



Systems Thinking

An Introduction

What is Systems Thinking?

How Does It Relate to Sustainability?

How Can It Help Us Implement Compass Strategies?

Presented by
Terry Woodward

Systems Thinking *Definition*

Systems thinking is a discipline for seeing wholes.

It is a framework for seeing interrelationships rather than things,

for seeing patterns of change rather than static “snapshots.

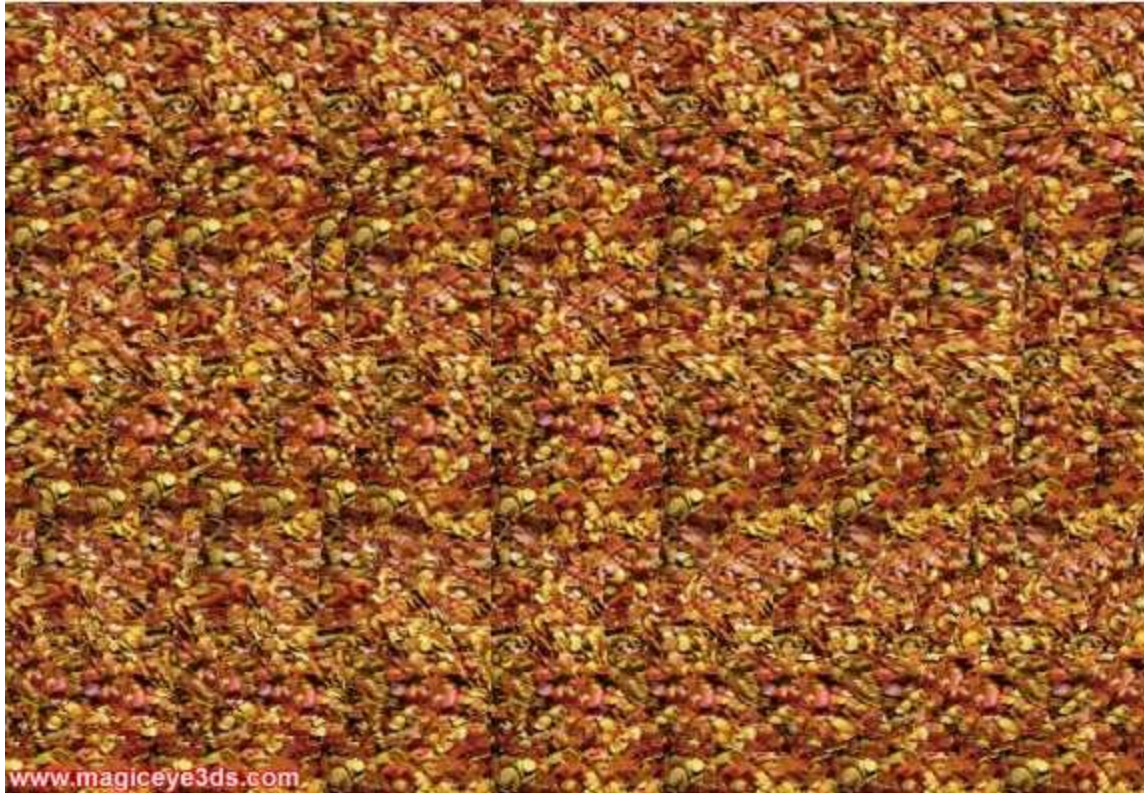
– Peter Senge



Héctor Garrido

Systems Thinking...

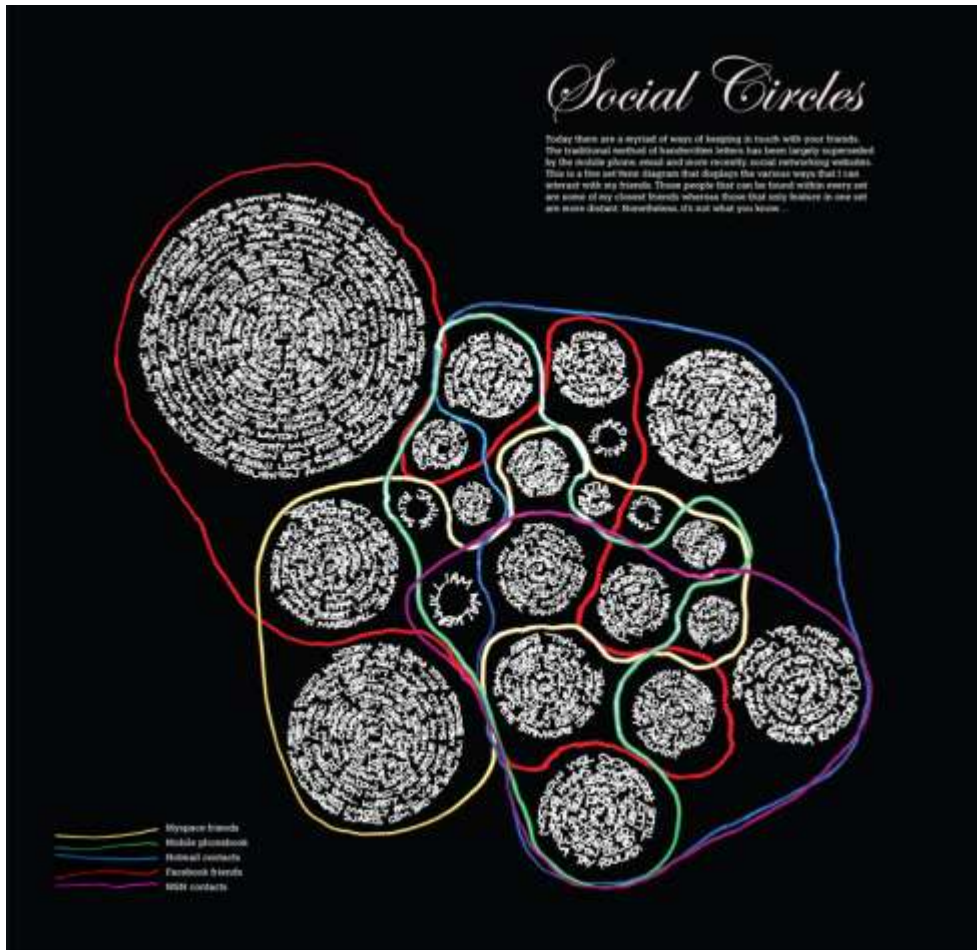
Encourages us to see the whole as well as the parts.



