Progress on Systems Changes Learning:
Coevolving towards Rethinking Systems Thinking

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http://systemschanges.com

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Image CC-BY Mike Cassano (2009) *Most Interesting Pothole*

Agenda: Systems Change Learning first reorients attention, and then aims to nurture both competence and mentoring

	Praxis	*Theoria*	*Poiesis*
Educating of attention	Behavioral or ecological? (A)	Changelessness or temporality? (B)	Wei or Wuwei? (C)
Learning for competence	Action-learning (D)	Theory-using (E)	Methods-deploying (F)
Learning for mentoring	Action-guiding (G)	Theory-building (H)	Methods-making (I)

A. Behavioral or ecological? (Educating of attention, in praxis, #1 of 2)...

What is the way of *castor canadensis* (beaver) in habitats?

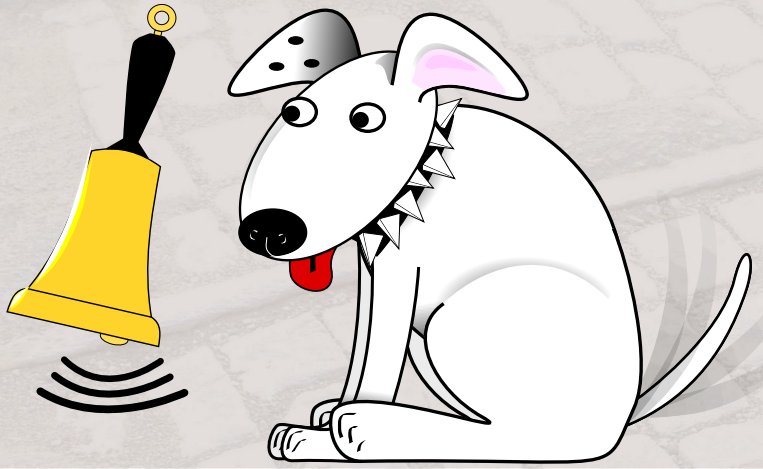
Image: CC-BY D.W. Ross (2010) “North American Beaver”

Image: CC-BY Steve Hersey (2007) “Happy Beaver”

A. Behavioral or ecological? (Educating of attention, in praxis, #2 of 2)...

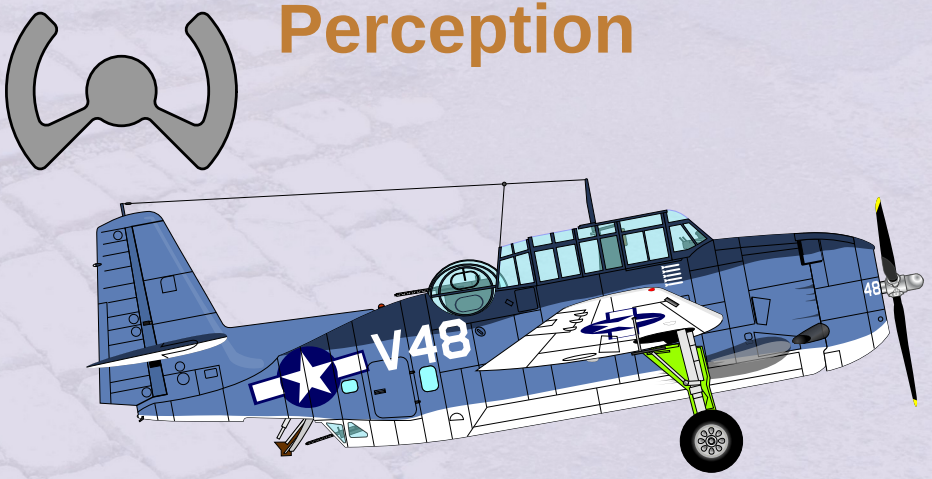
Ask Not What's Inside Your Head, but What Your Head's Inside of

Stimulus – Response
(Behavioral Psychology)



[In the 1950] psychophysics of perception … "givens" in the light to the eye could not support perceptual phenomena, but only elementary experiences such as sensations. [….] Succinctly put, the **psycho-physical program** was … traditional in considering perception to be a set of responses to presented stimuli (albeit "higher order" stimuli).

Ecological Approach to Perception



Over the last 10-15 years [James J. Gibson] has tried to develop enough theory … to demonstrate that direct perception is indeed plausible even if hordes of difficult details remain to be worked out. The … analysis of the optic array, stimulus organization, and the **functional organization of perceptual systems** are what Gibson often points to as radical features ….

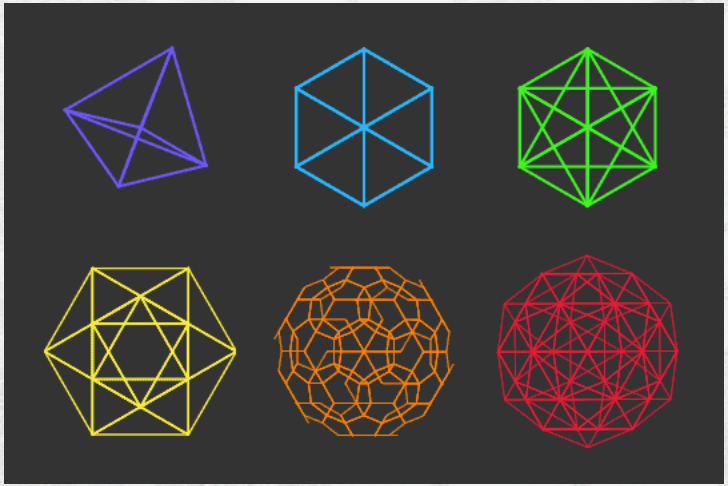
William M. Mace 1977. "James J. Gibson's Strategy for Perceiving: Ask Not What's inside Your Head, but What Your Head's inside of." In *Perceiving, Acting, and Knowing: Toward an Ecological Psychology*, edited by Robert Shaw and John Bransford, 43–65.

B. Changelessness or temporality? (Educating of attention, in theoria, #1 of 2)...

Two ways of seeing nature, since ~500 BCE, have set how humans beings negotiate with themselves and in their world(s)

Reality as a **changelessness state**

- Parmenides of Elea, Confucius
- Shift → stability → sustainable
- Analytic paradigm



Hyper Platonic, by Nathan P. Seddig (natpbs.tumblr)

Reality as a **state of change, not a change of state**

- Heraclitus of Ephesus, Laotse
- Beauty of dynamic (c.f. protection of static)
- Contextual appreciation

Walking, by Dominique Taswell (strawberrylicorice.tumblr)

Hawk, David L. 1999. “Changelessness, and Other Impediments to Systems Performance.” In *Proceedings of the Conference to Celebrate Russell L. Ackoff, and the Advent of Systems Thinking*, edited by Matthew J. Liberatore and David N. Nawrocki. Villanova University. http://davidhawk.com/wp-content/uploads/2018/09/Ackoff-Birthday-Conference.pdf#page=59 .

B. Changelessness or temporality? (Educating of attention, in theoria, #2 of 2)...

A *dwelling* perspective is beyond a naturalistic view of landscape as neutral backdrop, and culturalistic view as cognitive or symbolic ordering of space

Landscape

... the landscape is the world as it is **known** to those who **dwell** therein, who **inhabit** its places and **journey** along the paths connecting them.

Temporality

It is to the entire ensemble of tasks, in their mutual interlocking, that I refer by the concept of ***taskscape***. [….] – the taskscape is **an array of related activities**.

Temporalizing the Landscape

… landscape seems to be what we *see* around us, whereas the **taskscape** is what we ***hear***. [….] In short, what I hear is ***activity***, even when its source cannot be seen.

Ingold, Tim. 2000. “The Temporality of the Landscape.” In *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*, 189–208. Routledge. Images from Tenor: JoseFilm walk-forest; dirtriderofc pov-motocross; JoseFilm walk-forest

C. Wei or Wuwei? (Education of attention, in poiesis, #1 of 2)...

Willful action and *non-intrusive action* are central in Chinese thinking

為
wèi

無為
wú wèi

为（為）wéi: p. 517
I (动， verb)
1. **do; act**: 敢做敢 ~ gǎn zuò gǎn ~ bold in action
2. **act as; serve as**: 以此 ~ 凭 yí cǐ ~ píng This will serve as proof.
3. **become**: 变沙漠 ~ 良田 biàn shā mó ~ liáng tiān turn the desert into arable land.
4. **be; mean**: 一公里 ~ 二里□ yī gōng lǐ ~ èr huā lǐ One kilometer is equivalent to two li.

无（無）wu2: p. 526
I (名， noun) **nothing; nil**: 从 ~ 到有 cóng ~ dào yǒu start from scratch
II (动， verb) **not have; there is not; without**: ~ 一定计划 ~ yī dìng jì huà have no definite plan
III (副， adverb) **not**: ~ 须多谈 ~ xǔ duō tǎn need not go into details

Concise English-Chinese Chinese-English Dictionary (2004), 3ed, Commercial Press and Oxford University Press

Wei meant application of **the force of will-power**, the **determination** that things, animals, or even other men, should do what they were ordered to do, but ***wu wei*** was the opposite of this, **leaving things alone**, letting **Nature** take her course, profiting by **going with the grain** of things instead of going against it, and **knowing how not to interfere**.

