# Guiding Patterns of Naturally Occurring Design: Elements
A Pattern Language Approach

Viewing things as tailing each other
or as out hunting for action?
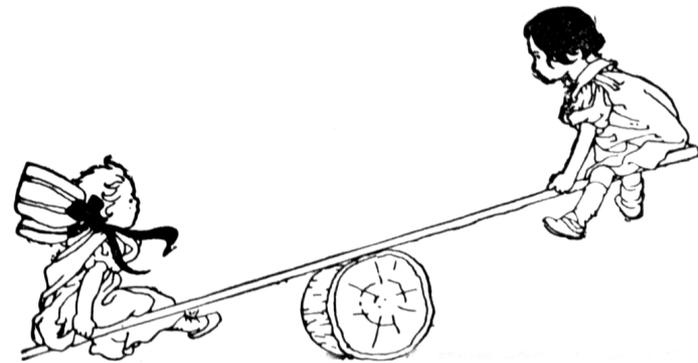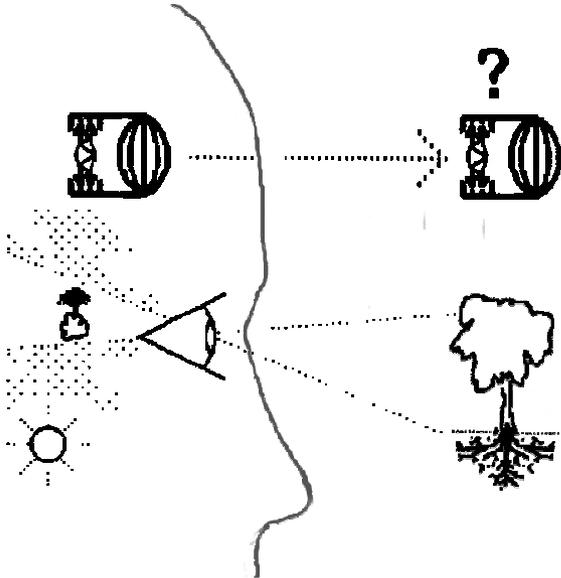

Back and forth,
*Creatively Responding to a Partner*
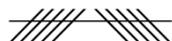
Guiding Patterns of Naturally Occurring Design:
Origins

Patterns of Animating Events

Patterns of Animating Environments
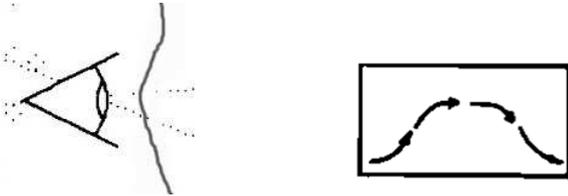
Phases of natural growth are irreversible stages of organizational development
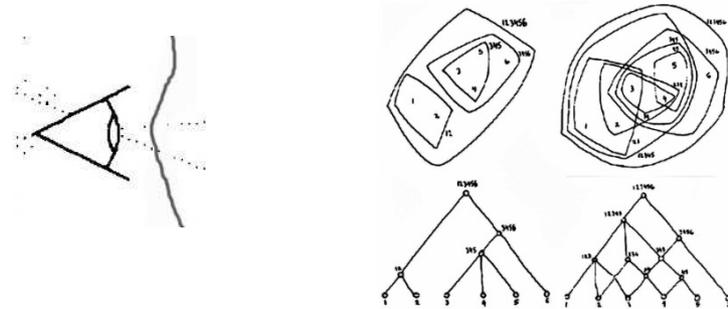
Relationships in a living place are complexly overlapping, like a semi-lattice

Jessie Henshaw

Physics & Architecture in the 70's
**"An Unhidden Pattern of Events" 1979**

- 80's & 90's the basic theory, methods & papers
- *Organized wholes as working natural designs developing from seeds*

Christopher Alexander

*Math & Architecture in the 60's*
"A City is Not a Tree" 1965

- A Pattern Language 1977
- The Timeless Way of Building 1979
- *patterns of wholeness in urban and architectural design*
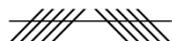
Guiding Patterns of Naturally Occurring Design:
A Model for Object Oriented for Science
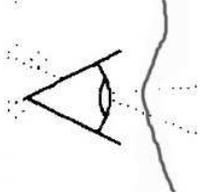
- ## Nature: full of whole individual organizations
  - that science has never had a way to study,
  - either as organizations or as individuals

- ## Science: studied rules for numeric data
  - modeling nature as equations
  - with variables co-determined in fixed relationships.

