Rethinking Systems Thinking for Systems Changes Learning:
Philosophizing, Theorizing, and Methodizing

David Ing
http://coevolving.com

The 29th World Multi-Conference on Systemics, Cybernetics and Informatics: WMSCI 2025
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Image CC-BY Mike Cassano (2009) *Most Interesting Pothole*

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Agenda

A. Introduction

B. Histories of Systems

C. Research Approach on Systems Changes

D. Philosophizing on Systems Changes

E. Theorizing on Systems Changes Learning

F. Case Study, Methodizing Pilot

G. Discussion

H. Conclusions

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■ *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. Copyright © 2013 John Wiley & Sons, Ltd.

Keywords systems thinking; learning; coevolution; world

INTRODUCTION: IS SYSTEMS THINKING LEARNING AND COEVOLVING WITH THE WORLD?

The rise of systems thinking can be correlated with the founding of the Society for General Systems Research—the precursor for today's International Society for the Systems Sciences—in 1956. Much of conventional wisdom about systems thinking was influenced by luminaries between the 1950s and 1980s. Prominent names include presidents of the ISSS between 1971 and 1999: Stafford Beer, Margaret Mead, James Grier Miller, Gordon Pask, Kjell Samuelson, Heinz von Foerster, Sir Geoffrey Vickers, Richard F. Ericson, Brian R. Gaines, Robert Rosen, George Klir, John N. Warfield, Karl Deutsch, Bela H. Banathy, John A. Dillon, Peter B. Checkland,

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2013



Systems Thinking through Changes: An action learning guide | Canadian Digital Service | 2022-03-04

Agenda

~60m	~60m	– 80m		~10m	~90m	
A. **Presentation**		B. **Workshop**			C. **Workshop**	
• Introductions • *Systems Thinking* as *Systems Changes Learning* • Action learning practices as a hub + 4 spokes		• Reforming into groups • Knowing from within • Contextural influences • Diagnosing rhythmic disorders	~10m ~20m ~20m ~30m		• Prognosing likelihoods • Reordering pacing • Reflecting on progress + process(for retrospective) • Read-outs	~20m ~20m ~20m ~30m

D. **Post-workshop retrospective** (homework)
- Summary (1 page) of paths considered and not taken, actions to be negotiated

 systemschanges.com, 2022

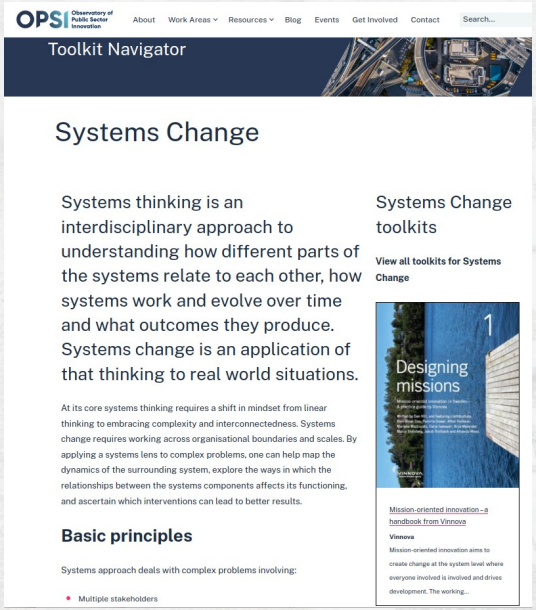
Source: Code for Canada and Systems Changes Learning Circle. 2022. "Systems Thinking through Changes." Web video presented at the Canadian Digital Service, Toronto, Canada, March 4. https://systemschanges.com/online/presentations/20220304_cfc.

