Module 3 Lesson 4 – Concepts & Causes
Friday, September 23, 2022 6:20 PM

3.4.2 Concept Maps

- Characteristics:
  1) Concepts
     - perceived regularity in events or objects, or records of events/objects, designated by a label
     - label is usually a word, although symbols (+, %, etc.) can be used
  2) Linking Words
     - Propositions
       - statements about some object or event in the universe, either naturally occurring or constructed
       - contain 2 or more concepts connected using linking words/phrases to form a meaningful statement
  3) Concept Hierarchies
     - most inclusive, general concepts at top, more specific concepts arranged below
     - depends on the context in which that knowledge is applied/considered
     - Focus Question
       - a particular question we seek to answer
  4) Cross-Links
     - relationships/links between concepts in different segments or domains of the concept map
     - represent creative leaps on the part of knowledge producers
     - two important features:
       1) hierarchical structure that is represented in a good map
       2) ability to search & characterize new cross-links
  5) Examples
     - helps clarify meaning of a given concept
     - normally not included in ovals or boxes

3.4.3 Creating Concept Maps

- Steps:
  1) Begin with a domain of knowledge that is familiar/you want to be familiar with
     - creates a context that will help determine hierarchical structure of concept map
     - construct a Focus Question (every concept map responds to a focus question)
     - do a periodical check-in with the focus question

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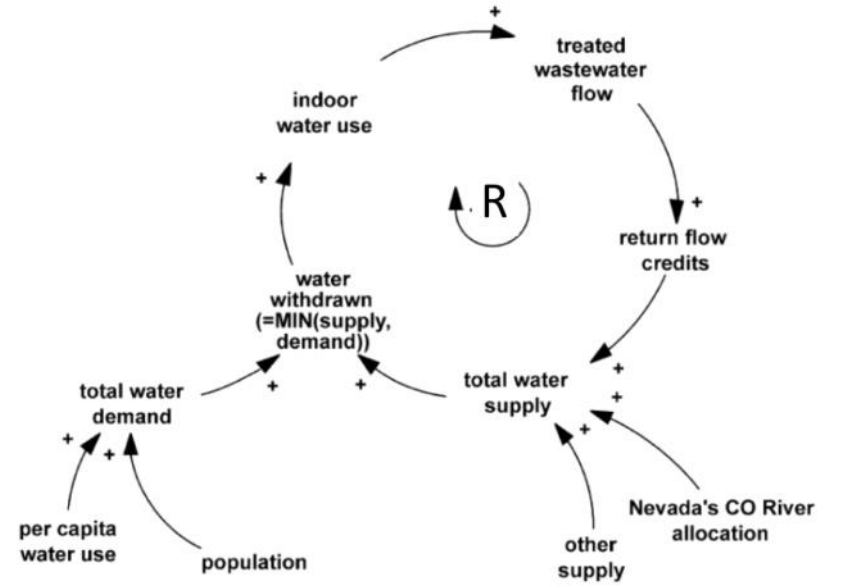
2) Create a ranked list of key concepts that apply to the knowledge domain chosen for the map
   - Start with the most general, most inclusive concept
   - Progress to more specific topics at the end of the list

3) Construct a preliminary concept map
   - A concept map is never finished
   - It is always necessary to revise this map

4) Add cross-links

3.4.4 Causal Loop Diagrams

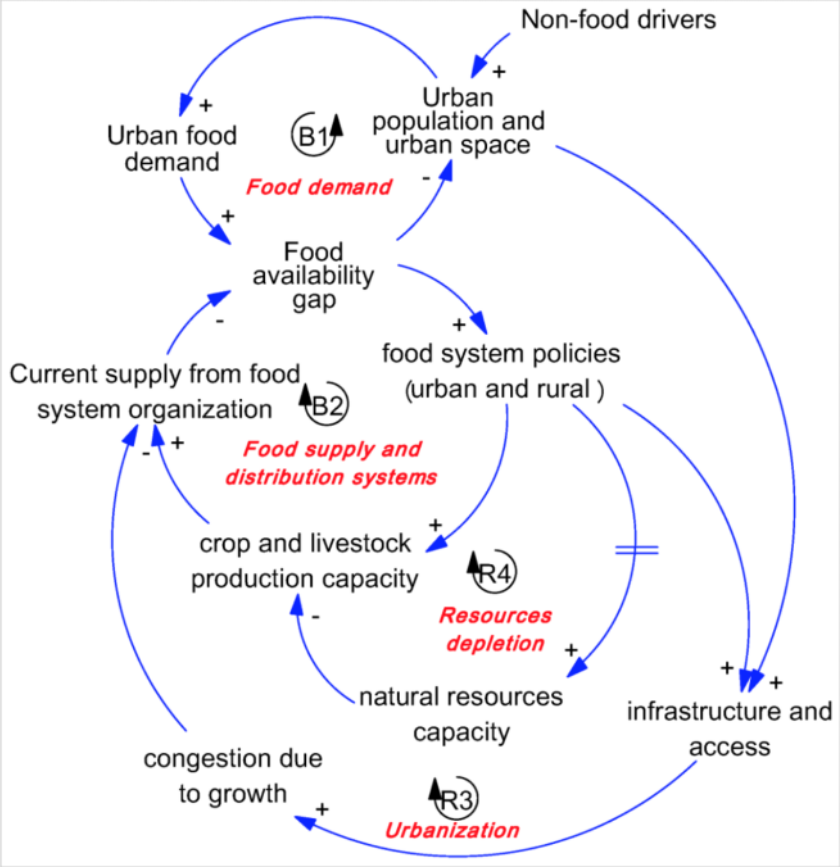
- Feedback Loops in CLDs can be either reinforcing (R) or balancing (B)



An example causal loop diagram with a positive feedback loop showing water use in Las Vegas, Nevada (from Stave, 2003)

Each arrow is always associated with (+) or (-)

3.4.5 Reading CLDs



Be able to describe & explain

- which variables have direct causal relationships
- reinforcing feedback loops
- balancing feedback loops
- instances of significant lag times

Also consider carrying capacity, engineering intervention that might influence the system (natural resources capacity)