- ## Pattern Language: of organization for whole things
  - would allow study of the objects of nature as wholes
 - and their otherwise invisible internal designs
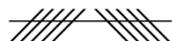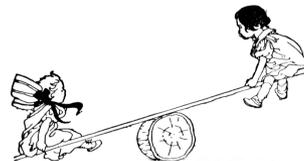
Guiding Patterns of Naturally Occurring Design:
Comparing Design Before and During Implementation

The Process of Purposeful Design

Stages of Achitectural Design
Duration and Amount of Designer's Work

I. Relationship
II. Initial Idea
III. Concept Devl.
IV. Schematic Design
V. Design Development
VI. Working Drawings
VII. Const. Supervision
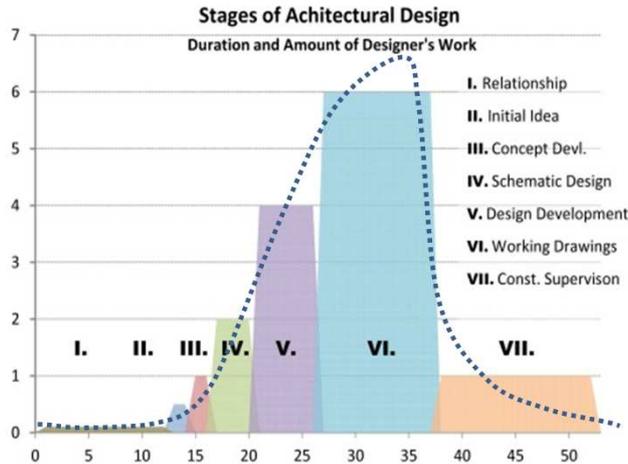
Stages of Emergence & Development to Fulfillment,

in Autonomy
Life
& Aging

The Process of Natural Design

Design Before Development

Purposeful Design Followed by Developing the Design

Innovations　∗
Design　　　······　design pivot
Building　　　——

fulfillment & autonomy
development pivot

germ　　　kick-off

0...... I.　II.　III.　IV.　V.　VI. VII.

many stages in beginning and completing both design & development

Designing ⟶ Developing ⟶
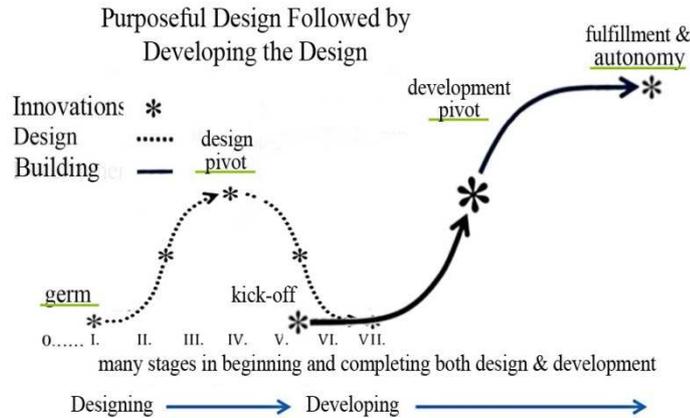
The organization to multiply your energy and make good use of it

Design During Development

Naturally Occuring Growth, Design and Development as One

Innovations　∗
Design　　　······　design pivot
Building　　　——

fulfillment & autonomy

germ　　　kick-off

0...... I.　II.　III.　IV.　V.　VI. VII.

many stages in beginning and completing

Growth ⟶
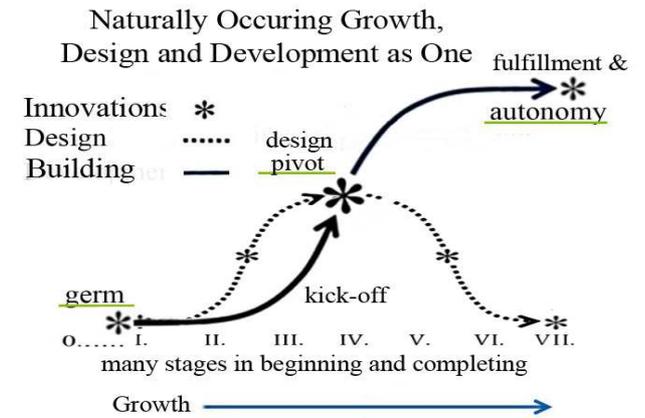
Guiding Patterns of Naturally Occurring Design:
Home as a Private World of Equitable Relationships

The General Pattern of Homes
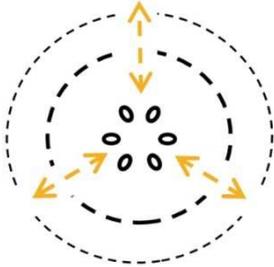
- An enclosure for a culture's own design for living
- With access to the world
- And a near environment or "niche" that marks its domain