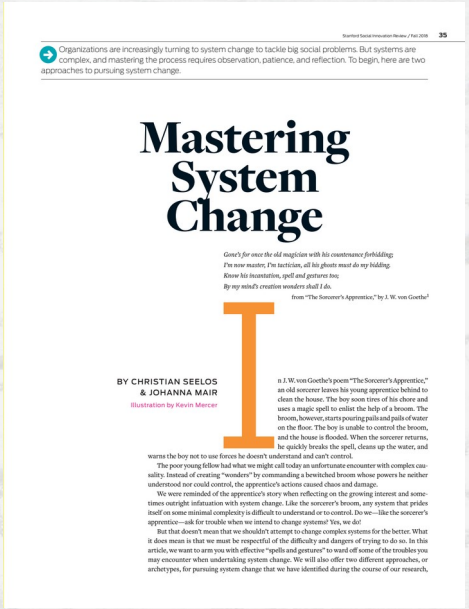
2022

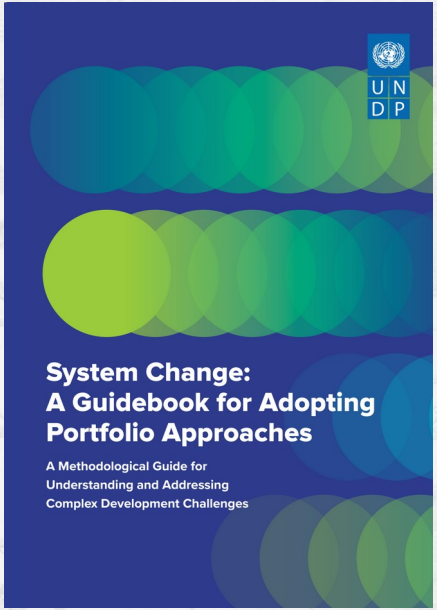
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A. Introduction ...

Which is/are *system(s) change(s)* c.f. ***not*** *system(s) change(s)*?









OECD Observatory of Public Sector Innovation

"… (rare) use" by governments of systems approaches towards making public services more effective and resilient"
(Cook & Tõnurist, 2017, p. 4).

Stanford Social Innovation Review

… a way for "policymakers, foundations, NGOs, and social enterprises tackling issues like poverty, preventable disease and poor education" to "solve the root causes" of these intractable problems (Seelos & Mair, 2018, p. 35).

United Nations Development Programme

… a three phase methodology: (i) sense and frame; (ii) engage and position; and (iii) transform (Wellsch, 2022, p. 1)

Forum for the Future + McConnell Foundation

"What is systems change?"
"… asked people attending and unable to attend to offer their definitions of systems change" (Birney & Riddell, 2018, p. 5)

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Agenda

- A. Introduction
- B. Histories of Systems ...
  - B1. History of philosophies of sciences on systems
  - B2. History of sciences on systems
  - B3. History of systems methods
- C. Research Approach on Systems Changes
- D. Philosophizing on Systems Changes
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Have the systems philosophies (over history) been adequate towards addressing continuous change?

Galilean topology

- Kurt Lewin Field Theory
- Fred Emery + Eric Trist → Socio-Technical (STS) + Socio-Ecological (SES) perspectives

Organicism

- Ludwig von Bertalanffy General Systems Theory
- Kenneth Boulding Skeleton of Science
- Ervin Laszlo synthetic philosophy

Non-relativistic pragmatism

- Russell L. Ackoff Idealized Design
- C. West Churchman Inquiring Systems
- ← Edgar A. Singer Jr ← William James

Causal Texture

- Eric Trist Organizational Ecology ← Geoffrey Vickers Appreciative Systems
- Fred Emery Psychology Ecology ←J.J. Gibson

Phenomenology

- Martin Heidegger →
- Charles Spinosa + Fernando Flores + Hubert Dreyfus → History-Making Disclosing

Complex Ecology

- Timothy F.H. Allen → biotic + abiotic, nutrient cycles + energy flows
- Hierarchy, scale, cross-scale interactions