Needham, Joseph. 2004. “General Conclusions and Reflections.” In The Social Background, edited by Kenneth Girdwood Robinson. Vol. VII:2. *Science and Civilisation in China*. Cambridge University Press. p. 16

Some scholars have argued that the interpretation of ***wuwei*** as “**non-intrusive action**” or “**non-interfering action**” is more philosophically profound and interesting. These latter translations support a meaningful rendition of the concept *wuwei* **both at the sociopolitical level** (arguing against the imposition of artificial, conformist and universally binding norms) **and at the metaphysical level** (acknowledging the inappropriateness and fatality of imposing egocentric or anthropocentric norms upon other individuals or species).

Lai, Karyn. 2003. “Conceptual Foundations for Environmental Ethics: A Daoist Perspective.” *Environmental Ethics* 25 (3): 247–66. https://doi.org/10.5840/enviroethics200325317 .

Are your changes systematic, or systemic?

Systematic	*Systemic*
Somatic (adaptive, cellular) change	Genotypic (generational) change
Non-living, effect-producing (allopoietic)	Living, systems-generating (autopoietic)
Reactive	Co-responsive

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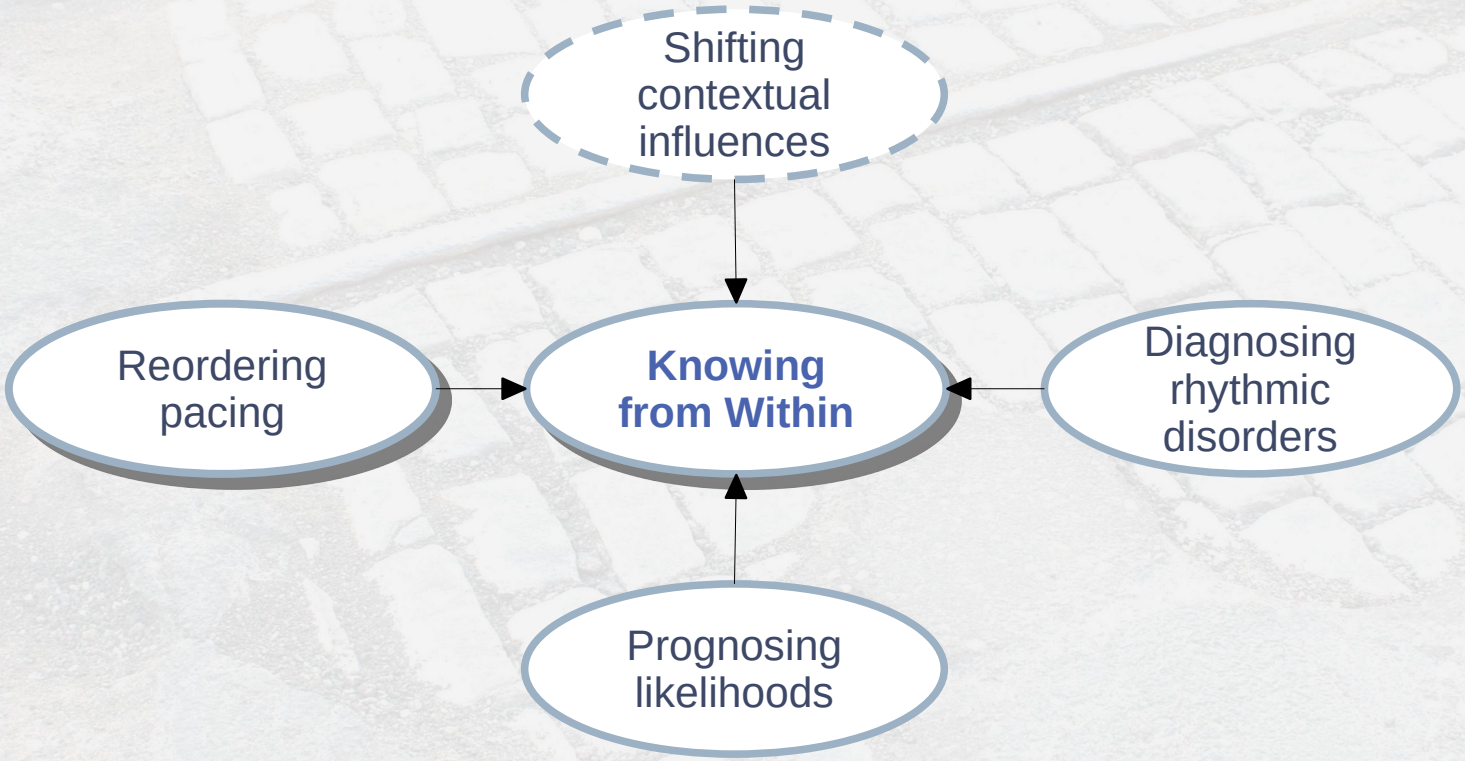
Systems Changes Learning authentically depends on *Knowing from Within*, appreciated through four movements

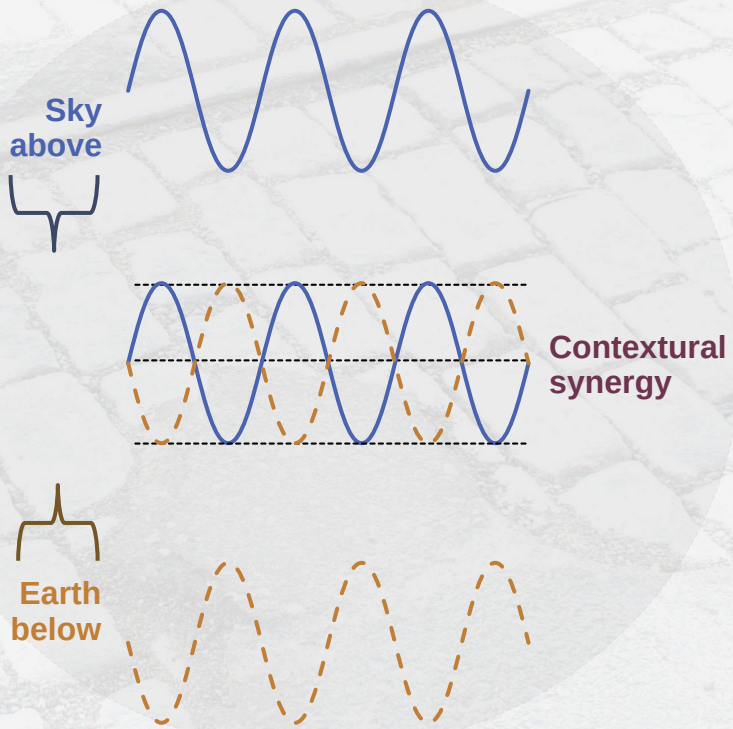


Object Process Language

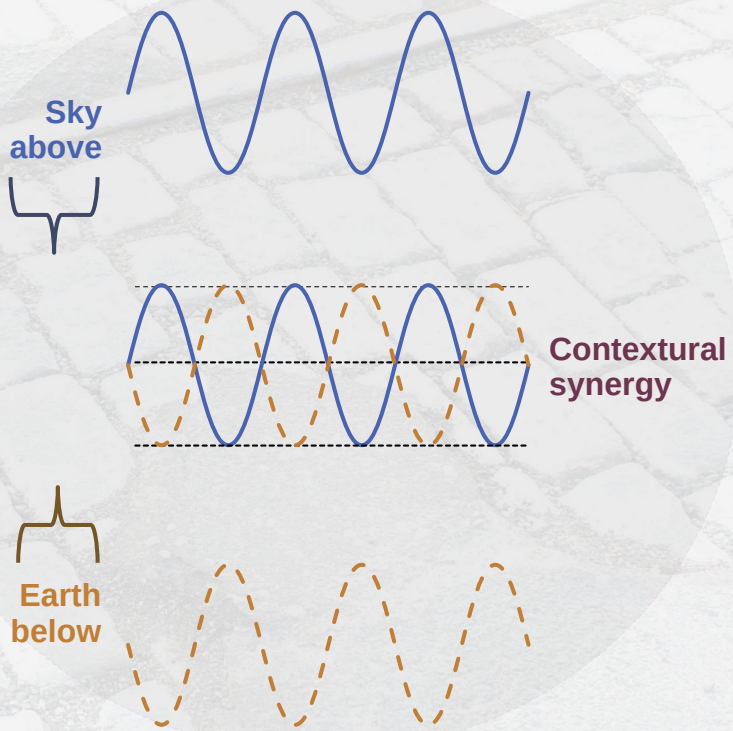
- *Knowing from Within* is physical and systemic.
- *Knowing from Within* consists of *Shifting contextual influences conditions*, *Diagnosing rhythmic disorders*, *Prognosing likelihoods*, and *Reordering pacing*.
- *Shifting contextual influences* is informational and environmental
- *Diagnosing rhythmic disorders* is informational and systemic.
- *Prognosing likelihoods* is informational and systemic
- *Reordering pacing* is physical and systemic

E. Theory-using (for competence, in theoria, #1 of 4)...

Farming can be viewed as a dyad of (i) warming-drying from the sky above, and (ii) cooling-watering in the earth below, (iii) generating vegetation in the contextural synergy between



(Towards diagnosing a pathology), first identify two rhythms in relationship, generating synergy in the contexture