Equitable Connections
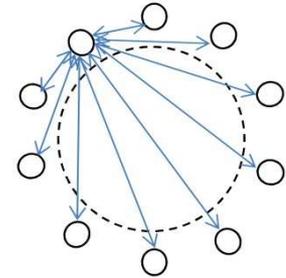

A Family Home as a private Commons
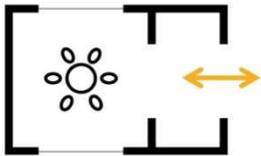
- A private way of living needing a private commons
- Access to the world and public commons
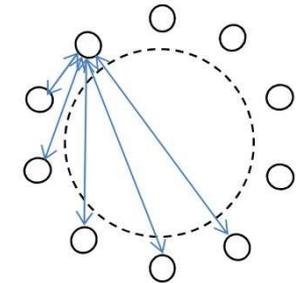
## A Community Home as a Public Commons
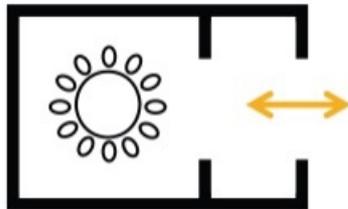
- The Town Hall,
- A Community Center for a public family
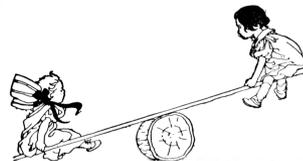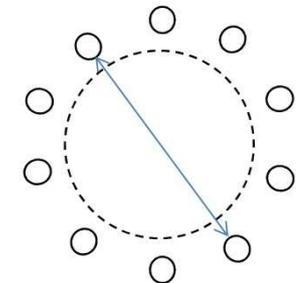
Guiding Patterns of Naturally Occurring Design:
Ecological Designs used for Pattern Search

An Ecology of Homes
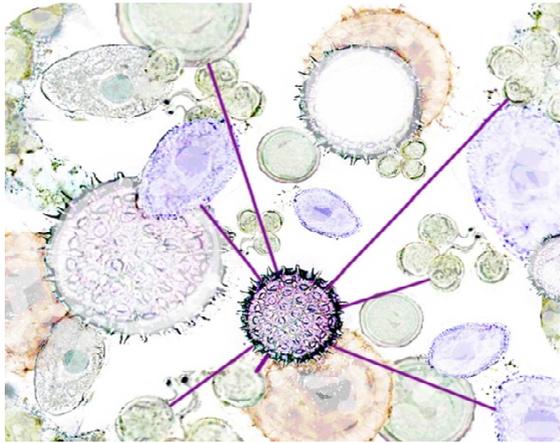
- Visible and Invisible Networks of Homes, With Visible and Invisible Overlapping Connections, Where Perhaps _Only_ the Ones You Relate To Are Visible…

Mediums of Exchange
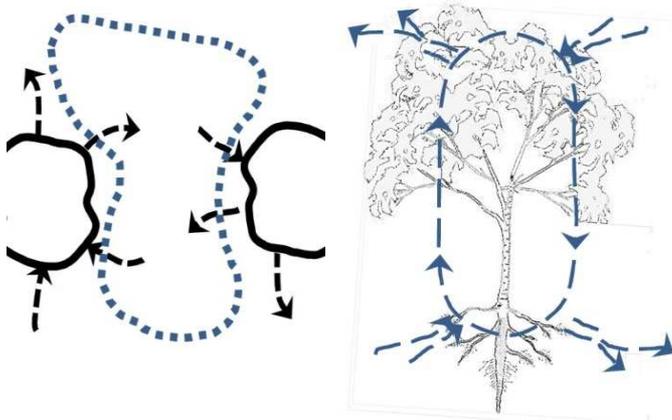
- Common Pools of exchange develop
- Circulatory Systems develop
- Places where things can be left where they won't be disturbed are discovered.
- Places where things can be left and are taken care of by something else
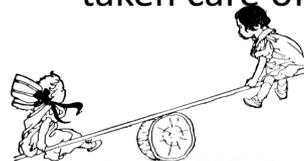
Guiding Patterns of Naturally Occurring Design:
Internal v. External views of natural designs for life

Nature:

The information world:
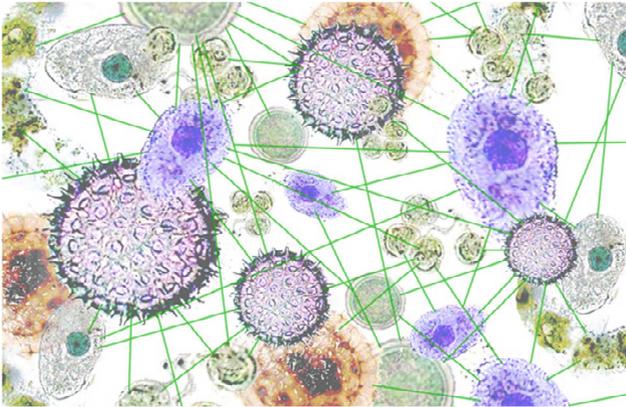
Full of Natural Organisms
- hidden worlds made by living things, as homes for their way of living

- a pattern repository for the design of its culture and organization system,

- encoding the roles of the past for future interpretation
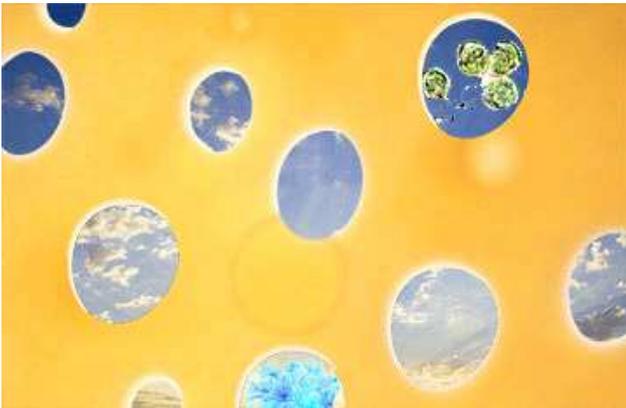
Full of corresponding holes in our information
- hidden worlds left out of the information for outside observers.

