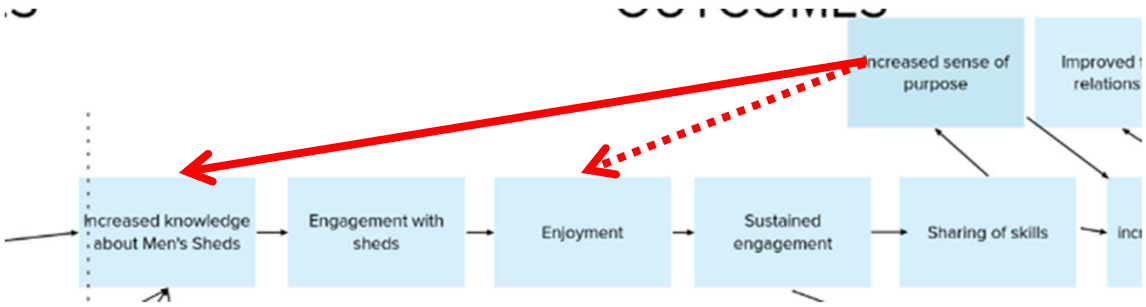
Example – Every Bloke needs a Shed



Every Bloke needs a Shed- Feedback loop



Every Bloke needs a Shed- Feedback loop



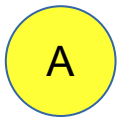
Systems Thinking for TOC
Causal loop diagrams

Causal loop diagrams

1. Elements and relationships (+/-)
2. Loops and boundaries
3. Reading a CLD story

Elements and naming conventions

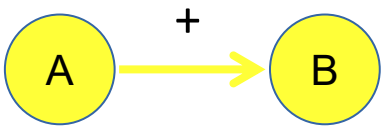
- Staff stress
- Number of absences
- Quality of service



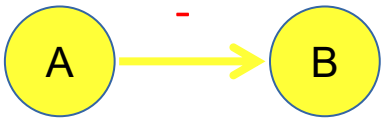
All of these can increase or decrease.

Warning: Don't include the words – Increasing or decreasing.

Type of Relationship

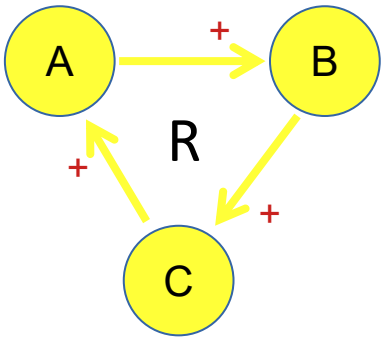


Positive relationship



Negative relationship

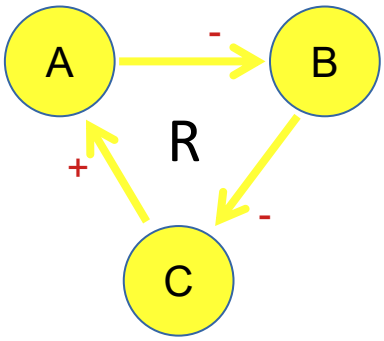
Reinforcing loop



Virtuous – If good outcome

Vicious – If poor outcome

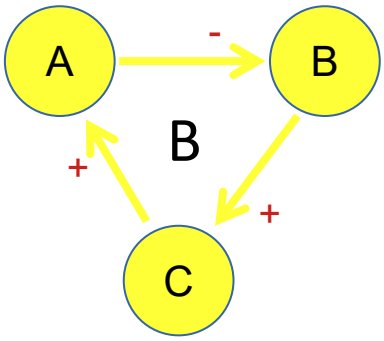
Reinforcing loop 2



Virtuous – If good outcome
Vicious – If poor outcome

Note- You can have negative relationships but the number of them must be **even**.