Ecological Epistemology

- Tim Ingold → Relational Developmental Anthropology
- Being Alive

Contextual Dyadic Thinking

- Keekok Lee ← Philosophical Foundations of Classical Chinese Medicne

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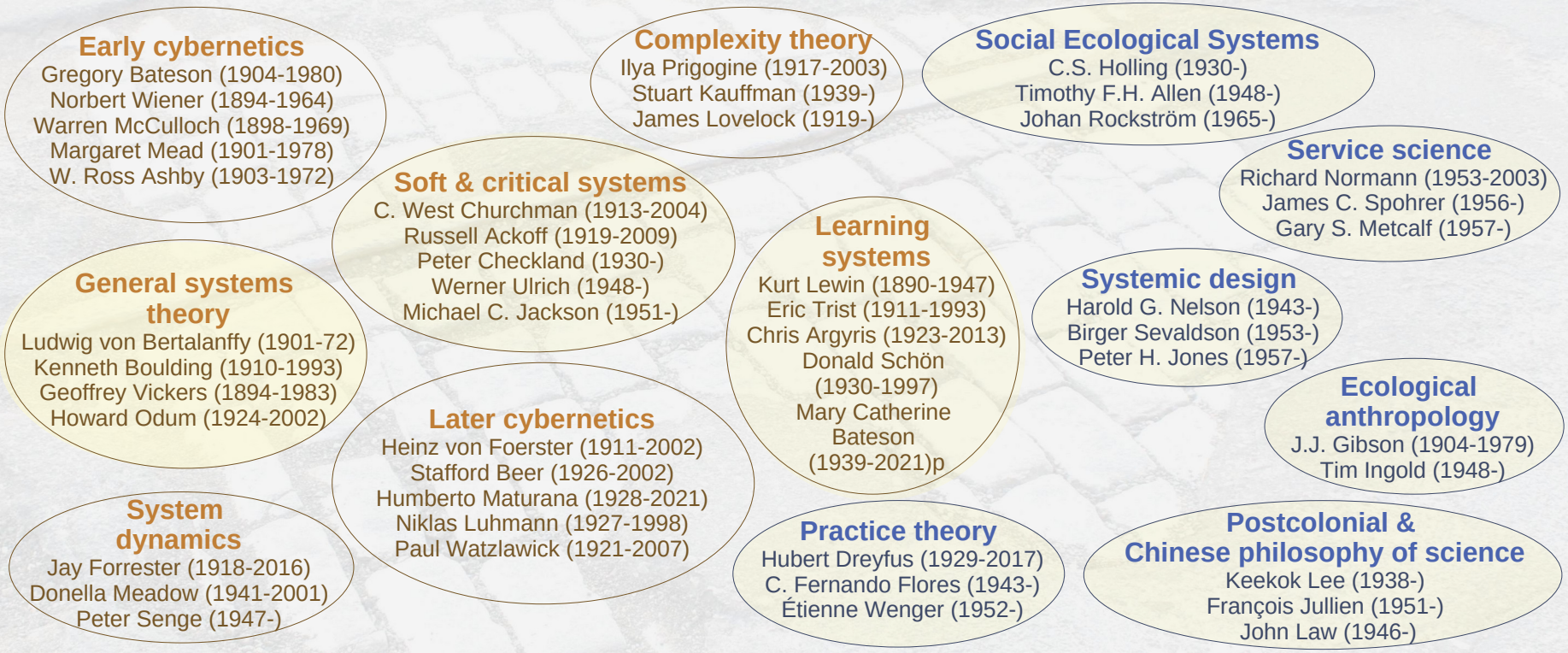
Pluralist pragmatism of William James → Stephen C. Pepper → Emery + Trist → Michael C. Jackson → Critical Systems Practice

	Dispersive manner for organizing evidence	***Integrative*** manner for organizing evidence
Analytic mode of reasoning	**Formism** *Root metaphor*: **Similarity**, as recurrence or recognizable features	**Mechanism** *Root metaphor*: **Machine**, where exerting force or energy produces predictable outcomes
Synthetic mode of reasoning	**Contextualism** *Root metaphor*: **Situation**, as a historic event in its living actuality	**Organicism** *Root metaphor*: **Constructive Development**, with orderliness of changes from stage to stage