- It's a serious inconsistency in the models of science to not notice this gap in our ability to look at our subjects….!
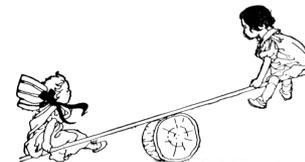
Guiding Patterns of Naturally Occurring Design:
Templates for Recording Design Patterns

A Template for Design Pattern Writing

Name	Context	Forces
Image	Problem	
	Solution	
Subject	Actions	Results

A Template for Natural Pattern Writing

Name type	Problem Boundaries & Scales	Forces Resilience & Animation
Image	Context – Arrangements of : • Centers • Roles & • Stages & • Movements	
Simplifying Relationships	Object Domain & engagement	Solution Learning process
Links	Results, Tracking, & Adjustments Anticipated Open questions	

1. Description of Intent

- Expressive name and picture
- Concept statement
- The place and the forces at issue
- Statement of the problem and solution
- Steps to take and results to confirm

2. Pattern of Natural Organization & Forces

•Interiors• •Exteriors• •Distant• •Balance•

3. Action & Reaction Cycles
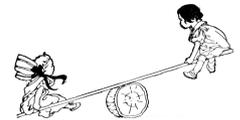
4. Place in the Phases and Events of Change

Connect

Fulfill

Mature

Break-out

Reorient

Start-up

Gather

Grow

Sustain
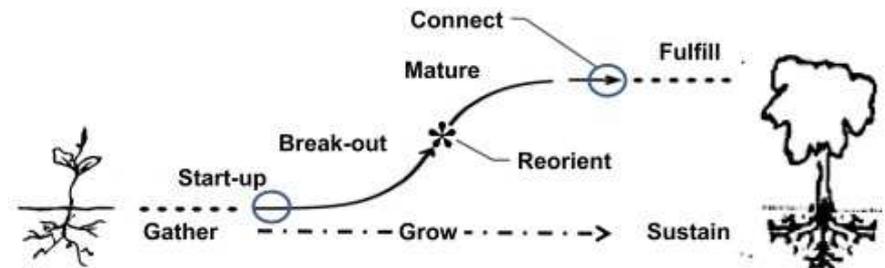
Guiding Patterns of Naturally Occurring Design:
General Idea of Natural Pattern Learning: Key Concept