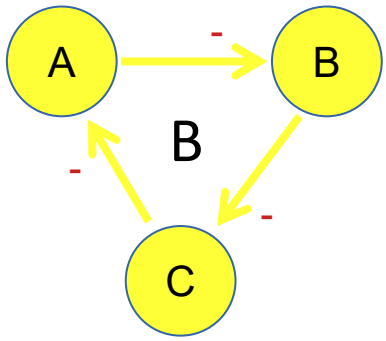
Balancing loop



Requires energy input

Note- You can have negative relationships but the number of them must be **odd**.

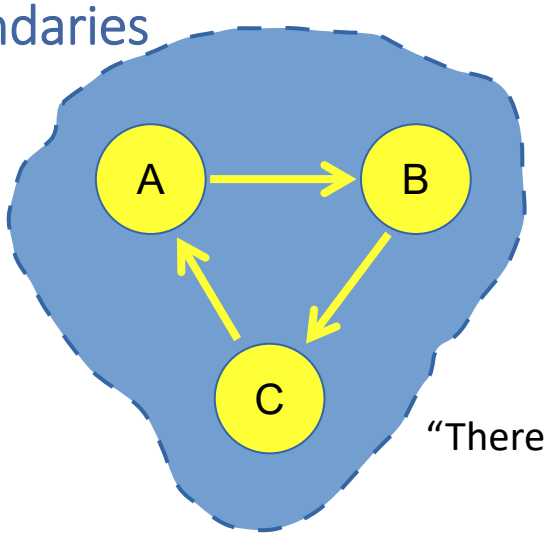
Balancing loop 2



Requires energy input

Note- You can have negative relationships but the number of them must be **odd**.

System boundaries



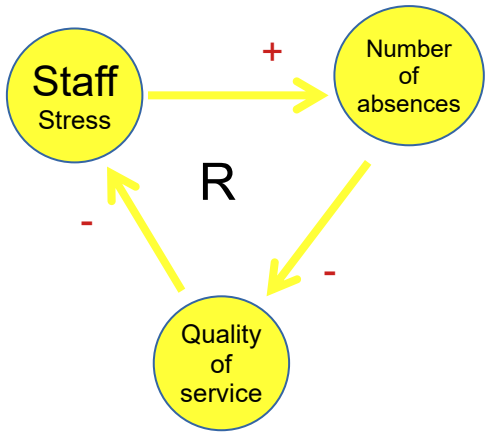
What's in?;
What's out?

"There is only one system"
Donella Meadows

Note- Can only look at the bit that is most important to you.

System storytelling

Vicious Loop

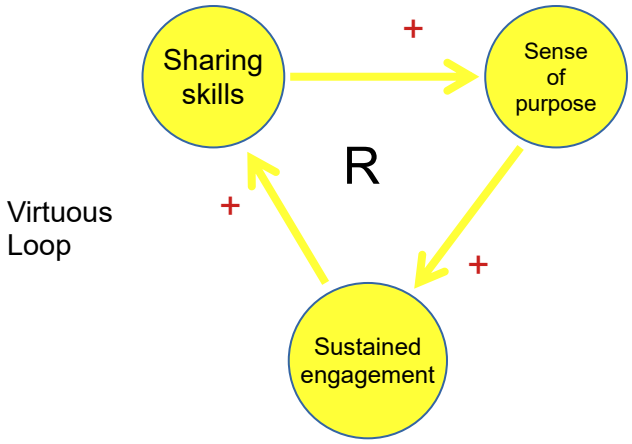


Systems Thinking and TOC
The why and Men's Shed example

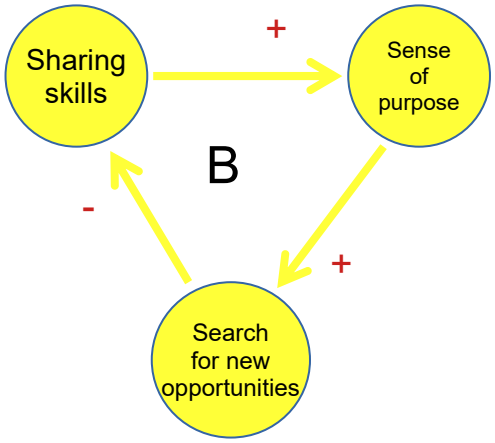
Why incorporate systems thinking in Evaluation and TOC?