	Dispersive manner for organizing evidence	***Integrative*** manner for organizing evidence
Analytic mode of reasoning	**Formism** **Analytic**: parts in relations are presumed; each whole is inferred. **Dispersive**: unpredictability (non-determinism) is presumed; determinate order is denied.	**Mechanism** **Analytic**: parts in relations are presumed; each whole is inferred. **Integrative**: determinate order is presumed; unpredictability (non-determinism) is denied.
Synthetic mode of reasoning	**Contextualism** **Synthetic**: wholes are presumed; parts in relations are inferred. **Dispersive**: unpredictability (non-determinism) is presumed; determinate order is denied.	**Organicism** **Synthetic**: wholes are presumed; parts in relations are inferred. **Integrative**: determinate order is presumed; unpredictability (non-determinism) is denied.

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From a rich legacy of 20th century systems thinkers, preferred luminaries are selected, and extended to contemporary researchers



Source: Ramage, Magnus, and Karen Shipp. 2020. "Introduction to the First Edition." In *Systems Thinkers*, edited by Magnus Ramage and Karen Shipp, xiii–xx. Springer London. https://doi.org/10.1007/978-1-4471-7475-2, p. xvii

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Systemic practice == thinking in terms of wholes; systematic practice == linear, step-by-step thinking; systems praxis == theory → action

Organization Restructuring

- Social phenomena in primary groups (SPS)
- Action research (STS), DP1 + DP2 (+ DP3)
- Search conferences (lawful connections)
- Contextual action research
- Scenario planning

Social Systems Design

- Critical Systems Thinking → Multi-methodology
- System of Systems Methodologies → Critical Systems Practice (EPIC)

Social Ecological Systems

- Resilience Project (Holling)
- Resilience Alliance
- Ecological Economics
- Self-Organizing Holarchic Open (SOHO) → Adaptive Methodology for Ecosystem Sustainability and Health (AMESH)
- Society for Social-Ecological Systems

Systemic Design

- Product + service design → Design 4.0 as generative
- Gigamapping
- Synthesis maps
- Design Journeys → Systemic Design Toolkit (Jones)
- UK Design Council Double Diamond → Framework for Innovation (Design for Planet)

Pattern Language

- Built environments (Alexander)
- Software design + development (Hillside Group)
- Liberating Voices
- IBM Systems Integration patent
- Unified Method Architecture (OMG)

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… Philosophizing: Metaphilosophical and constructionist
… Theorizing: Multiparadigm with appreciative systems
… Methodizing: Contextural action learning longitudinally

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From 2019, a deliberate departure from mainstream systems thinking == concurrent philosophizing, theorizing, methodizing

Philosophizing:

- *Metaphilosophical*
  - Systems philosophy (Ervin Laszlo 1972)
  - Synthetic philosophy (von Bertalanffy (1972 foreword)
  - More than one type of value ⟹ more than one world hypothesis (Pepper 1972)
- *Constructionist* (Littlejohn 2022)
  - Beyond comparative of classical Chinese and Western traditions
  - Standpoint different from both

Theorizing:

- *Multiparadigm* inquiry from management literature
  - Sociological paradigms (Burrell & Morgan 1979) → organizational pluralist and paradox (Lewis & Kelemen 2002)
- *Appreciative systems* across epistemology, evaluation, action (Vickers 1965)
  - Reality judgment
  - Value judgment
  - Instrumental judgment

Methodizing:

- *Education of attention*
  - (i) praxis from behavioral → ecological; (ii) theoria from changelessness → temporality; and (iii) poiesis from causality → propensity.
- *Learning for co-relating*
  - Reorienting fields temporally and spatially
- *Learning for articulating shifts*
  - (i) praxis → inductive situation through concerns; (ii) theoria → post-colonial science; (iii) poiesis as method-composing

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D. Philosophizing on Systems Changes ...