Focus as though you are looking *through* the image into the distance.
(magic eye)

Systems Thinking...

Helps us explore interdependencies looking for patterns.



Max Barret



Webecoist.com

Systems Thinking...

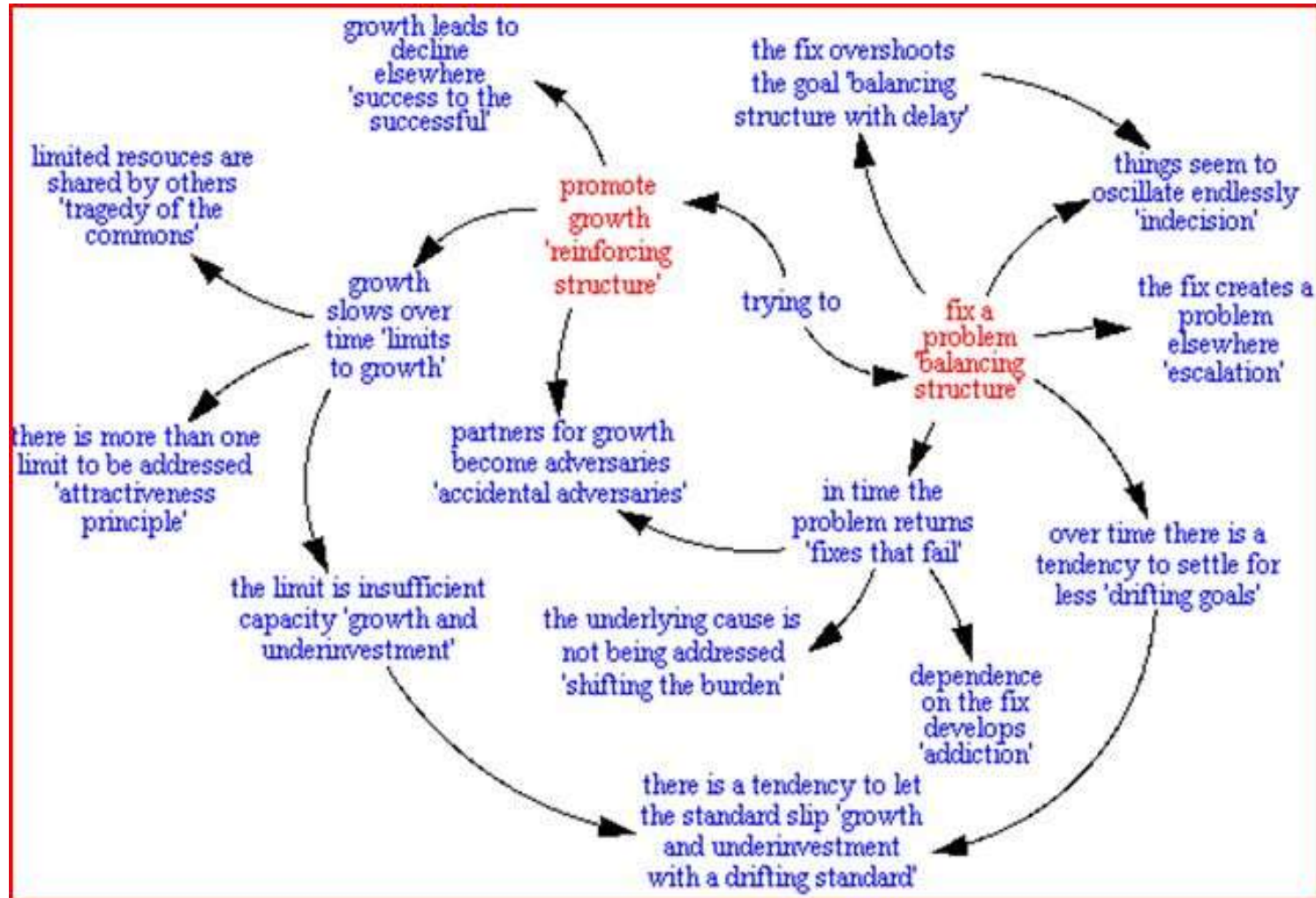
Helps us understand feedback structures that change systems over time.



