CAUSAL LOOP DIAGRAMS

WHAT

System dynamic tool to identify and map structures in a system by mapping feedback loops. Identifying this structure will help to understand the behaviour that follows.

WHEN TO USE

- **Stage(s)**: Can be used in any stage
- **Goal**: Interrogate existing knowledge, create new knowledge, think ahead & find solutions to address challenges
- **Type**: Systems thinking tool
- **Time & Effort**: 3 - 4 hrs

HOW TO USE

- Determine the system/theme you want to map and the boundaries you will respect. Identify the variables in your system and the links between them, they can evolve in the same (S or +) or opposing (O or -) direction.
- **Reinforcing loops** compound change in one direction with even more change eg one nasty comment leads to nasty respons and a conflict arises.
- **Balancing loops** try to bring a system to a desired state and keep it here eg eating when hungry and stopping when you have had engough
- Both type of loops can be combined in one system and there can be a shift in dominance between the two loops.
- When mapped over time: reinforcing loops go up, balancing loops are cyclycal until plateau is reached.
- Delays in the loop cause the resulting behaviour to come with a delay - very hard to predict the outcome in such a system

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STRENGTHS

- Offers a high level view of a system, first step in system dynamics.
- Can be expressed in behaviour over time graphs which offer a different way of looking at the same process.
- Forces you to clearly select a theme, time horizon, boundaries and aggregation level.
- Allows you to think about delays in the system.

WEAKNESSES

- No distinction between stock variables and flow variables and thus the diagrams offer less detail than stock & flow diagrams.
- It helps determine the leverage points but not necessarily the direction in which to manipulate them to obtain the desired result.

Source:
The Systems Thinker – Video: Introduction to Causal Loops - The Systems Thinker

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