Mental Patterns for finding Natural ones

Nature

Organism & Culture

Individuality

Organization

Relationship

Expectation

Image & Meaning

Observation

Acculturation
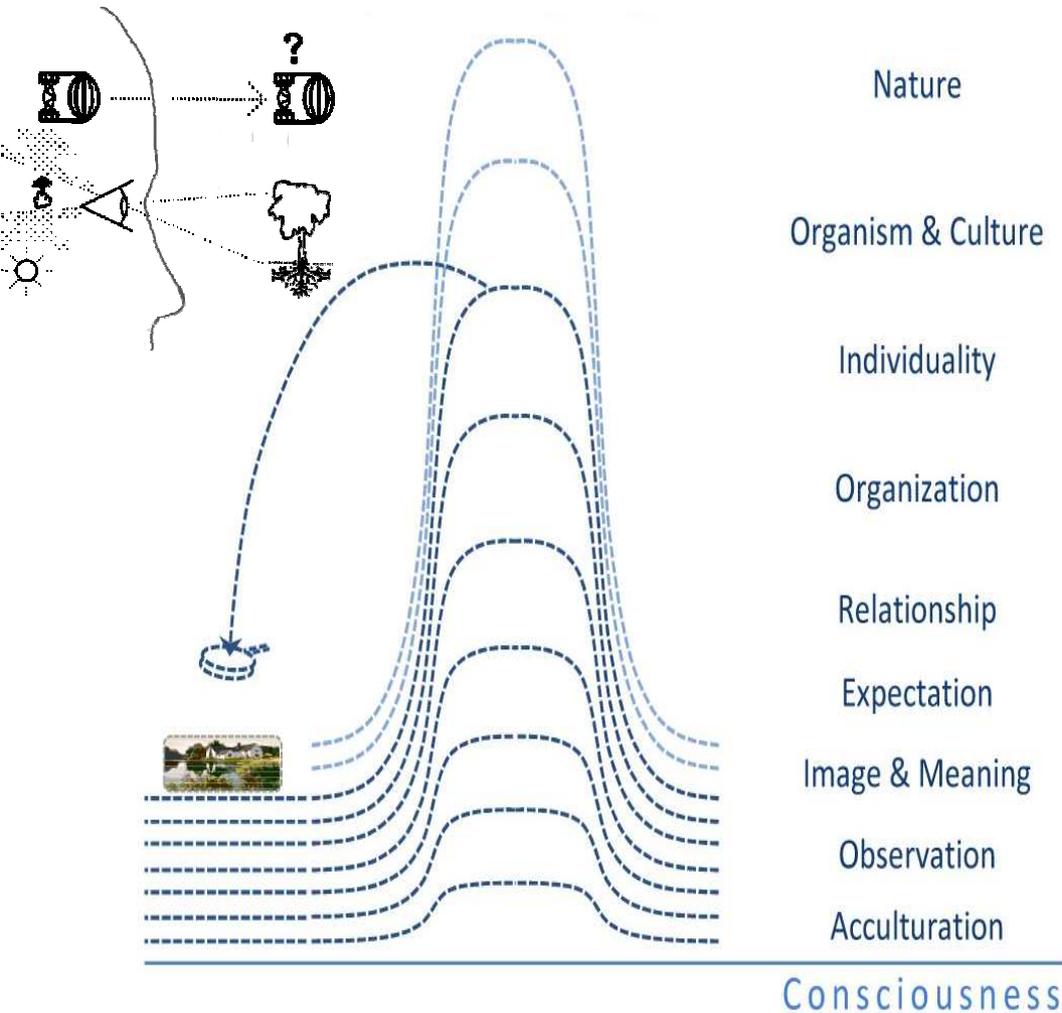
Consciousness

Equitable Connections

Levels of Natural Pattern Learning

- *levels of accumulating learning,*

- *a base of biological consciousness*

- *add acculturation & observation*

- *information and experience.*

- *using model patterns at one level*

- *to explore their natural instances,*

- *leading to recognition of patterns at the next level.*

- *As with Argyris' "Ladder of Inference" (1982), or Maslow's "Hierarchy of Needs"(1943), natural pattern learning can correspond to levels of self-awareness, confidence, and higher consciousness*

Guiding Patterns of Naturally Occurring Design:
The Dual Paradigm View of Learning II.

Learners Communicate with Each Other

JL Henshaw Version of Robert Rosen Diagram
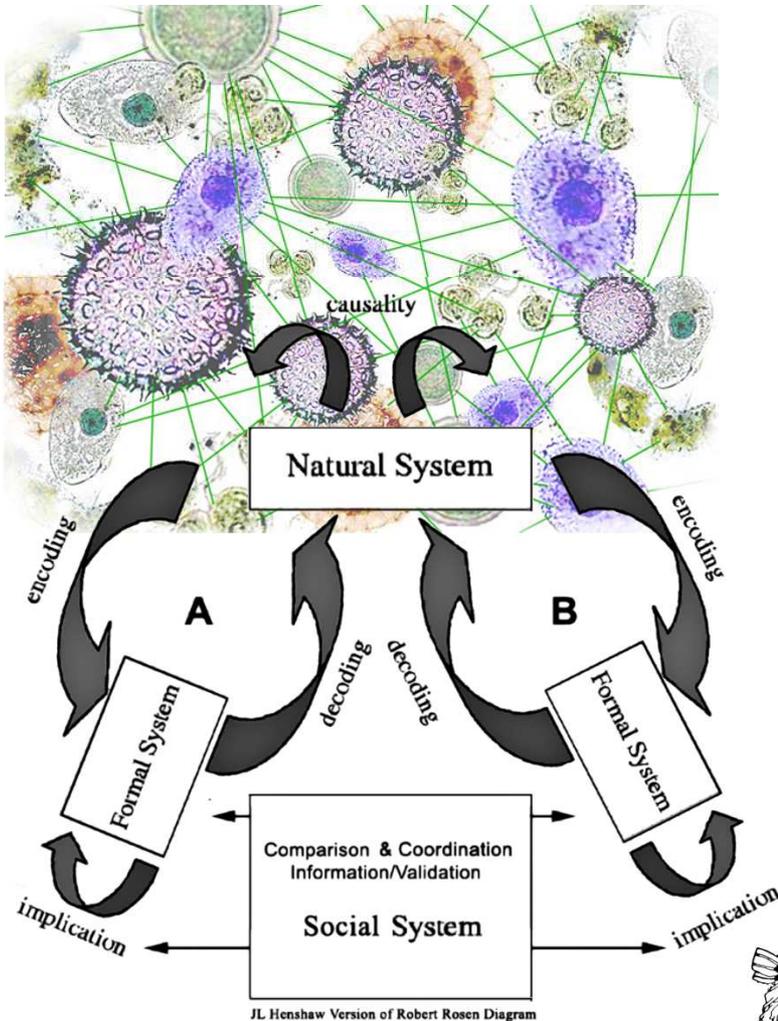
- For faithful translation of patterns from a multiplicity of independent 'minds', interest in what is lost in translation is needed.

- Much of what's lost is the inner worlds of independent 'minds', read from outside by their defenses, echoes and discards.

- Discards become resources with the environment as a "*medium of exchange*".

- Two human cultures have in common the need to read the same natural world patterns, as "insides read from the outside".

