Causal Loop Diagrams

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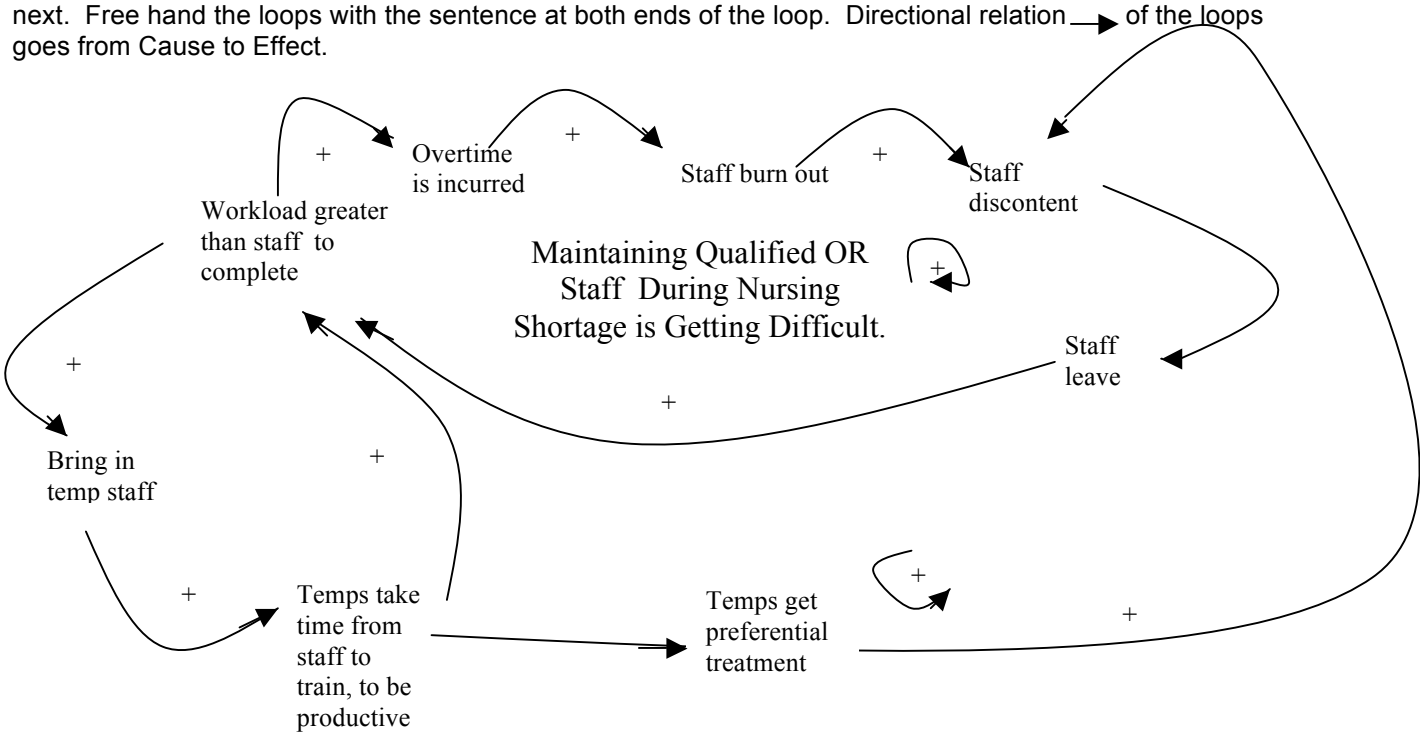
Causal loops diagrams are used to display the behavior of cause and effect from systems standpoint. Fishbone diagrams may elicit the categories of causes that impact a problem. Causal loops show the interrelation causes and their effects. When finished you have a diagram of the positive and negative reinforcements which describe the system of behavior. Neat thing about causal loops is it is depersonalizing. People can point at the arrows in the loop that are reinforcing the problem instead of pointing at people. It becomes a model of system behaviors that create the outcome of the system.

One way to create a Causal Loop Diagram:

Step 1 Start with a problem – characterize it in simple terms such that it would be clear to all who have even peripheral understanding of it. What is wrong? What is it you don't like? What is the root source of the problem?

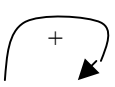
Step 2 Begin defining the causes of the problem. Start with a fact in the loop. State it in sentences such that there is a relationship between cause and effect. The reason OR staff are dissatisfied is because too much overtime is being incurred. There is always a noun in the sentence.

Step 3 Each cause becomes an effect of the next. To find a cause, ask, Why. To find out the effect, ask, what happens. It's a probing process of Why's. And when you discover a why, you ask, well what happens next. Free hand the loops with the sentence at both ends of the loop. Directional relation → of the loops goes from Cause to Effect.



Step 4 Show relation between Cause to Effect as reinforcing (+) or negative (-). This does not indicate good or bad it just means as the cause goes intensifies, effects does too (+) and as cause diminishes, effect does also (-).