- D1. Bridging Western and Classical Chinese Traditions
- D2. Philosophisizing Systems Based on World Hypotheses

E. Theorizing on Systems Changes Learning

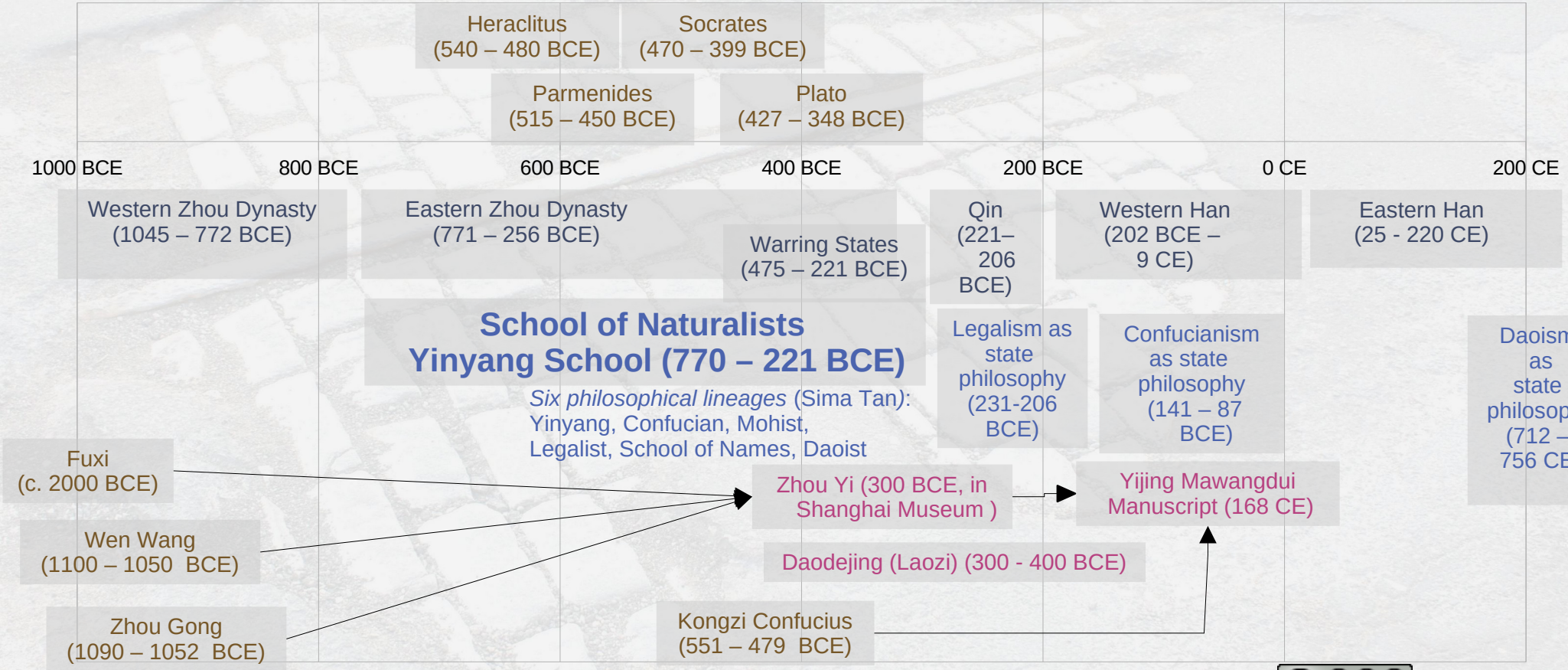
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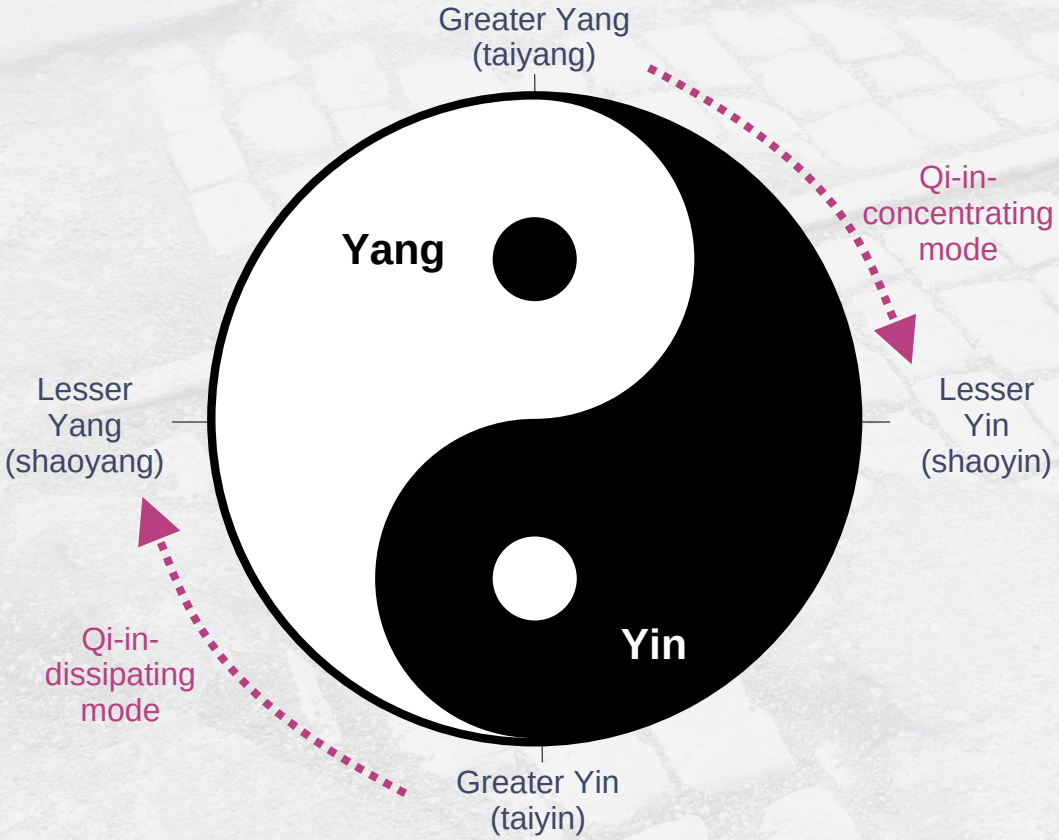