Natural Design Patterns

Snowflake
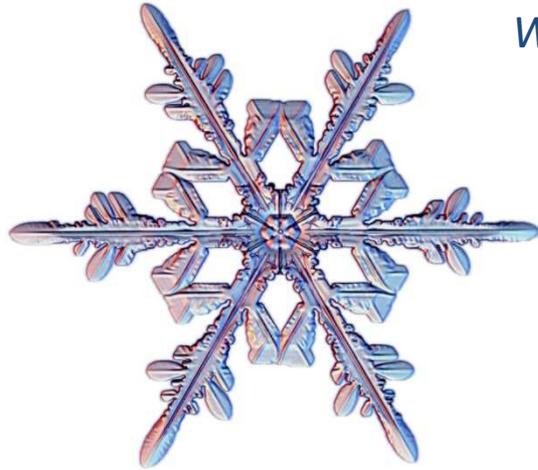
A Plant
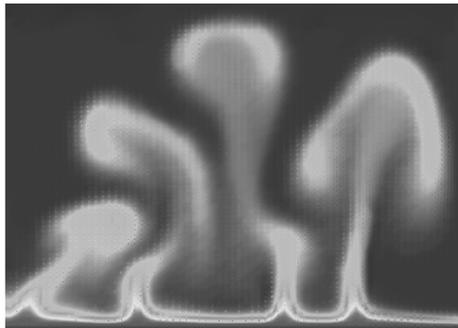
2009 by D.H. McNeil

*What pattern of design
Is it that propagates
From the point
Of each beginning*

*A starting*

*Germ cell
Crystallization
Eruption
Contraction*

Air Currents

Breathing

Guiding Patterns of Naturally Occurring Design:
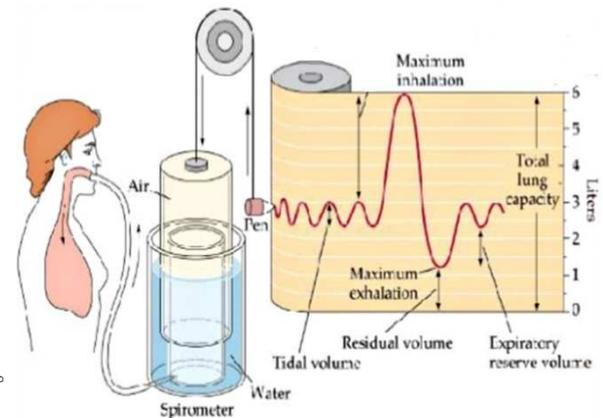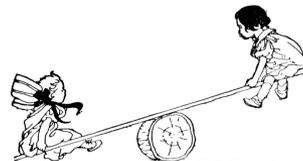
The Dual Paradigm View of Learning

Natural World & Learning Systems

Physically Experienced world

(collecting)
encoding

Natural System

Human
Science Art
Culture
Economy

causality

(remaking)

decoding
(distributing)

Mentally Experienced Patterns,
Conceptual and Behavioral
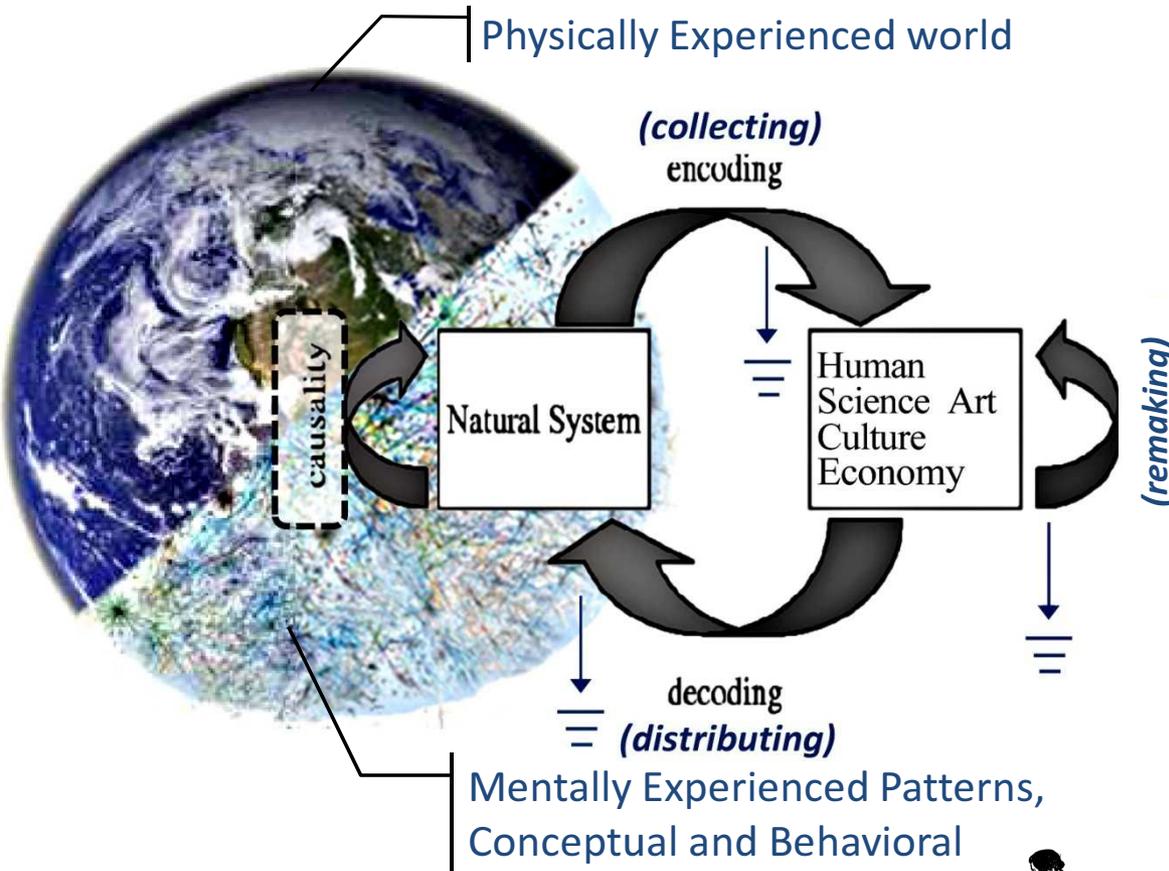
- • Natural patterns converted to mental ones, as collected Materials reused for Art, Science, Culture & Economy,