1. Visual. Rapid. Accessible shared-understanding.
2. It brings Theory of Change models 'back to reality'
3. Problem solving in complexity requires nuance.

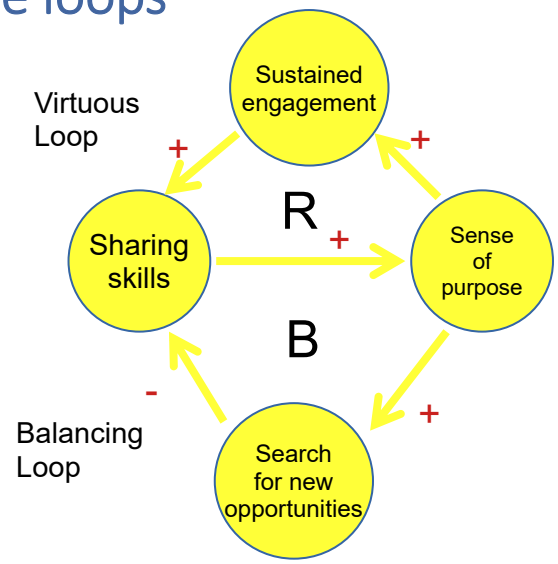
Every Bloke Needs a Shed Example 1



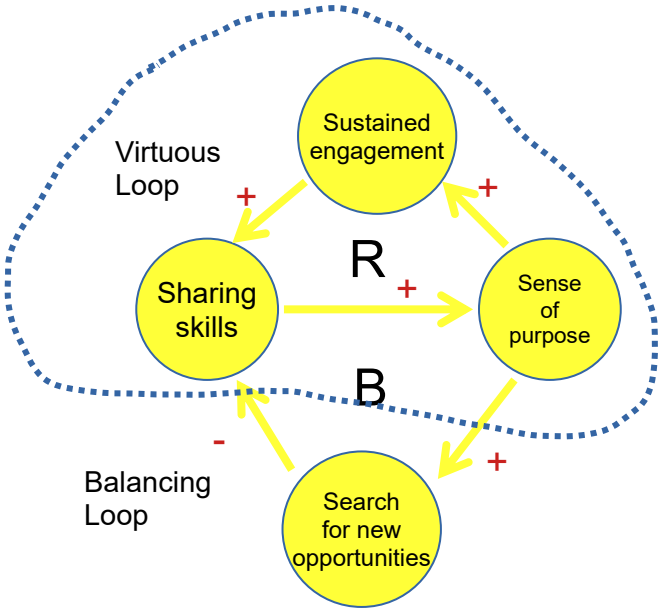
Every Bloke Needs a Shed Example 2



Combining the loops



Boundaries – What is in? what is out?



The activity

1. Use Mural to draw the "staff stress" causal loop example presented by Dr. Skelly.
2. Create a causal loop from your model in Mural
   A. Choose a group of 3 outcomes (hint: you may need to create a new outcome) that is suitable for a causal loop.
   B. Copy this group of outcomes to the area provided.
   C. Check the outcome boxes in the group are all neutral (i.e. no "increasing" or "decreasing", e.g "increased health" changes to "health").
   D. Create the directional pathways between the outcomes
   E. Mark each as either "+" or "-" relationships
   F. Identify what type of loop it is (i.e. reinforcing (virtuous or vicious) or balancing)
   G. Add "R" for reinforcing or "B" for balancing in the centre of the causal loop.

Extension activity

1. Add the causal loop you created in the area provided to your TOC model (either your Mural Model or Draw.io model).
2. Create an additional causal loop and add this to your model.