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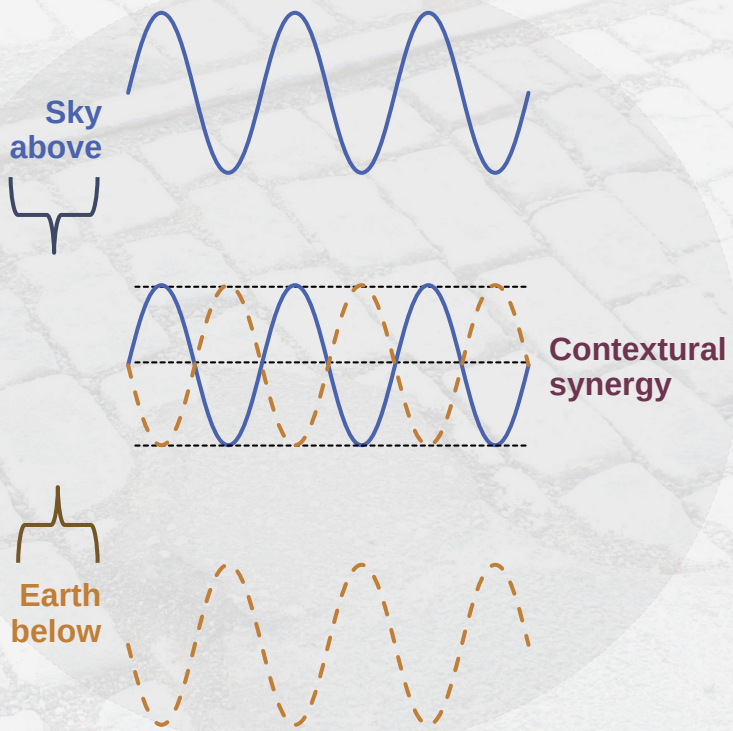
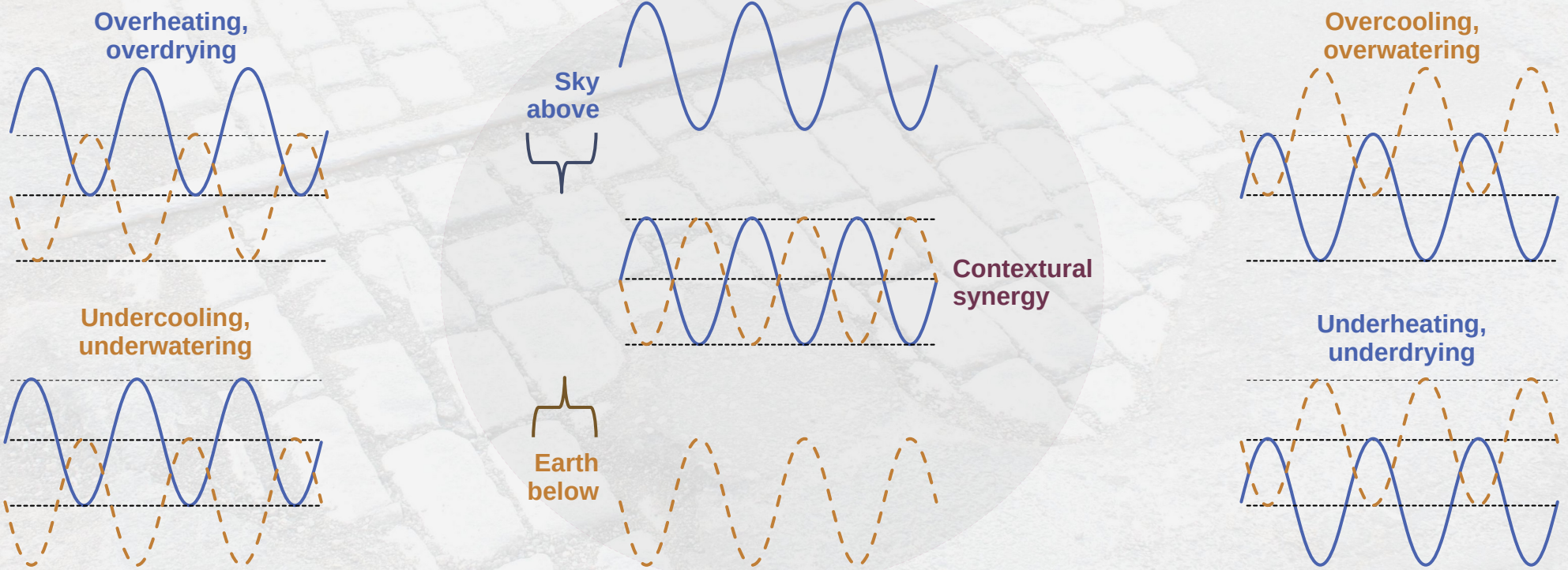
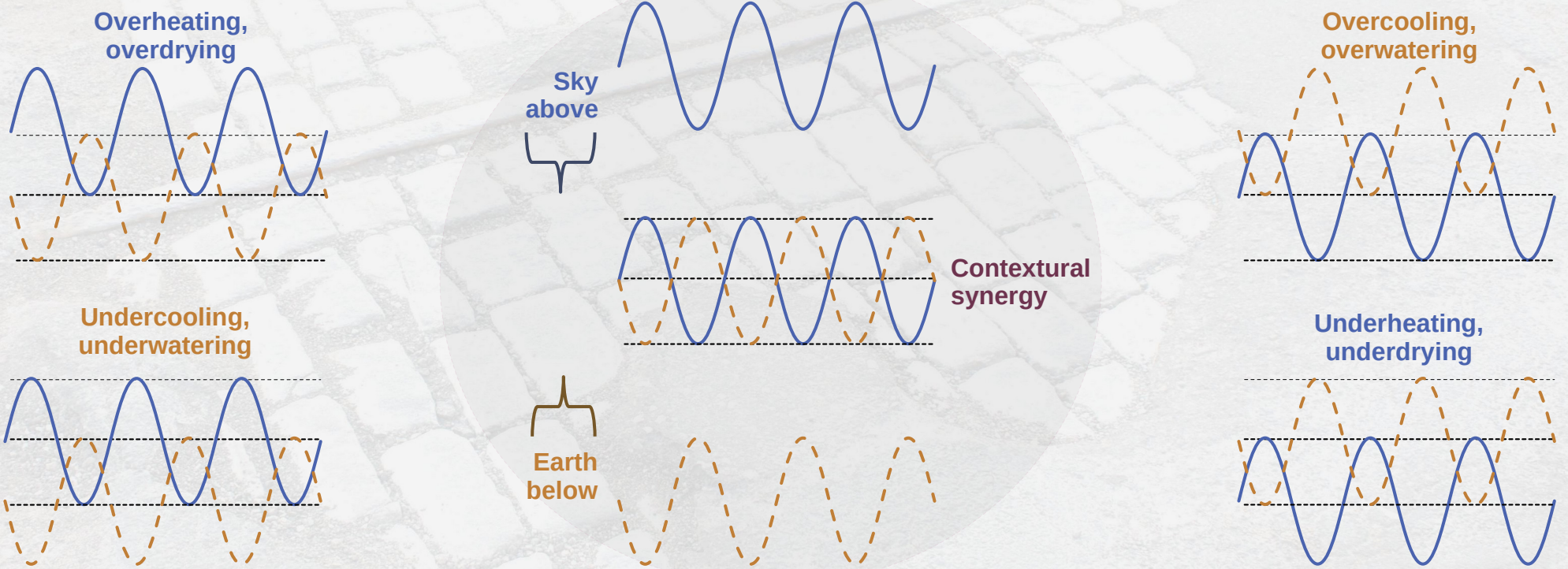


Pathology in generating vegetation is an (a) excess or (b) deficiency of (i) warming-drying from the sky above, or (ii) cooling-watering in the earth below



Looking for pathology [== pathos (suffering) + logos (study of)] in a contexture finds (a) excess or (b) deficient, trapping of the rhythms (i) above or (ii) below