- • Various "losses in translation" in 'collecting', 'remaking', 'distributing'

- • The internal design of the human world interprets the internal designs of other natural worlds, *by their external appearances*

- • For good translations a sense of what gets lost in translation is needed.

- • H. Finidori image of earth & systemic sphere, + adapted Robert Rosen (1991) model of relation of science and nature.
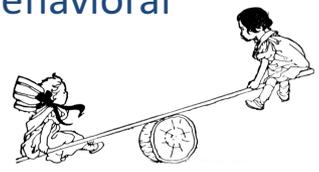
Guiding Patterns of Naturally Occurring Design:
Paradigm Bridges used for Pattern Search

Nature and Perception as different worlds – with different designs & languages
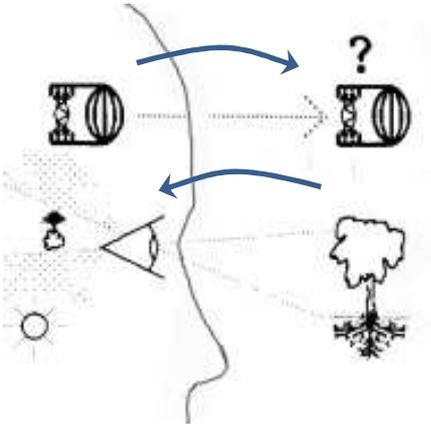
- Using mental patterns to find related ones in nature to learn from.

- Develops a capacity to imagine variations needed to get things to fit well when using them for design.

- It teaches you to understand how and why that set of relationships works and is found in its environment, and the natural limits of understanding them

**Work & Home as different worlds – with different designs & languages**

- At work we compete with each other in cooperative groups for serving competitive business goals
- At home we bring the money back from work to give away, and traditionally include everyone's interests in every decision.
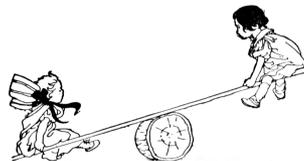
Guiding Patterns of Naturally Occurring Design:
Shapes of Change & Boundaries used for Pattern Search

The Emergence of Pattern Language
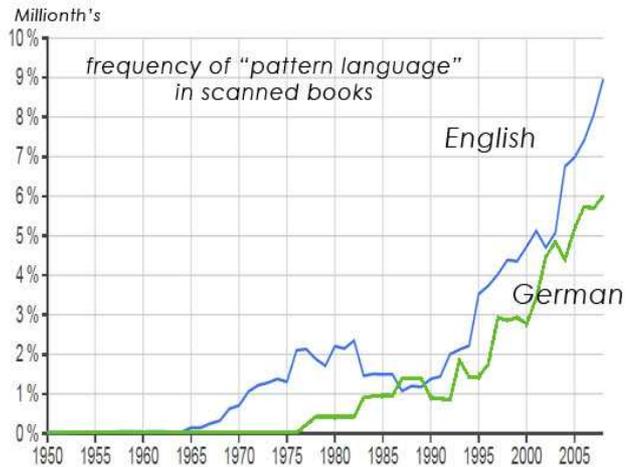
- The early wave of usage for English and German language communities might reflect the original architectural discussion which did not spread globally, with the later continuing growth curve reflecting its leap to other cultures.