River Fractal - Héctor Garrido

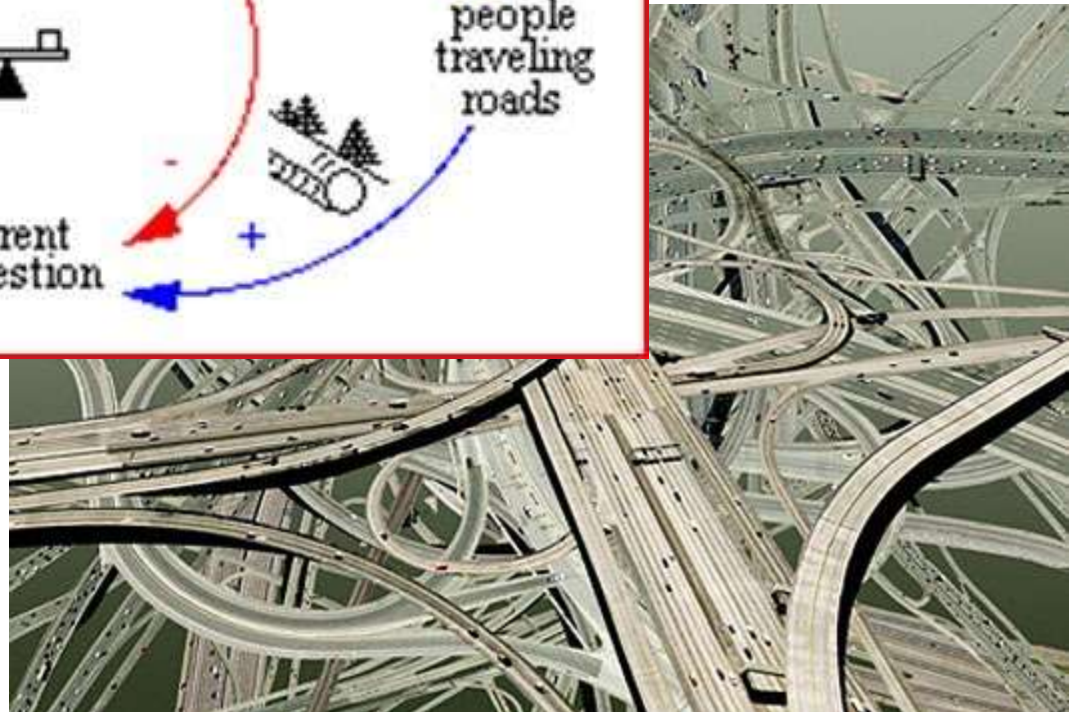
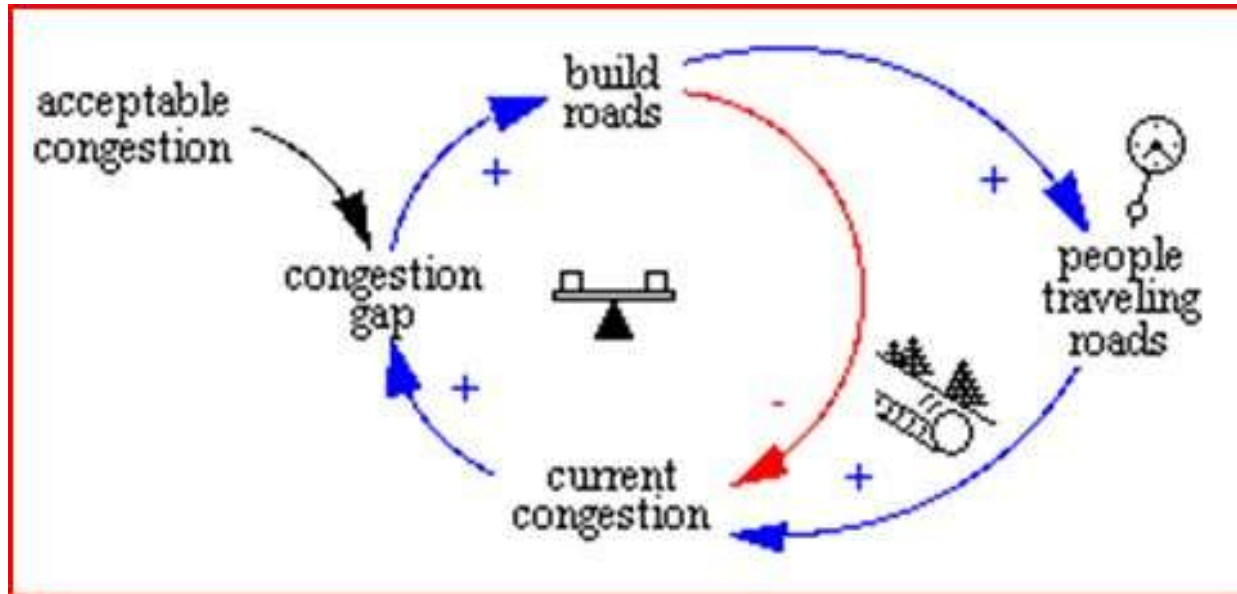
Systems Thinking...