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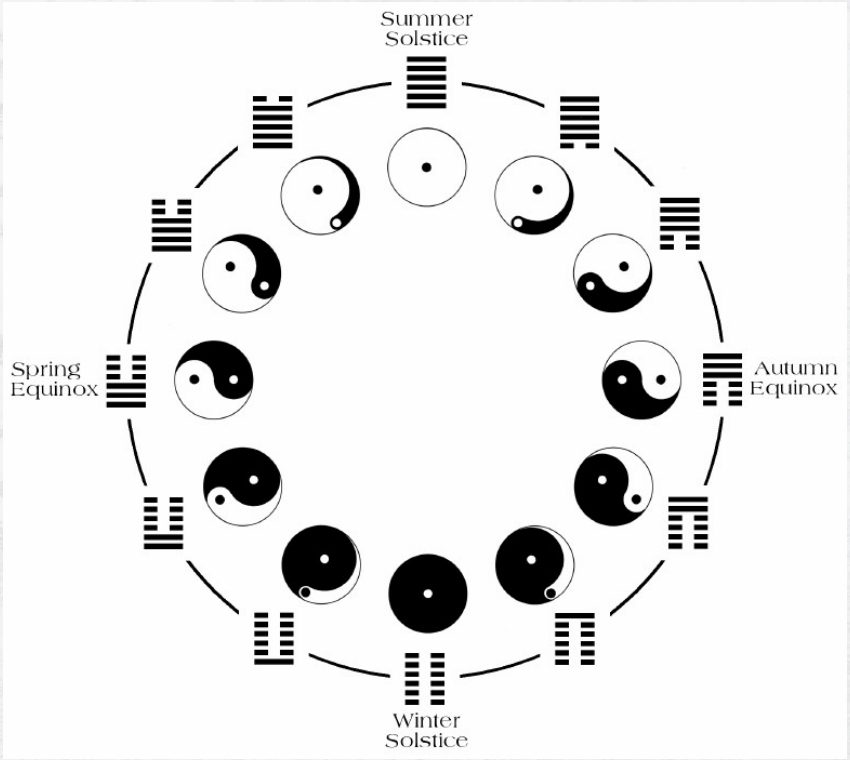
The School of Naturalists → science on yinyang → Classical Chinese Medicine, one of six schools in Warring States Period