## Boundaries of Ecological Domains
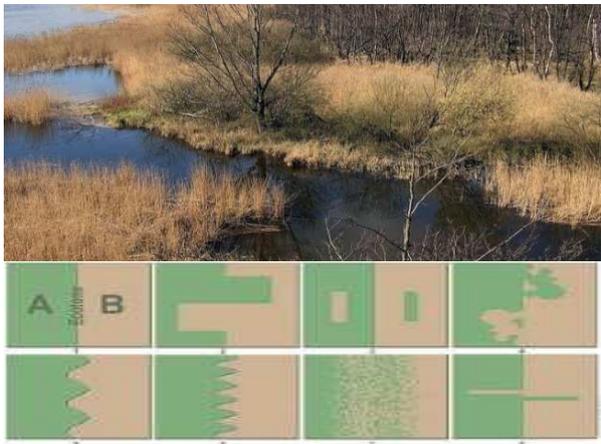
- Neighborhood and cultural boundaries have similar variations in shape to ecological boundaries.
- Where you find a boundary, it probably *encircles* a home.
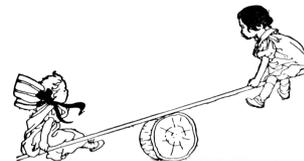
Guiding Patterns of Naturally Occurring Design:
Individuality & Emergence used for Pattern Search

Wheel & Axel, Glass & Water

The calm and the release
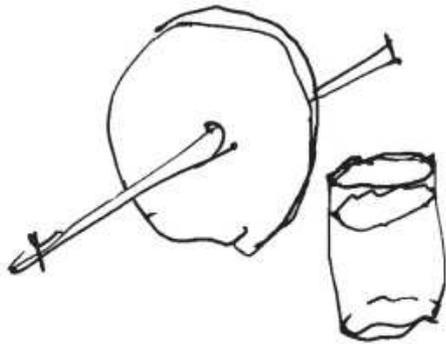
Emergent Combinations Create Individualities

- Fitting "useless disks" to "useless axles" is needed to make "a wheel", maybe only for their own beauty.

- How opposites combine for magical emergent effect is in virtually everything we find useful,

- The emergent combination is a "new whole" & "individuality", replacing the separate parts. So *some may 'see' only the whole and others only the parts*.
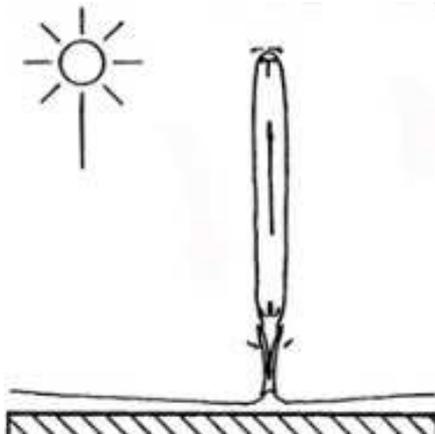
**Look to the Details For What They Fit Together**

- It's often a "radical element", a "misfit" with a secret, breaking the order with a divergent direction, which of course then upsets itself as it must.

- With warm air rising, the column breaks away to become an autonomous cell, it's "birth" as a system.
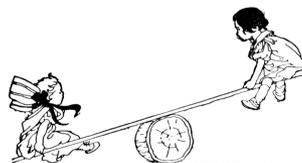
Guiding Patterns of Naturally Occurring Design:
Depths of Natural Language used for Pattern Search

1,965 common English words modified by "tion"

- Each word has a double meaning, naming the process of transformation and the end state, giving our meanings a "three dimensions", combining nature's meanings with our emotional and cultural values.

Words for Transforming States of Being

- **abbrev.iation**: used for both shortening something and the shortened form of it.

- **acclam.ation**: used for the process of making and the end state of what was made

- **dele.tion**: used for both the removing something and the end state of it having been removed.

- **comm.uni.cation**: a common understanding, both the way of reaching it and what was reached.

- **co.oper.ation**: as jointly operating something, both the way of finding how and the way found.

- **vocal.iz.ation**: used to variously mean 1) using the voice for expression, 2)the collection of ways people do that and 3) a particular vocal expression

"OneLook Dictionary" search for "*tion"   http://www.onelook.com/?w=*tion&scwo=1&sswo=1

Guiding Patterns of Naturally Occurring Design:
Depths of Cultures used for Pattern Search

Above the surface,

Below the surface,

Far Below,

Seen & Hidden Networks with Others

- Cultural cues prompt you to ask deeper cultural questions, understanding the common language everyone has for protecting the home of their culture

Guiding Patterns of Naturally Occurring Design: Elements
A Pattern Language Approach

Natural design patterns   The dual paradigm

Nature as a Repository of Designs that Work

Recognizing where they're needed   Recognizing how they can fit.

To balance the forces

Healing and bringing living quality home
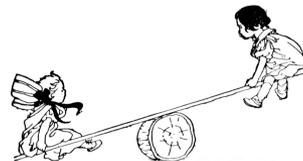
Guiding Patterns of Naturally Occurring Design: Elements
## A Pattern Language Approach

Credits

- [Wikipedia "Ecotone"](#)

- Christopher Alexander, from "A City is Not a Tree"

- Robert Rosen, 1991 *Essays on Life Itself*.
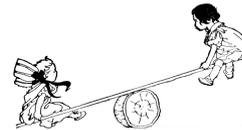
- Arthur Mee and Holland Thompson, eds. The Book of Knowledge (New York, NY: The Grolier Society, 1912)

- 2009 Don McNeil Collection

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