Helps us understand results of our decisions...



Systems Thinking...

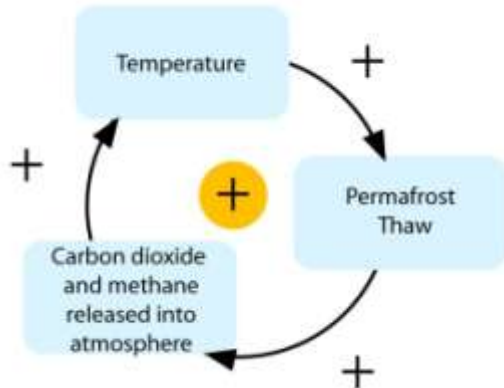
...Helps us to identify and avoid unintended results



How does systems thinking relate to sustainability?

Gives us a basis for understanding sustainability...

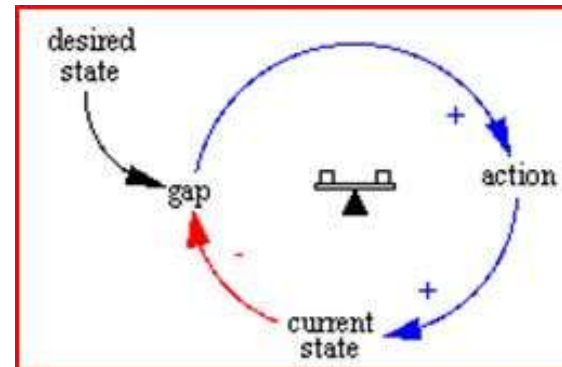
In any system under consideration - system behavior results from the effects of reinforcing and balancing processes.



A reinforcing process leads to the increase of some system component.

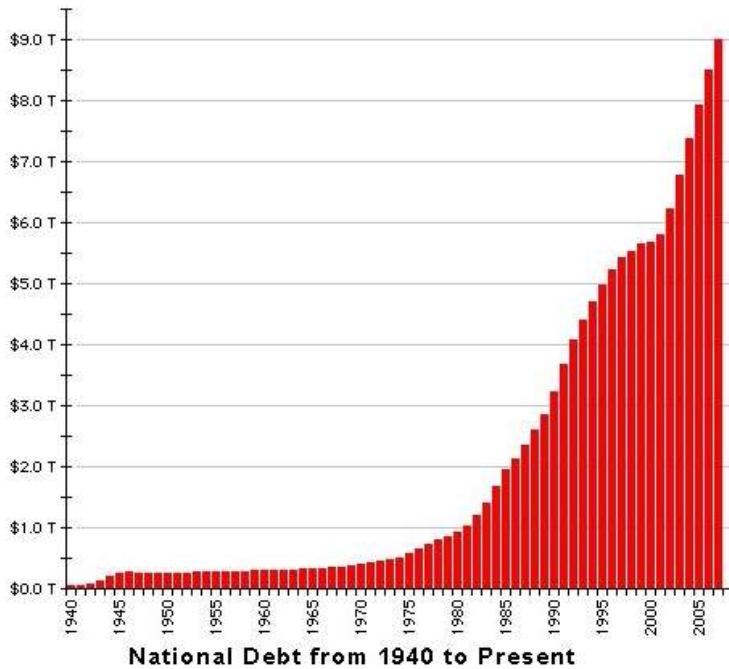
If reinforcement is unchecked by a balancing process, it eventually leads to collapse.

A balancing process is one that tends to maintain equilibrium in a particular system.