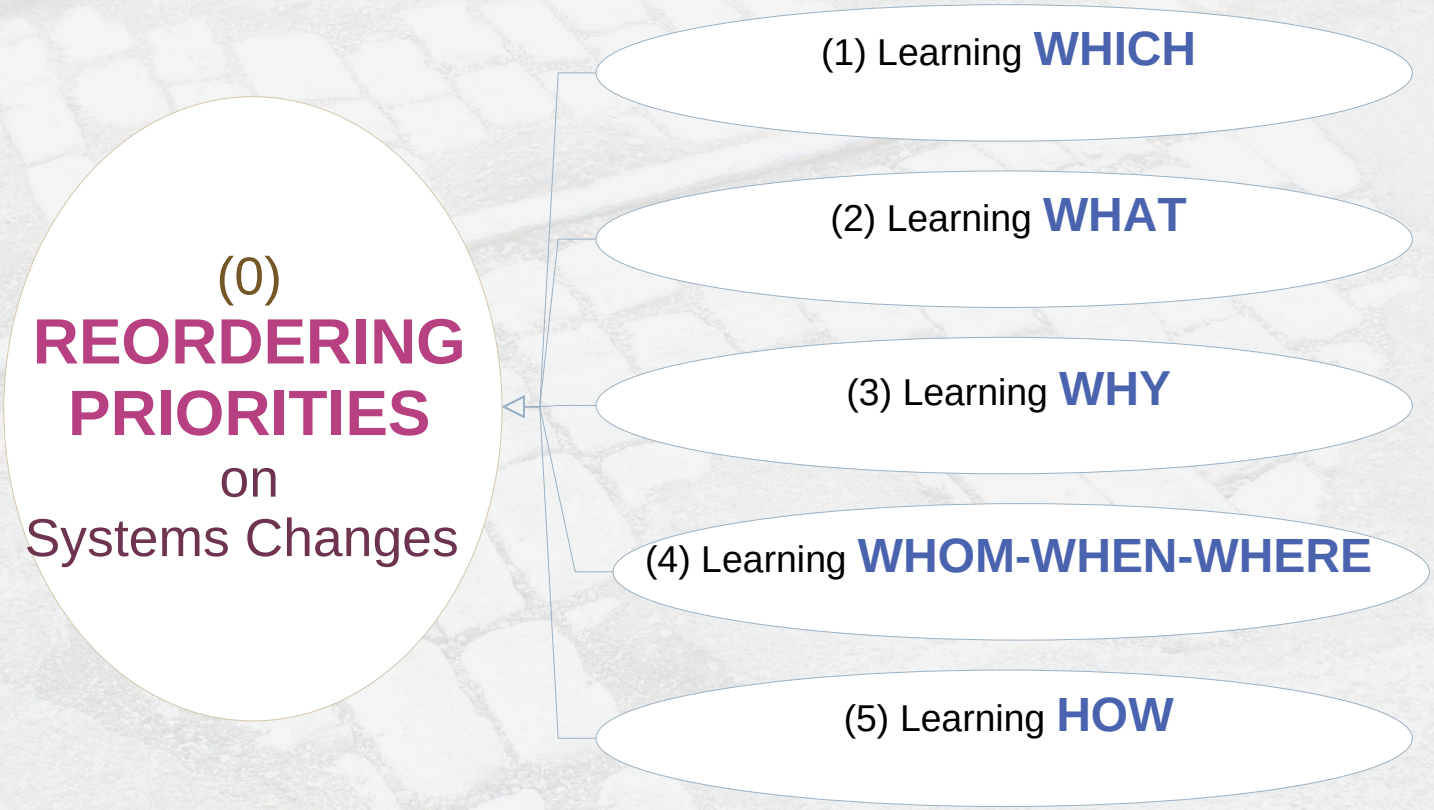


If they can get you asking the wrong questions, they don't have to worry about answers (Thomas Pynchon)

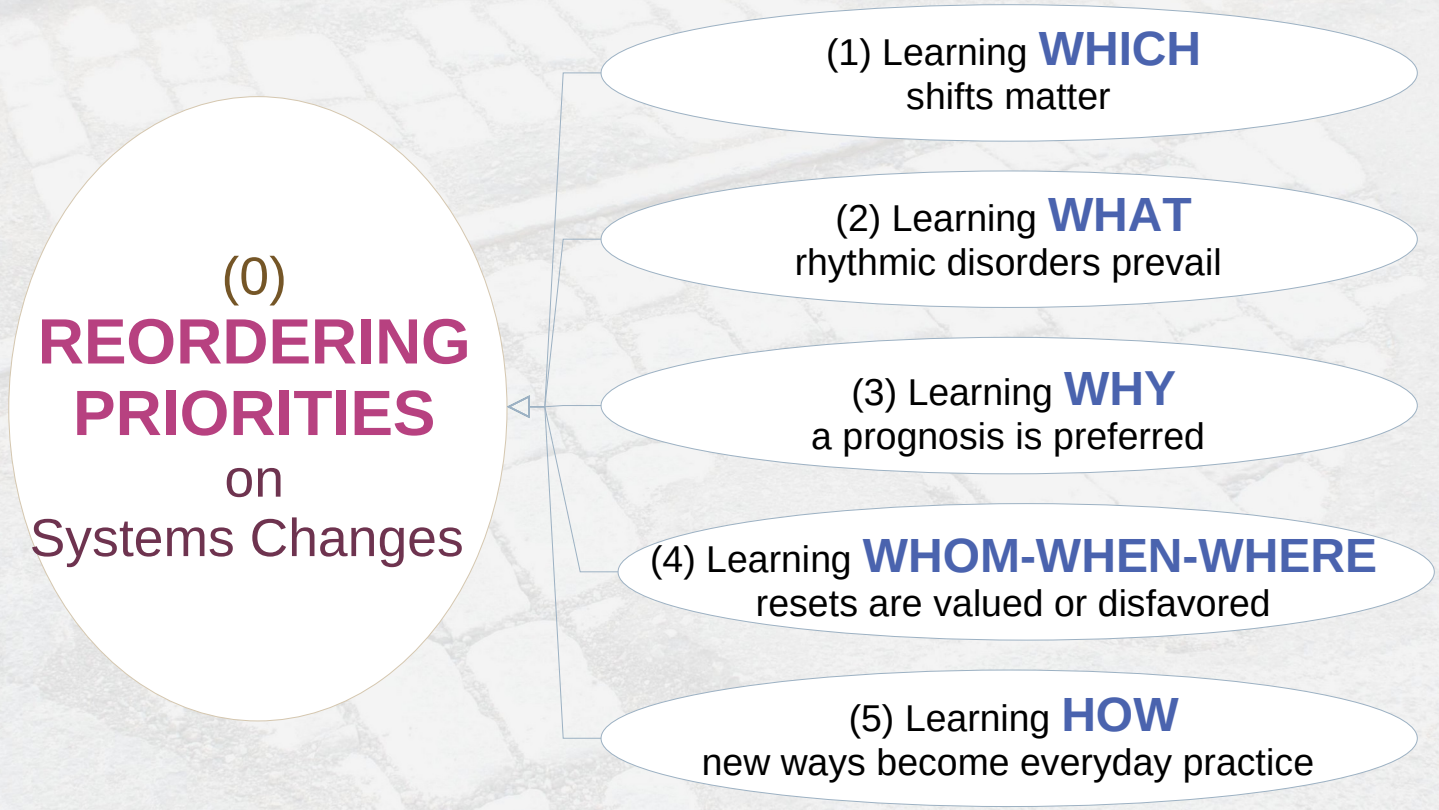
Type 1 error	**False positive**: finding a (statistical) relation that isn't real
Type 2 error	**False negative**: missing a (statistical) relation that is real
Type 3 error	**Tricking ourselves**: Unintentional error of solving wrong problems precisely (through ignorance, faulty education or unreflective practice)
Type 4 error	**Tricking others**: Intentional error of solving wrong problems (through malice, ideology, overzealousness, self-righteousness, wrongdoing)

Ian I. Mitroff and Abraham Silvers. 2010. *Dirty Rotten Strategies: How We Trick Ourselves and Others into Solving the Wrong Problems Precisely.* Stanford University Press.

Anticipating outcomes leads inquiries beyond *science* as a search for better answers, with *philosophy* as a search for better questions

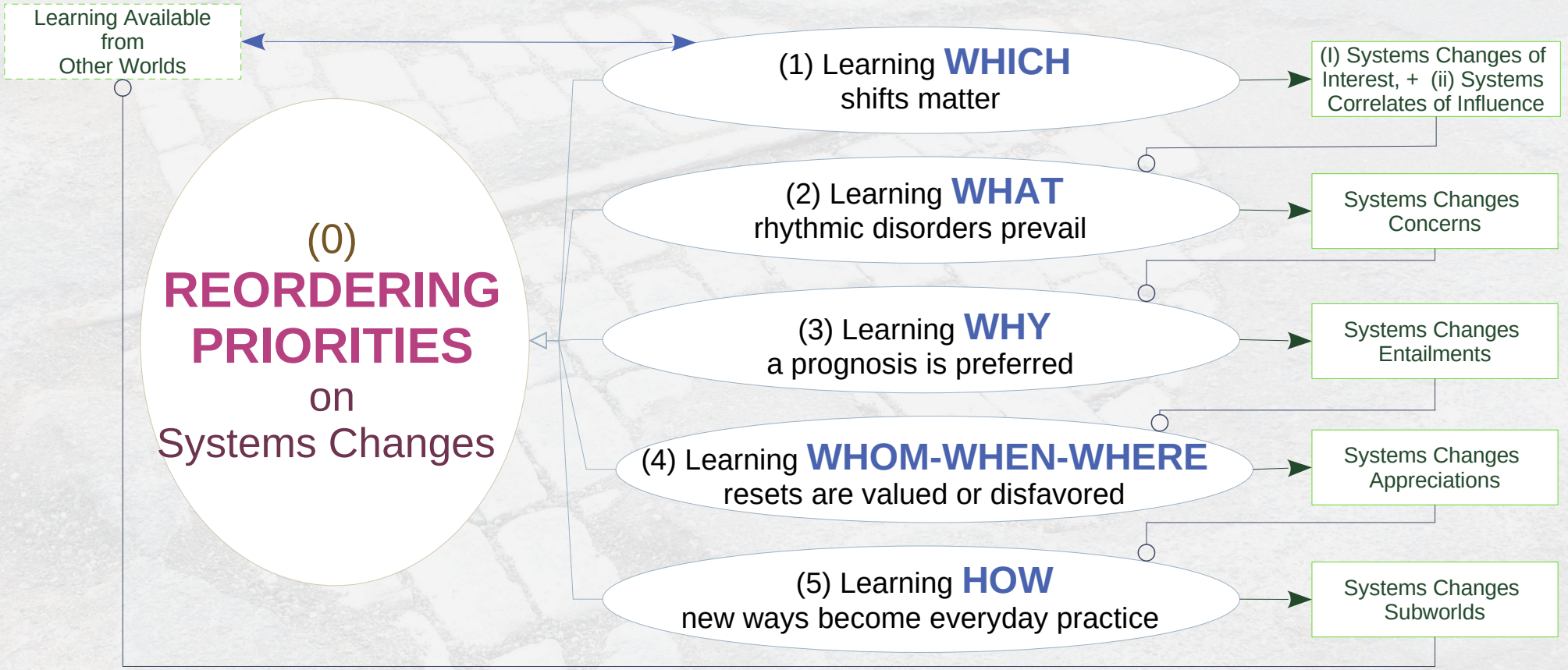


Precise framing of five learnings poses questions sequenced for deeper understanding of conditions, alternatives and options