Step 5 Seek out systems and sub systems (series of loops that feed into each other) of loops. If a subsystem of loops is reinforcing place a notation:
The set of loops is completely reinforcing.



A negative or balancing loop (-) is referred to as a "**goal seeking**" loop. There is a mechanism in this loop that is trying to maintain some level of stability.

Step 6 Distinguish between perceived and real facts. Graph over time to better characterize them.

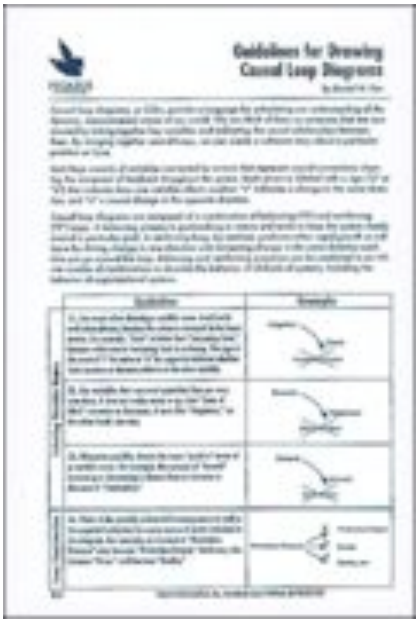
Step 7 To begin reducing an effect of a cause, take a loop out and ask: if this effect were 'fixed' or did not matter what could be done to lessen its impact on the loop. This entertains possible solutions. By lessening or eliminating any arrow in the loop, you make an impact on the overall behavior of the system. If you are stuck on how to lessen an impact of the loop, imagine having a conversation a year from now and saying "I overcame this by…..)

What I like most about Causal Loop Diagrams is they illustrate that our organizations are human nature on mass scale. And by understanding the assumptions behind its actions allows one to make profound change.

Reference: This site and material has been recommended to me
Good little site - http://www.pegasuscom.com/cld.html

Guidelines for Drawing Causal Loop Diagrams

- Case Studies
- Causal Loop Diagrams
- Complexity
- Conflict Management
- Dialogue
- Education
- Global/Societal Issues
- Healthcare
- Human Dynamics
- Leadership
- Mental Models
- Organizational Design
- Organizational Learning
- Personal Mastery
- Shared Vision
- System Dynamics
- Systems Archetypes
- Systems Thinking
- Team Learning



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Description

This guide outlines a 10-step process for drawing effective causal loop diagrams--including selecting variable names, constructing the actual loops, distinguishing between reinforcing and balancing processes, and checking your loops for accuracy. Every tip is accompanied by examples and an accessible diagram.

The Virtue of Causal Loop Diagrams (CLD): From an email comment by Jim Hines, a Professor at MIT, to the system dynamics listserv on February 23,2000.

> "In consulting, I usually start with causal loop diagrams before going on to stock and flows. The exception is when I see immediately a very clear and important stock and flow structure (the I-Think folks might call this a "main chain") in which case, I might dive into the stock and flow right from the start.
>
> "In teaching the SD applications course here at MIT, we encourage students to start with causal loop diagrams. One reason for this is that students who start with stocks and flows often never complete any important feedback loops.
>
> "Other reasons to start with causal loop diagrams include:
>
> 1. CLD's are usually more dramatic and hence capture the interest of students and clients alike (its good to start with a bang).
> 2. Causal loop diagrams lead to insights on their own more frequently than stock and flow diagrams do. (Note, I am distinguishing between stock and flow diagrams and the simulation model).
> 3. Causal loops are easy to develop at a relatively high level of abstraction - this means that they can provide an overview of the system you are modeling, before getting down to the nitty gritty.
> 4. Causal loop diagrams are fuzzier, so they can be drawn even if you are not yet clear on every single concept (this is a common state at the beginning of the project).
> 5. Causal loop diagrams are cheap relative to simulation modeling (and cheap relative to an equation-level stock and flow diagram). This means you can more quickly get a comprehensive feel for the problem area. And inexpensively generate some initial insights."

However, CLDs have some shortcomings: they don't adequately illustrate details that are important to the larger picture. They don't note which of the terms is something flowing into the system and which is something accumulating in the system. Nor do they indicate which term comes first in a process, if this is important to the diagram logic. In addition, sometimes users don't adequately account for causality and so a CLD can be drawn inaccurately, which can lead to confused thinking.

Interesting Causal Loop Diagram on Doing the Right Thing

http://www.9types.com/epd/causal_loops.html

John J. Shibley / The Portland Learning Organization Group

This is a great method of developing loop. Article is on the site.

http://www.systemsprimer.com/making_loops_intro.htm

Here's the method...

1. Sense a story
2. Listen to the story
3. Listen to the story again, with "variable ears"
4. Create variables
5. Create links
6. See if the links make a loop

There are also two general rules that permeate the method:

Rule #1: As you move through the model, freely use what you learn to revisit and refine work done in earlier stages.

Rule #2: During it all, attend to the assumptions being made, and the way those assumptions are formed out of data.

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