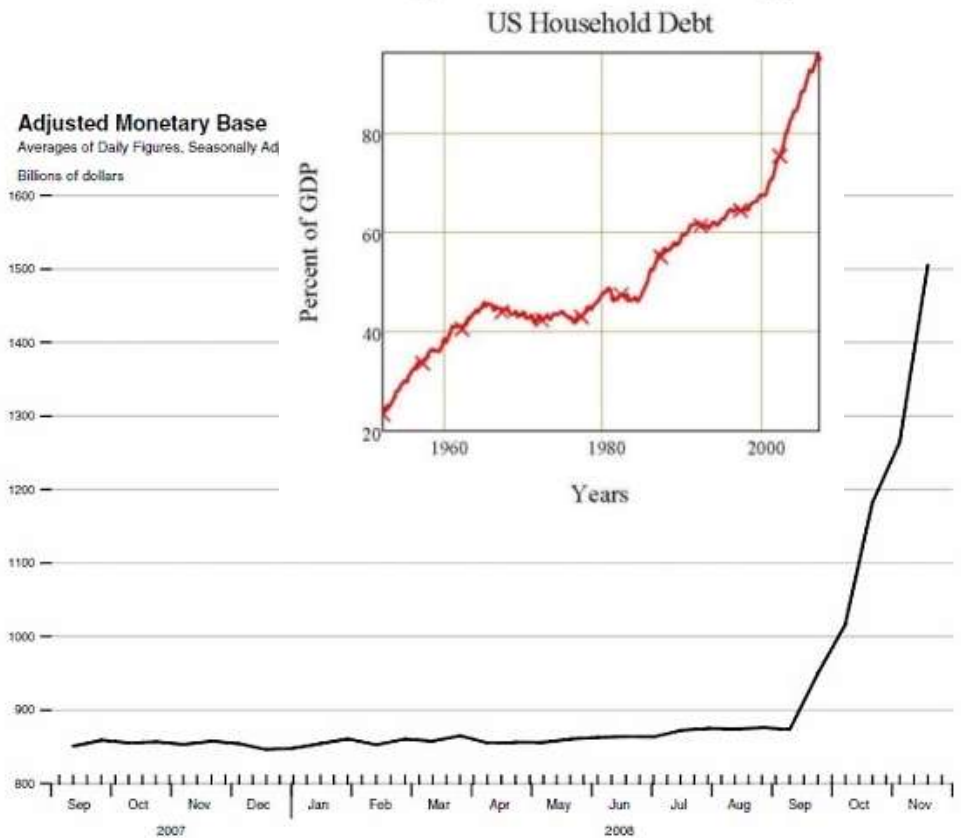


How does systems thinking relate to sustainability? *Helps us ask the right questions and set the right goals.*

$GDP = \text{consumption} + \text{gross investment} + \text{government spending} + (\text{exports} - \text{imports})$
 (A measure of flow acting as reinforcing loop + +)