F. Methods-deploying (for competence, in poiesis, #4 of 4)...

Methods involve not on the processes of learning, but also artifacts on which progress can be marked



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Syst. Res. **30**, 527–547 (2013)
Published online 10 October 2013 in Wiley Online Library
(wileyonlinelibrary.com) **DOI:** 10.1002/sres.2229

■ *Research Paper*

Rethinking Systems Thinking: Learning and Coevolving with the World

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Much of systems thinking, as commonly espoused today, was developed by a generation in the context of the 1950s–1980s. In the 2010s, has systems thinking changed with the world in which it is to be applied? Is systems thinking *learning* and *coevolving* with the world? Some contemporary systems thinkers continue to push the frontiers of theory, methods and practice. Others situationally increment the traditions of their preferred gurus, where approaches proven successful in prior experiences are replicated for new circumstances. Founded on interactions with a variety of systems communities over the past 15 years, three ways to rethink systems thinking are proposed:

1. 'parts and wholes' snapshots → 'learning and coevolving' over time
2. social and ecological → emerged environments of the service economy and the Anthropocene
3. episteme and techne → phronesis for the living and nonliving

These proposed ways are neither exhaustive nor sufficient. The degree to which systems thinking should be rethought may itself be controversial. If, however, systems thinking is to be authentic, the changed world of the 21st century should lead systems thinkers to engage in a reflective inquiry.

Keywords systems thinking; learning; coevolution; world

INTRODUCTION: IS SYSTEMS THINKING

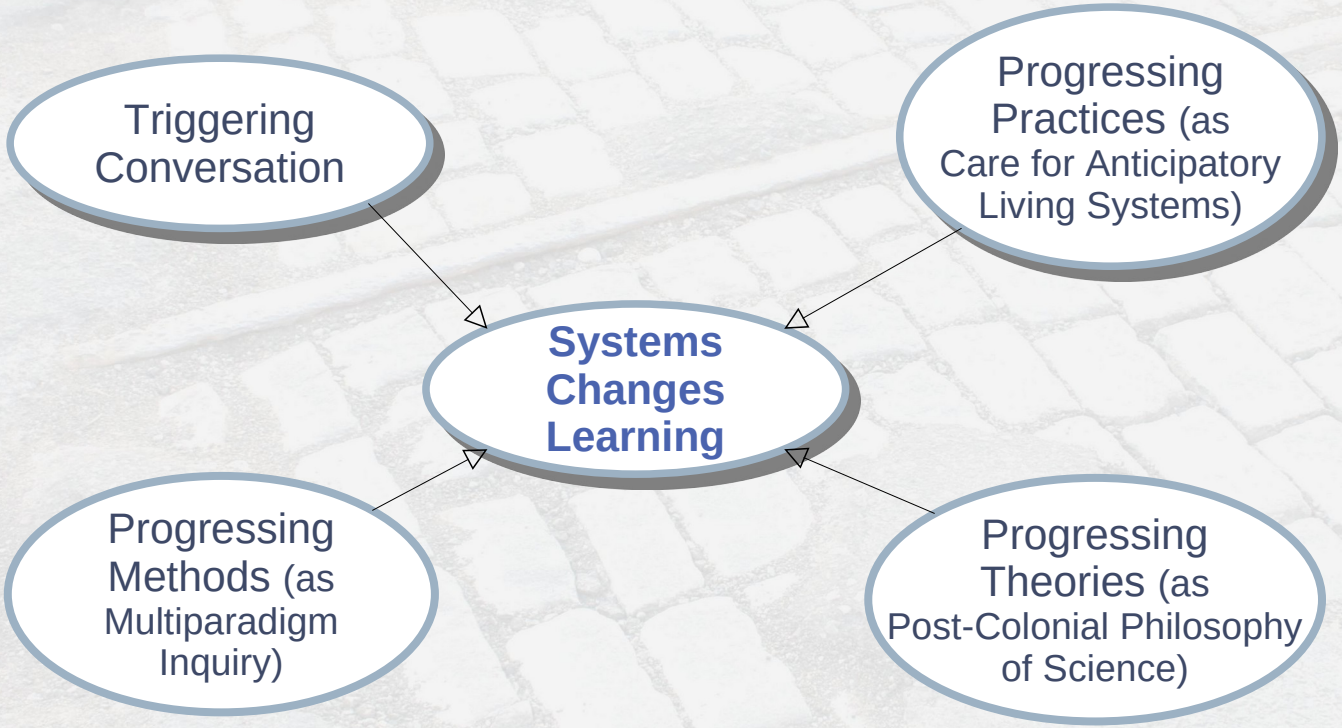
International Society for the Systems Sciences—

Since 2019, the core team has been coevolving our thinking both (practice → theory) and (theory → practice)

	We appreciate ...	… through ...	… disinclined towards ...
1.	Processual taskscapes, co-responding lines	• Becoming, fluidity (Heraclitus, Laozi) • Ecological anthropology (Ingold)	• Being, solidity (Plato) structuralism, functionalism • Behavioral psychology (Skinner)
2.	Restoring rhythmic synchrony	• Post-colonial science (Lin + Law) • Contextual-dyadic thinking (Keekok Lee)	• The one best way (universality) • Unfreezing – changing – refreeze (Lewin misquoted)
3.	Pacing layers of learning	• Panarchy, hierarchy (Holling, Brand, Allen) • Contextual action learning (Trist)	• “Everything is connected” (mechanistic flat networks) • Preactive planning, ideal-directed teleology

G. Action-guiding (for mentoring, in praxis, #1 of 7)...

Systems Changes Learning begins with Triggering Conversation, towards Progressing Practices, Theories + Methods

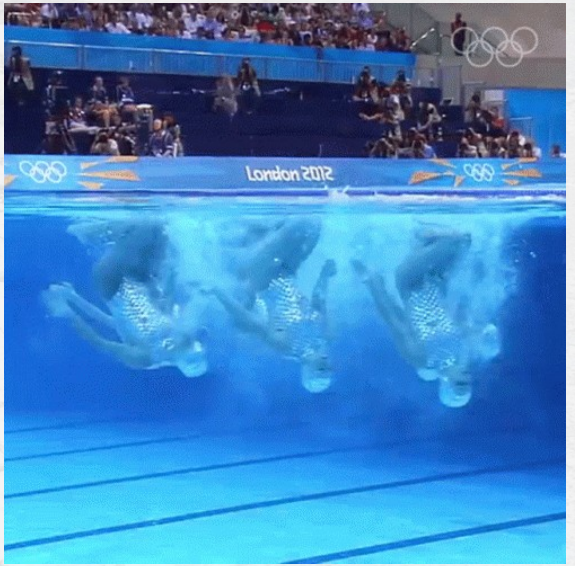


Object Process Language

- *Systems Changes Learning* is physical and systemic.
- *Triggering Conversation* is physical and systemic.
- *Triggering Conversation* is instance of *Systems Changes Learning,*
- *Systems Changes Learning* exhibits *Progressing Practices (as Care for Anticipatory Living Systems)*, *Progressing Theories (as Post-Colonial Philosophy of Science)*, and *Progressing Methods (as Multiparadigm Inquiry)*.
- *Progressing Practices (as Care for Anticipatory Living Systems)* is physical and systemic.
- *Progressing Theories (as Post-Colonial Philosophy of Science)* is informational and systemic.
- *Progressing Methods (as Multiparadigm Inquiry)* is informational and systemic.

G. Action-guiding (for mentoring, in praxis, #2 of 7)...

Embodied Becoming (action, being) comes from *Knowing from Within* and *Co-responding along Contextures* (travelling along meshwork)



[The Sami people] did not inform me of *what* is there, to save me the trouble of having to inquire for myself. Rather, they told me *how I might find out*. They taught me what to look for, how to track things, and that knowing is a process of active following, of *going along*.

… you know as you go ... **knowing *is* movement**.

Ingold, Tim. 2013. “Knowing from the Inside.” In Making: Anthropology, Archaeology, Art and Architecture, 1–14. Routledge. p.1.

