

# S.T.O.P. Systems Thinking Opens Possibilities

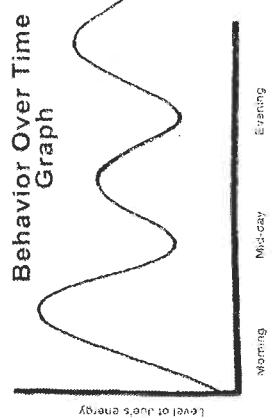
for Systems Understanding and Sustainable Change

## Sample Story

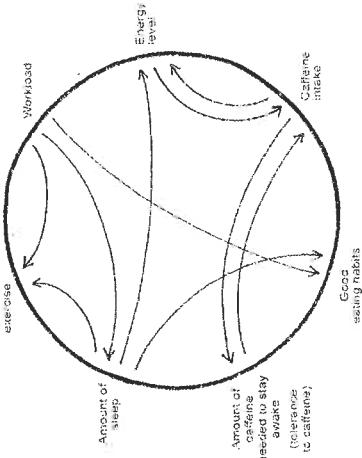
**The Coffee Crutch.** Having overslept, Joe grabs a cup of coffee for breakfast as he sprints out the door for work. By midmorning his energy slumps causing him to drink another cup of coffee. At lunchtime, as coworkers leave for their daily walk, Joe heads to the vending machine for a candy bar and soda. During his midafternoon meeting, Joe feels sleepy. He goes to the latte stand and thinking about the work he'll need to do that night, orders a triple shot latte. This keeps him alert for the evening but makes it hard to go to sleep and causes him to be even more tired the next morning. Poor Joe seems to be trapped in a cycle and doesn't know how to break it!

## Systems Analysis in Six Steps

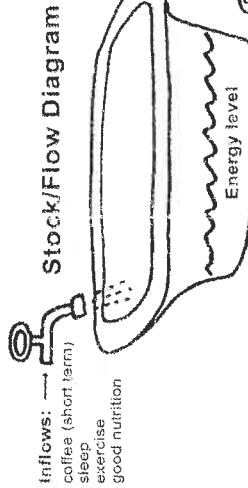
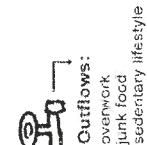
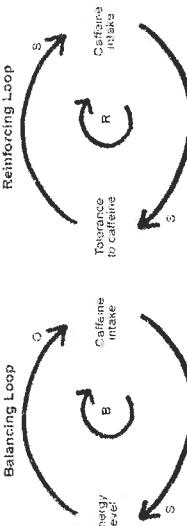
1. Tell the story
  2. Name the variables
  3. Determine the system boundaries
  4. Sketch the trends
    - behavior over time graphs
  5. Make the system visible
    - connection circles
    - causal loop diagrams
    - stock / flow diagrams
  6. Share and look for leverage
- 'Til We're Halfway*
- 
- The diagram illustrates the 'Iceberg Model' of systems analysis. It features a large, dark blue wavy line representing the 'Visible System'. Above the waterline, there's a small portion of the line labeled 'Events (what does what to whom)'. Below the waterline, a much larger portion of the line is labeled 'Patterns (recurring patterns of behavior)'. To the right of the wavy line, a small circle labeled 'Problem' contains the text 'How do I get off this thing?'. A curved arrow points from the problem circle down to the wavy line. The wavy line then splits into two paths: one path leads to a small circle labeled 'Joe's Example' containing the text 'I woke up exhausted and need COFFEE!', and the other path leads to a small circle labeled 'Reactive What happened?' containing the text 'Long work hours... a coffee shop on every corner.' Further along, the wavy line splits again into two paths: one leading to a small circle labeled 'Adaptive What is happening over time?' containing the text 'Everyday I get tired and need coffee throughout the day.', and the other leading to a small circle labeled 'Creative Why is this happening?' containing the text 'To stay competitive, I need to work a lot of hours.' Finally, the wavy line ends at a small circle labeled 'Generative In what way have our mental models created or sustained the structures that are in place?' containing the text 'Coffee is how I survive.'



## Connection Circle



## Causal Loop Diagram



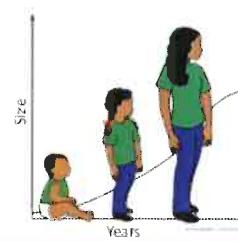
Adapted from: Sweeney, L. B. (2001). *When butterfly sleeves: A guide for helping kids explore interconnections in our world through favorite stories*. Waltham, MA: Pegasus Communications Inc.

our mental models created or sustained the structures that are in place?

Seeks to understand the big picture



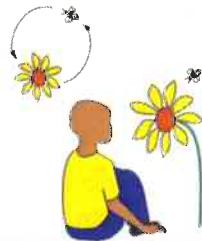
Observes how elements within systems change over time, generating patterns and trends



Recognizes that a system's structure generates its behavior



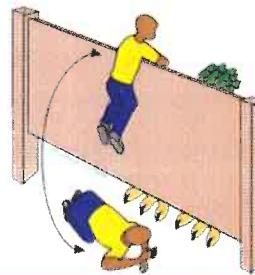
Identifies the circular nature of complex cause and effect relationships



Makes meaningful connections within and between systems



Changes perspectives to increase understanding



Surfaces and tests assumptions



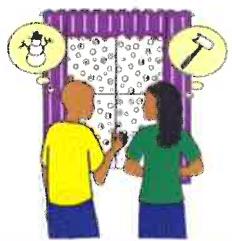
## Habits of a Systems Thinker



Considers an issue fully and resists the urge to come to a quick conclusion



Considers how mental models affect current reality and the future



Uses understanding of system structure to identify possible leverage actions



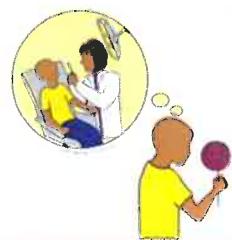
Considers short-term, long-term and unintended consequences of actions



Pays attention to accumulations and their rates of change



Recognizes the impact of time delays when exploring cause and effect relationships



Checks results and changes actions if needed: "successive approximation"