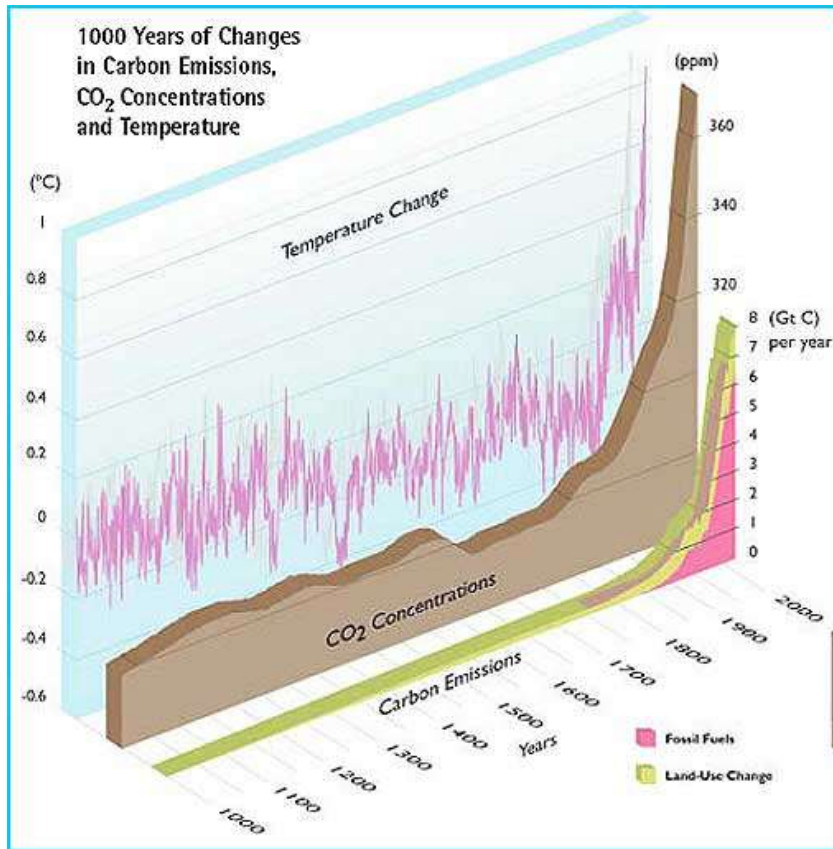


Source: U.S. National Debt Clock
http://www.brillig.com/debt_clock/

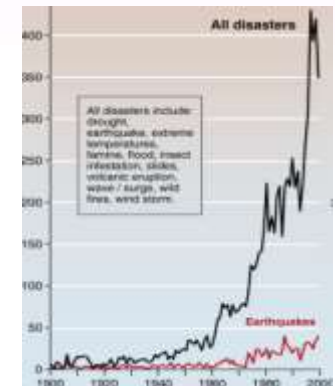
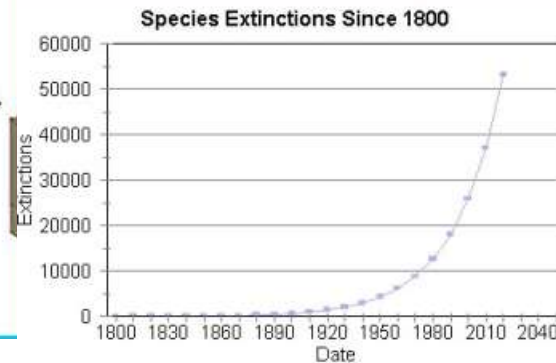
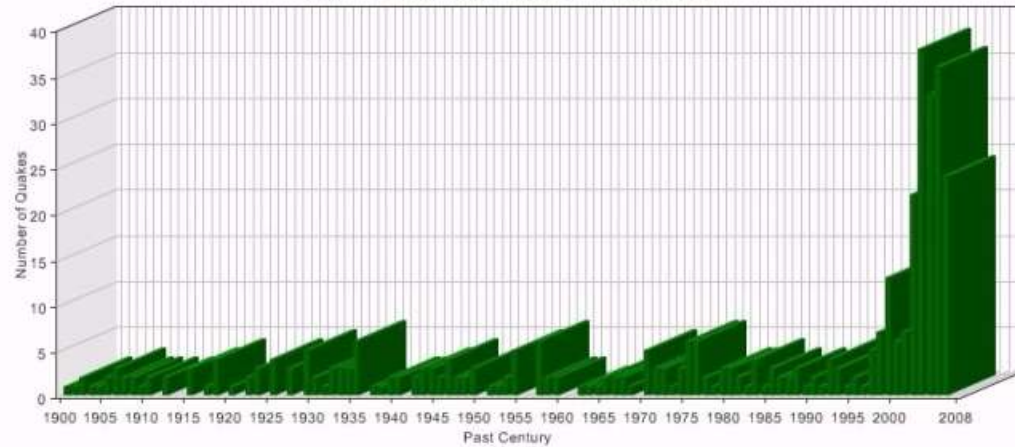


How does systems thinking relate to sustainability? *Helps us ask the right questions and set the right goals.*

1992 Council on Environmental Quality Report. "Accounting systems used to estimate GDP do not reflect depletion or degradation of the natural resources used to produce goods and services."



USGS Worldwide Deadly & Destructive Earthquakes between Magnitudes 6 and 8
<http://earthquake.usgs.gov/regional/world/historical.php>



How does systems thinking relate to sustainability?

Helps us ask the right questions and set the right goals.

What if?

Instead of a reinforcing

(+ +) loop of

consumption

without bounds



How does systems thinking relate to sustainability?

Helps us ask the right questions and set the right goals.

What if our goal looked more like a balancing loop (+ -) of:



- **getting BETTER rather than bigger,**
- **DEVELOPMENT rather than growth,**
- **QUALITY rather than quantity.”**

Steady State Economy Proverb



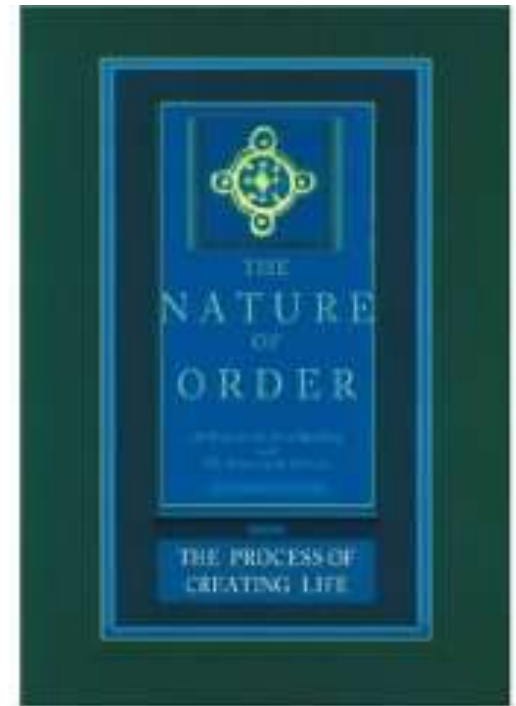
How does systems thinking help us implement the strategies of Compass?

Economic Vitality, Sustainable Development, Transportation, Healthy Natural Environment, Organizational Excellence, Thriving Families and Healthy Community.

“The key to any human unfolding process is that the artist or builder visualizes the thing as an entirety, as a whole, from the first day. Even before you start, you already fix on it and see it as if it were a whole. You feel it as a whole, imagine it in its wholeness and gradually tease out from it the features of this wholeness.”