… **the ground of knowing** … **is itself the very ground we walk**, where earth and sky are tempered in the ongoing production of life.

Ingold, Tim. 2015. “Knowledge.” In The Life of Lines, 46–50. Oxford, UK: Routledge. pp. 48-49.

G. Action-guiding (for mentoring, in praxis, #3 of 7)...

In balancing priorities, Eisenhower said that "The urgent are never important, and the important are never urgent"

Urgent ... but not important?

Important ... but not urgent?

Image from Giphy: "Ringing Telephone" 2015 BY Phillippa Rice. Image from Flickr; "Inner Levee Breach" CC-BY 2015 Infrogmation of New Orleans

G. Action-guiding (for mentoring, in praxis, #4 of 7)...

Systems changes may be with relations perceived as (i) *local* in direct interaction, or (ii) *distant* through representations with equivocality

Local in direct interaction

- Co-responding alongside

Distant through representations with equivocality

- Mediated with a contextural landscape

Images from Flickr: Hand in Hand" CC-BY 2009 Carrie Kellenberger; "USFK Commander and ROK CJCS" CC-BY 2017 Chairman of the Joint Chiefs of Staff

G. Action-guiding (for mentoring, in praxis, #5 of 7)...

With multiple contextual changes at play at any given time, our attentions are divided between the immediate and the anticipatory

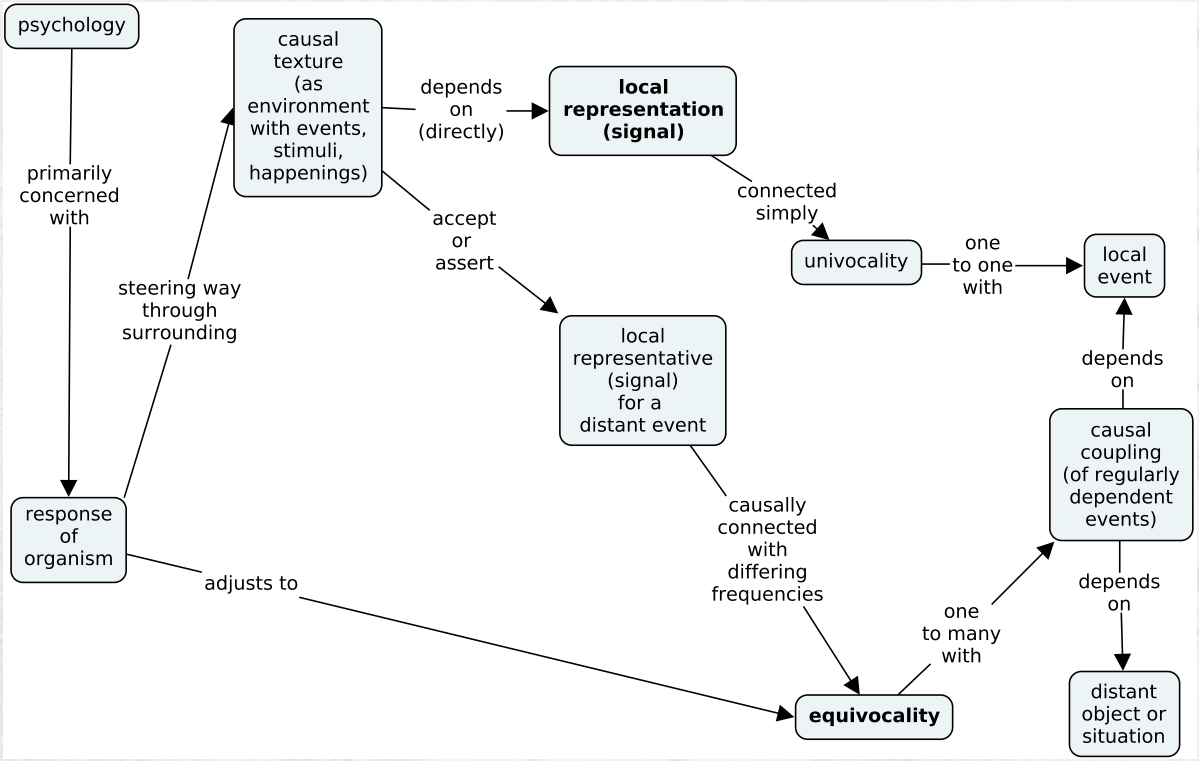
G. Action-guiding (for mentoring, in praxis, #6 of 7)…

We can place concurrent changes over time and space as (i) closer for engaging directly, and (ii) distant via engagement of others

	Urgent	*Important*
Distant	Expediting trauma emergencies 	Organizing operating room teams
Local	Summoning battlefield medics 	Scheduling neighbourhood clinics 

G. Action-guiding (for mentoring, in praxis, #7 of 7)...

Causal texture theory sees perceptual distance with (i) events closer and directly observable; and (ii) events more distant and represented



The system of interest is in the discipline of psychology, primarily concerned with the response of an organism.

The "real world" (in a column at the rightmost) has local events that an organism can perceive directly, as well as distant objects or situations that can't be perceived directly. There's a causal coupling between the local event and the distant objects/situations that also can't be perceived directly.

The organism steers its way through a causal texture, which is an environment.

- The causal texture depends directly on a local representation (i.e. a signal) this is connected simply with the local event. The connection has a feature of univocality — like a single speaking in a narrative mode — as there's a one-to-one relationship with the local event. The organism can observe the event, stimulus or happening directly.
- The causal texture accepts or asserts a local representative (signal) for a distant event that it can't observe directly. Organisms are not omnipresent, e.g. they can't have visibility to everything happening in the world.

There's equivocality — ambiguity, with two or more voices in conflict over meaning — both about the causal coupling, and the associated distant objects or situations. The organism recognizes the mediation of signals (i.e. not observing directly), and adjusts responses accordingly.

Tolman, Edward C., and Egon Brunswik. 1935. "The Organism and the Causal Texture of the Environment." *Psychological Review* 42 (1): 43. https://doi.org/10.1037/h0062156.

Ing, David. 2020. "Causal Texture, Contextualism, Contextural." Blog. Coevolving Innovations (blog). June 9, 2020. https://coevolving.com/blogs/index.php/archive/causal-texture-contextural-contextualism/ .

Post-colonial philosophy of science in Taiwan hybridizes correlativity in TCM pulse + tongue diagnosis, alongside analytical biomedicine

[Dr. Lee] works with a body that has circulating qi and meridians. [….]
Dr Lee adds the biomedical results to her findings. They supplement her diagnosis.

Lin, Wen-yuan, and John Law. 2014. "A Correlative STS: Lessons from a Chinese Medical Practice." *Social Studies of Science* 44 (6): 801–24. https://doi.org/10.1177/0306312714531325.

Images: "Chinese Medicine" by Kian2018 (2015) on Pexels; "Examination" by Semevent (2017) on Pixabay; "Sphygmomanmeter" by Pavel Danilyk (2021) on Pexels

Philosophy of science in the West differs from Classical Chinese logic

Dualistic (Modern Western formal logic)		**Contextual-dyadic (Classical Chinese implicit logic)**
Abstract and permanent, is independent of context • Can extrapolate from propositions	**Truth - Falsity**	Application and meaning is relative to a particular context • Evaluate assertion as embedded
Oppositions Superior ↔ Inferior Superordinate ↔ Subordinate Intrinsic value ↔ Non-intrinsic value Human ↔ Nonhuman	**Pairings**	*Characteristics under context* A term presupposes it opposite • e.g. *cat* implies *non-cat*, not universe Context-dependence • e.g. men or women superior when/where?
Hierarchical Reductionist Entity- (thing-) ontology	**Frames**	Yin-Yang Harmonious whole Mutually engendering or constraining

Lee, Keekok. 2017. *The Philosophical Foundations of Classical Chinese Medicine: Philosophy, Methodology, Science*. Lexington Books. https://rowman.com/ISBN/9781498538886/The-Philosophical-Foundations-of-Classical-Chinese-Medicine-Philosophy-Methodology-Science.

