**Session Name:** Causal Loops and Concept Models: From Complexity to Clarity

**Speaker:** Jeff Wasbes, University of Albany

**Session Date/Time:** 6/23/2011 12:00PM

**Notetaker:** Katelyn Cummings

**Main Themes:**

* Purpose of this session:
	+ To explain the basics of causal loops
	+ To show how they can be applicable to evaluators
* Causal loops can be used to show the complex links between natural and human systems

**Detailed Notes:**

* Causal loops
	+ used to create a formal mathematical model
	+ an inexpensive, easy way to understand the complexities of a system
	+ do not substitute formal models but are a piece in getting to the formal model
	+ have a more qualitative aspect than quantitative
	+ use words and arrows
* The words have to be nouns (objects or effects) because the arrows represent causality
* Each casual arrow has a polarity, meaning it’s positive or negative
	+ Positive polarity represents events going in the same direction (e.g. both increasing or decreasing)
	+ Negative polarity represents events going in opposite directions
* Entire loops also have polarity, which can be a positive or negative loop
	+ Positive loop – reinforce the state
	+ Negative loop – seeks a stable state, balances out
* Can elaborate on the loops by explaining the loop goals
* Two ways to check the loop’s polarity
	+ Count the signs – an odd number = a balancing loop
	+ Follow the story - start on one level and when you come back around, whether it is on the same level or on a different one shows the polarity
* Can be difficult to quantify qualitative elements

**Points of Discussion:**

* Why is policy considered a noun? It seems more like an action to me.
* To check the polarity, can you start anywhere?
	+ Yes.
* How do you decide which nouns to use?
	+ Use interviews to get input on which variables to include
* Could you explain the use of polarity?
* How do you incorporate threshold into this model? What if a variable is positive in one case but negative in the other? Or what if it’s always neutral?
	+ Non-linear relationships are made to go to more formal models. Causal loops should not need any representation for threshold. The polarity should be definitive. If the polarity is in questions, then more variables need to be added.
* How would you apply causal loops for anything other than for a formal model?
	+ Can be used with audiences that might not have as clear of an understanding, better explains the other types of pressures and problems that exist within the system, supplement to logic modeling and program design process
* Do you have any strategies or tactics to think about when a full feedback loop occurs?
	+ Can have a whole other level to the loop, one causal loop can be a par tof a larger loop
	+ Levels and flows – additionl ways to extend the causal loop maps, can be used to show measures
* Can you see an application for causality loops?

Websites/Programs Used:

* [Vensim PLE](http://www.vensim.com/venple.html) – the software for creating causal loops