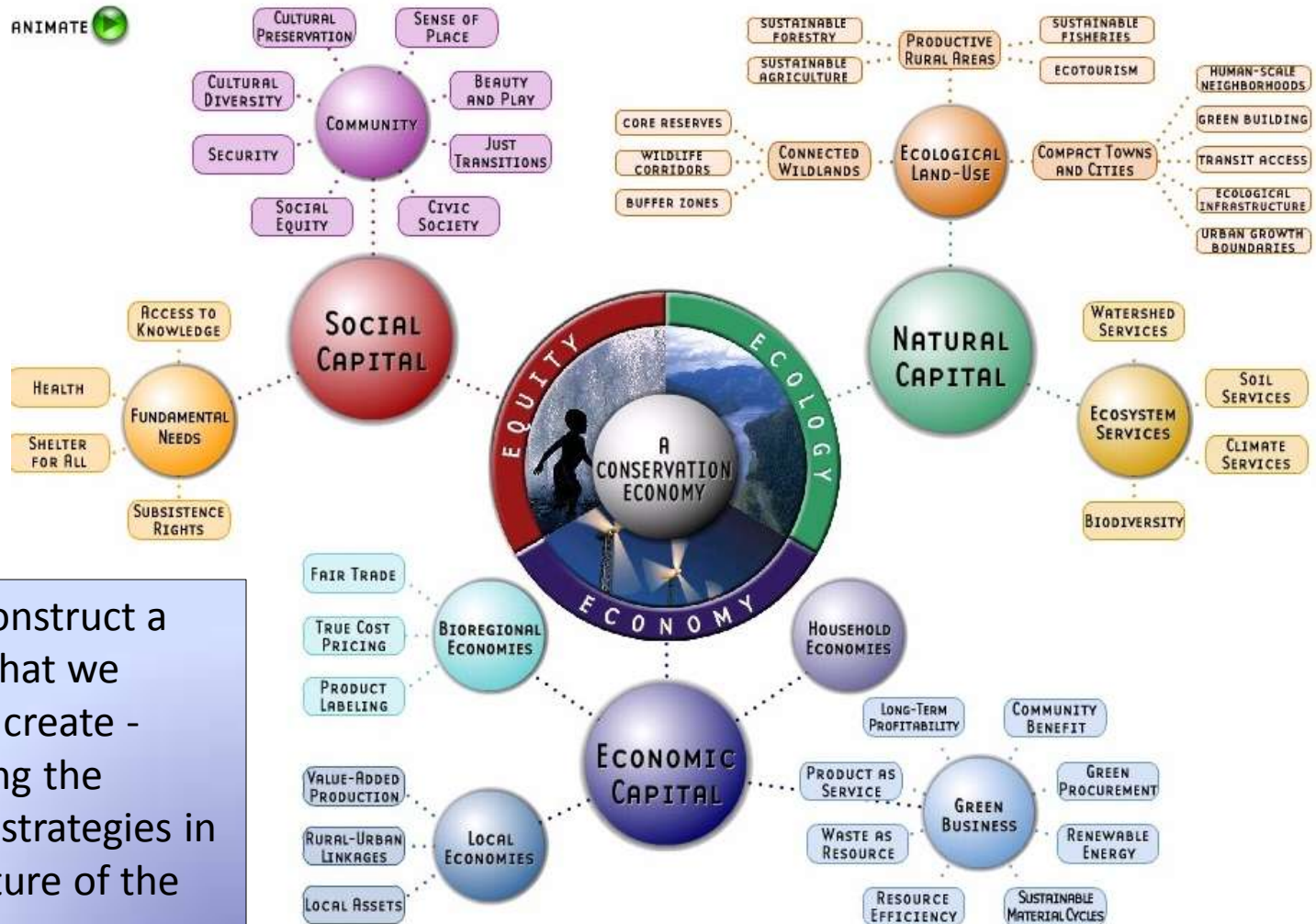
PROCESS “At each step you do something which has a significant (and good) effect upon this whole seen as a whole.” – Christopher Alexander

The principle of unfolding wholeness demonstrates that there are no “Ends” - only an interrelated chain of “Means” in a continuously moving sea of living change.



Christopher Alexander

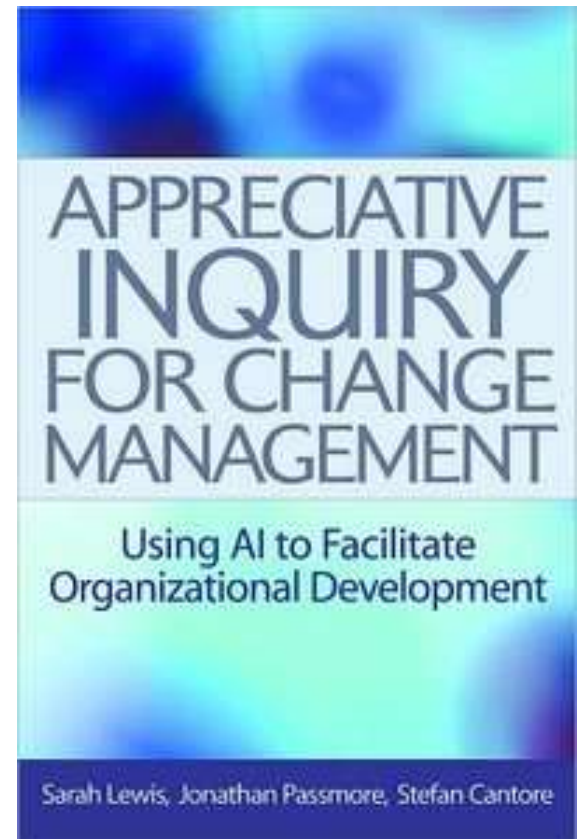
How does systems thinking help us implement the strategies of Compass?