The primordial dyad of a hill with (i) *yang* as the sunny side, and (ii) *yin* as the shady side, embeds correspondences in Chinese traditions

As two phases of a cyclical movement

Yang	*Yin*
Light	Darkness
Sun	Moon
Brightness	Shade
Activity	Rest
Heaven	Earth
Round	Flat
Time	Space
East	West
South	North
Left	Right

As two states of density of matter

Yang	*Yin*
Immaterial	Material
Produces energy	Produces form
Generates	Grows
Non-substantial	Substantial
Energy	Matter
Expansion	Contraction
Rising	Descending
Above	Below
Fire	After

As qualities in clinical practice

Yang	*Yin*
Fire	Water
Heat	Cold
Restless	Quiet
Dry	Web
Hard	Soft
Excitement	Inhibition
Rapidity	Slowness
Non-substantial	Substantial
Transformation / change	Conservation / storage / sustainment

Maciocia, Giovanni. 2015. *The Foundations of Chinese Medicine: A Comprehensive Text*. Elsevier Health Sciences., pp. 4-11

”As has long been recognized, China tends to treat opposites as complementary, the West as conflicting”

Earliest pairs (from the Ma-wang-tui manuscript of Lao-tzu)

Yang	*Yin*	*Yang*	*Yin*
Heaven	Earth	Elder brother	Younger brother
Spring	Autumn	Older	Younger
Summer	Winter	Noble	Base
Day	Night	Getting on in the world	Being stuck where one is
Big states	Small states	Taking a wife, begetting a child	Having a funeral
Important states	Insignificant states	Controlling others	Being controlled by others
Action	Inaction	Guest	Host
Stretching	Contracting	Soldiers	Labourers
Ruler	Minister	Speech	Silence
Above	Below	Giving	Receiving
Man	Woman		
Father	Child		

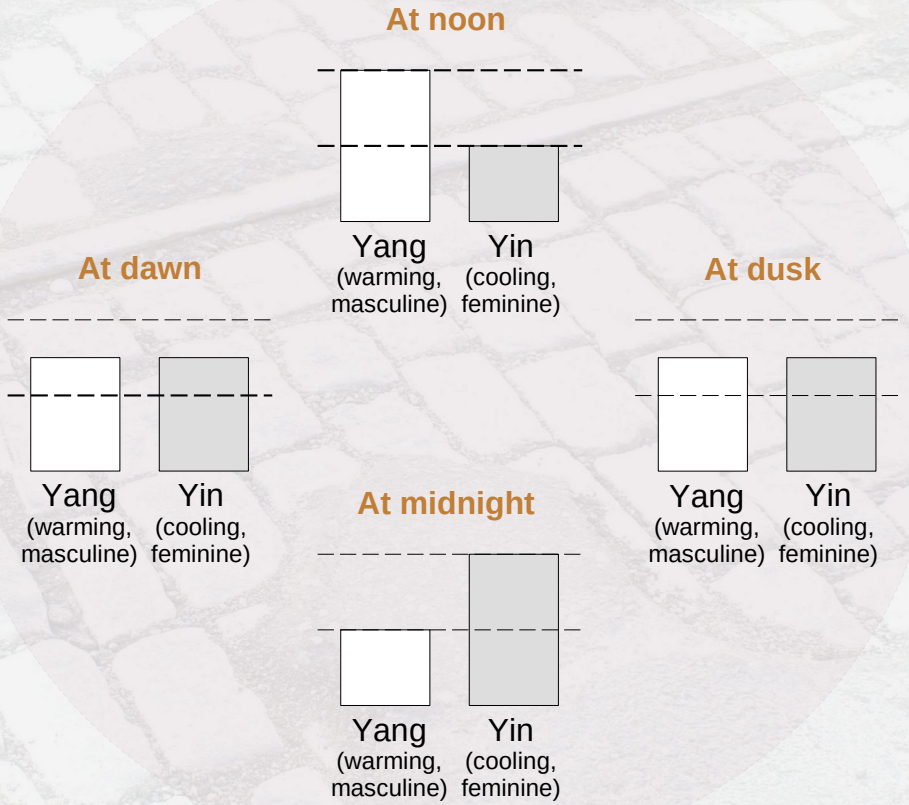
The cosmos (from Hui-nan-tzu)

Yang	*Yin*
Clear and subtle	Heavy and muddy
HEAVEN	EARTH
Hot	Cold
FIRE	WATER
SUN	MOON
Round	Square
Illuminates	Retreats to dark
Expels	Holds in
Does to	Is transformed by
Scatters	Congeals
RAIN and DEW	FROST and SNOW
FURRED and FEATHERED	SHELLED and SCALY
Flies or runs	Hibernates or hides
Goes up	Goes down

* NOMINAL CONCEPTS IN UPPER CASE, Verbal concepts lower case

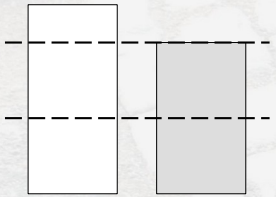
Graham, Angus Charles. 1986. *Yin-Yang and the Nature of Correlative Thinking*. Institute of East Asian Philosophies.

Let's shift cosmology as *dyadic* with (i) sunny change (light, fire) ***and*** (ii) cloudy change (dark, water), not *dualistic* (i) change ***or*** (ii) no change

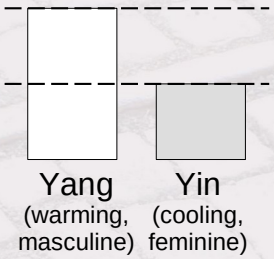


Context then puts dynamics changes (e.g. sunny and cloudy) as (a) freely intercoursing, or (b) blocked into excess or deficient levels

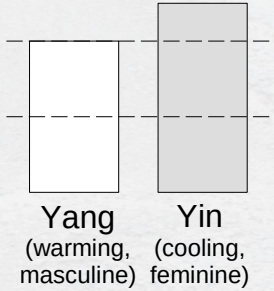
Excess Yang (Full Heat)



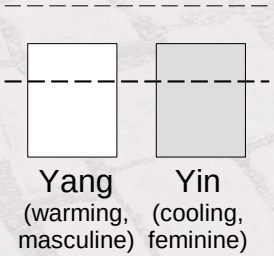
At noon



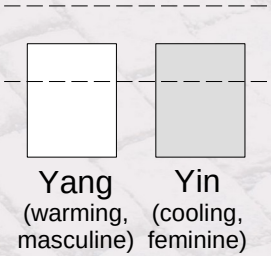
Excess Yin (Full Cold)



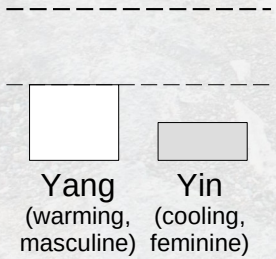
At dawn



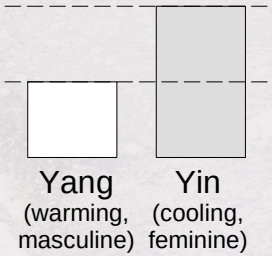
At dusk



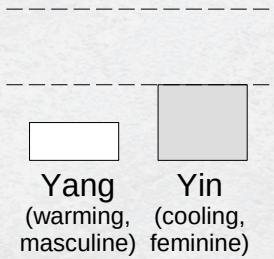
Deficient Yin (Empty Heat)



At midnight



Deficient Yang (Empty Cold)



Three principal concerns of systems changes relate to three perspectives, and logical categories of learning

Concern	*Perspectives*		Learning
Taskscape-Landscape Concern		**Redefining** the System and Taskscape-Landscape	Trito-learning
Ecological-Functional Concern	Availing or Removing **Affordances**		Deutero-learning
Behavioral-Processual Concern	Building up or Breaking down **Capacities** (Metabolic Reserves)		Proto-learning

Taking action recognizes modes of systems changes, as (i) unfolding nature; (ii) fixing problems; and (iii) making history

Unfolding nature

- Systems generating systems

Fixing problems

- Solution (engineering resilience)

Making history

- Disclosing new worlds

Images from Giphy: “Summer Grow” Kristy Good; ”DIY Tools” BY Reuben Armstrong; “Thomas Edison” BY General Electric

Coevolving and learning are constrained by slower-larger layers, and emphemeral in faster-smaller layers

SITE

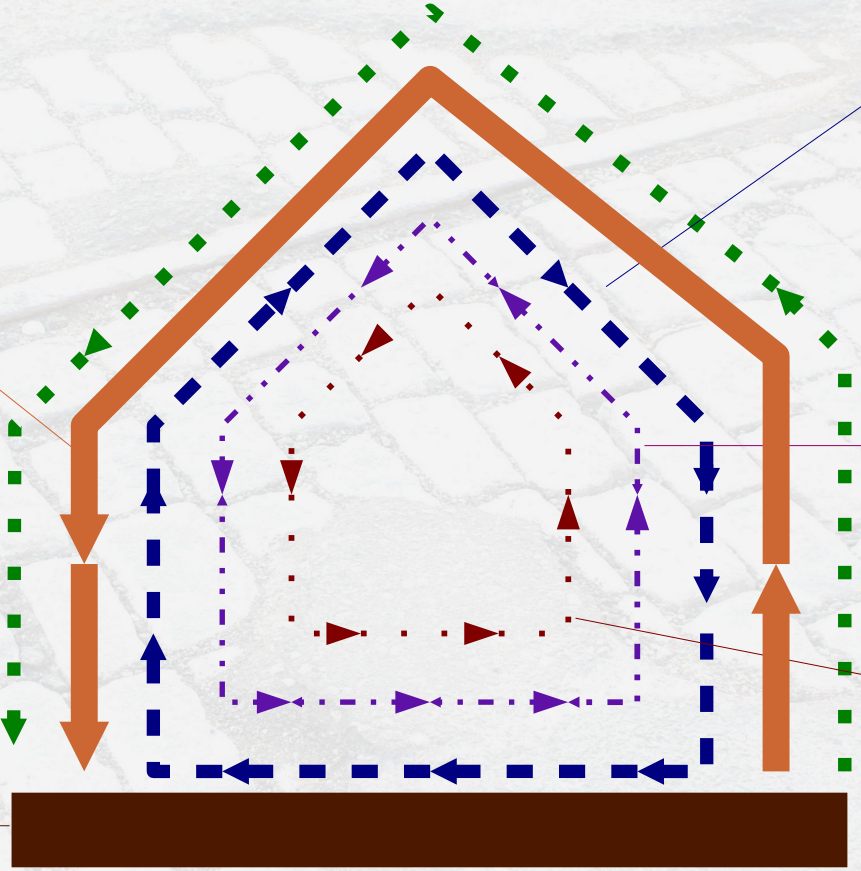
This is the geographical setting, the urban location, and the legally defined lot, whose boundaries outlast generations of ephemeral buildings. "Site is eternal", Duffy agrees.