What if we construct a map of what we intend to create - embedding the Compass strategies in the structure of the map?

How does systems thinking help us implement the strategies of Compass?

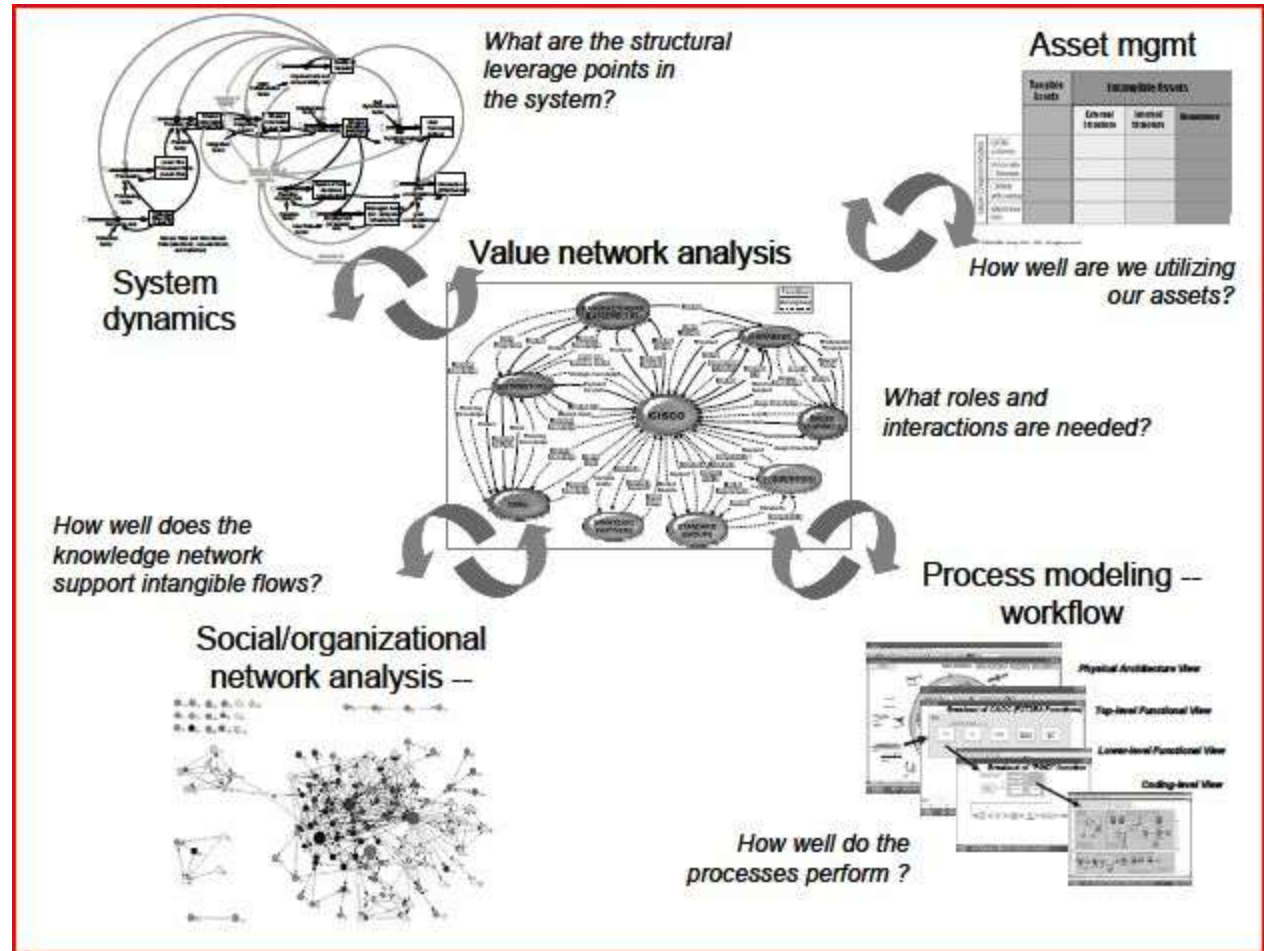
What if we focus on those positive things we excel at and seek to amplify them as the basis for change?



How does systems thinking help us implement the strategies of Compass?

What might we discover if we were to ...

explicitly map the VALUE in our relationships?





Systems Thinking...

Helps us transform our way of life.

"The Colorado Plateau is the Hopi Tusqua, or Homeland, but it is also the Learning Plaza.

Our tradition says that this is the place where one day people of all colors will come to fashion the Fifth World, a world where opposite strands-black and white, communal and private, one god or many gods-will be integrated.

From the six cardinal directions, people will create a new vision." - Vernon Masayesva - Hopi Hotevilla

Thank You!