STRUCTURE

The foundation and load-bearing elements are perilous and expensive to change, so people don't. These are the building. Structural life ranges from 30 to 300 years (but few buildings make it past 60, for other reasons).

SKIN

Exterior surfaces now change every 20 years or so, to keep up with fashion or technology, or for wholesale repair. Recent focus on energy costs has led to re-engineered Skins that are air-tight and better-insulated.



SERVICES

These are the working guts of a building: communications wiring, electrical wiring, plumbing, sprinkler system, HVAC (heating, ventilation, and air conditioning), and moving parts like elevators and escalators. They wear out or obsolesce every 7 to 15 years. Many buildings are demolished early if their outdated systems are too deeply embedded to replace easily.

SPACE PLAN

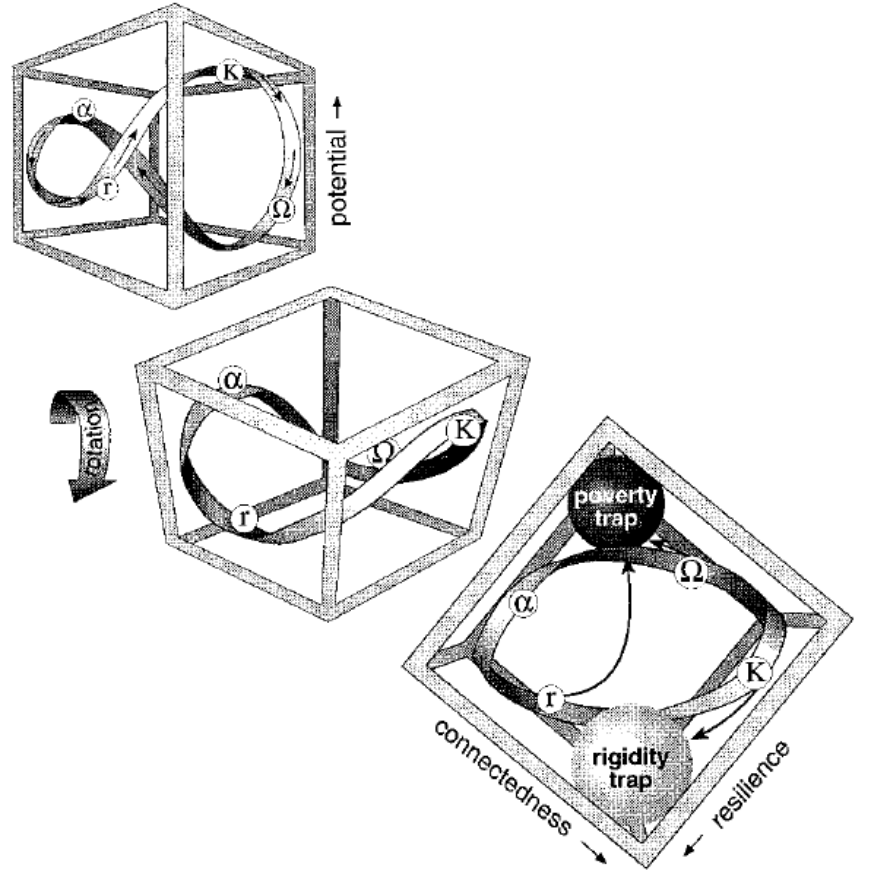
The interior layout, where walls, ceilings, floors, and doors go. Turbulent commercial space can change every 3 years; exceptionally quiet homes might wait 30 years.

STUFF

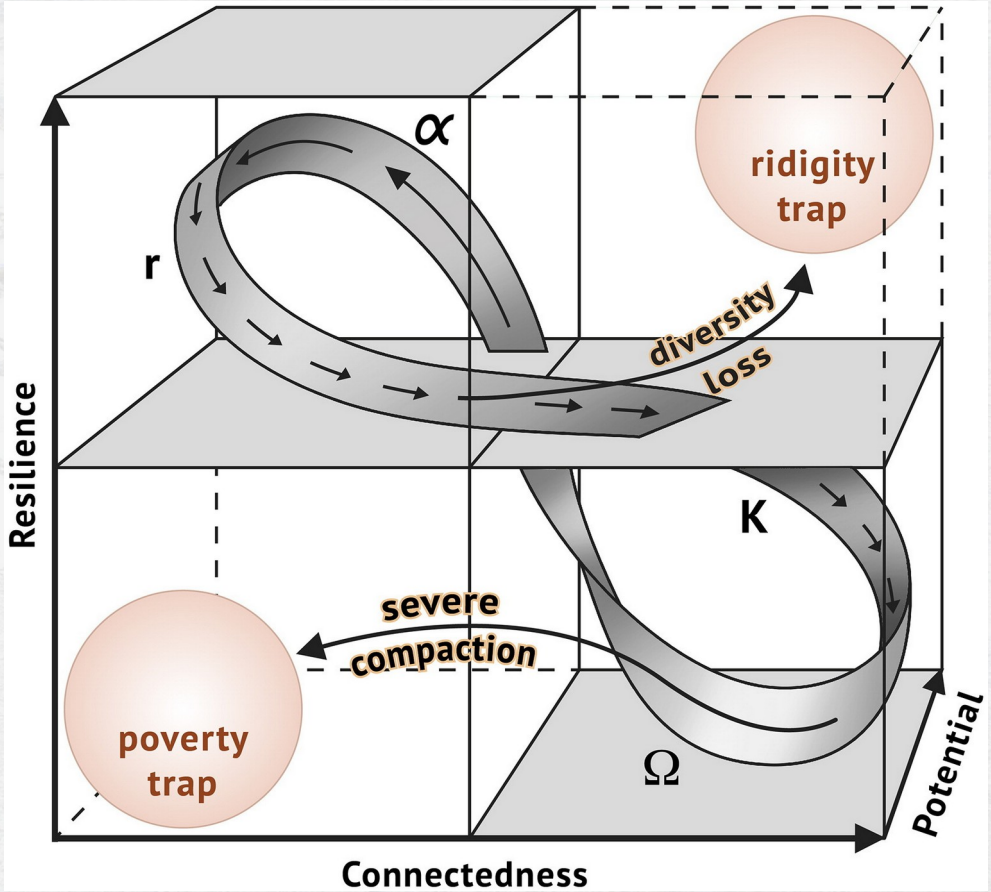
Chairs, desks, phones, pictures; kitchen appliances, lamps, hair brushes; all the things that twitch around daily to monthly. Furniture is called mobilia in Italian for good reason.

Source: Stewart Brand. 1994. *How Buildings Learn: What Happens after They're Built*. New York: Viking.

A maladapting adaptive cycle may be stuck in a rigidity or poverty trap



Holling, C. S. 2001. "Understanding the Complexity of Economic, Ecological, and Social Systems." *Ecosystems* 4 (5): 390–405. https://doi.org/10.1007/s10021-001-0101-5.



Ludwig, Marie, Paul Wilmes, and Stefan Schrader. 2018. "Measuring Soil Sustainability via Soil Resilience." *Science of The Total Environment* 626 (June): 1484–93. https://doi.org/10.1016/j.scitotenv.2017.10.043.

When direct immediate interventions fail, *Systems Changes Learning* incorporates five philosophical schools as an open system of inquiry

	Schools of ← **Philosophy** →	
	Which? (phenomena, perception)	
	What? (ontos, becoming)	
	Why? (episteme, science)	
	Whom, when, where? (phronesis, situated action)	
	How? (techne, skills + tools)	

When direct immediate interventions fail, *Systems Changes Learning* incorporates five philosophical schools as an open system of inquiry

Systematic, self-referential closed loop, self-sealing logic

Linear-Sequential Logical Positivism	Schools of **Philosophy**	*Systems Changes Learning*
Intention • Solution ← problem	**Which?** (phenomena, perception)	Attending/attention • Wicked messes
Human will • Machines, linear causes	**What?** (ontos, becoming)	Living beings • Fluid course of nature
Dynamic equilibria • Engineering resilience	**Why?** (episteme, science)	Regime shifts • Ecological resilience
Scaling technocracy • Lawful order	**Whom, when, where?** (phronesis, situated action)	Practical wisdom • Negotiated order
Unfreeze-Δ-freeze • Behavior (collective?)	**How?** (techne, skills + tools)	Social practice • Affordances

Omissions?
Open system sweeping in multiple paradigms

Agenda: Systems Change Learning first reorients attention, and then aims to nurture both competence and mentoring

	Praxis	*Theoria*	*Poiesis*
Educating of attention	Behavioral or ecological? (A)	Changelessness or temporality? (B)	Wei or Wuwei? (C)
Learning for competence	Action-learning (D)	Theory-using (E)	Methods-deploying (F)
Learning for mentoring	Action-guiding (G)	Theory-building (H)	Methods-making (I)

Image CC-BY Mike Cassano (2009) *Most Interesting Pothole*