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Qi as “atmosphere” is both matter and not-matter, waxing with qi-in-dissipating mode; and waning with qi-in-concentrating mode





Dr Andreas Schöter (2011)
“Waxing and Waning – Yin and Yang Throughout the Year”

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Dyadic processes of dissipating (to greater yang) and concentrating (to greater yin) are complementary in diachrony within (implicit) contexts



Yang	*Yin*
Illuminating	Darkening
Working	Resting
Warming	Cooling
Rising	Descending
Dissipating	Materializing
Scattering	Congealing
Generating	Growing
Expanding	Contracting

Sinusoid – Wave Form – Phase Difference CC-BY Dr. Chris Geoscience (2015)

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A new World Hypothesis is proposed as (Con)texturalism-Dyadicism, embracing both dispersive and integrative manners

	Dispersive manner for organizing evidence	***Integrative*** manner for organizing evidence
Synthetic mode of reasoning	**Contextualism**: *Root metaphor*: **Situation**, as a historic event in its living actuality *Theory of truth*: Operationalism, via qualitative confirmation of solving a specific problem *Categories*: Strands, texture, quality, novelty *Nature of time*: Qualitative duration, event relative to a specious present	**Organicism** *Root metaphor*: **Constructive Development**, with orderliness of changes from stage to stage *Theory of truth*: Coherence, where fragments cohere with their nexus, free of contradiction *Categories*: Progression (steps), final outcome (ideal) *Nature of time*: Directional arrow, successive integrations
	(Con)texturalism-Dyadicism: *Root metaphor*: **YinQi ⇌ YangQi dancing through [eight] seasons**, as ((YinQi) ∝ 1/(YangQi)) wayfaring in unfolding wanwu [concentrating ⇌ dissipating] textures *Theory of truth*: Entailment, traceability back through history, with anticipated outcomes indetermined *Categories*: Rhythmic shifts in (con)textures, situational propensity, dyadic diachrony *Nature of time*: Kairotic, with propitious periods and inopportune periods	
	Dispersive + integrative manner for organizing evidence	

Interpret the double harpoon as reversibility in chemistry: (YinQi ⇌ YangQi) == (YinQi is complementary with YangQi).

Interpret the math symbol ∝not as alpha: (YinQi ∝1/(YangQi)) == (YinQi is inversely proportional with YangQi).

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… Theorizing Systems Changes via Architecture

… Theorizing Systems Changes via Ecological Anthropology

… Theorizing Systems Changes via Chinese Medicine

… Theorizing Systems Changes via Rhythms

… Abducing a Theory of Systems Rhythms

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Multiparadigm inquiry on four theories on systems changes with three appreciative judgments → abducing a new theory of systems rhythms

via Architecture (Built Environment)

- *Reality*: Differentiating space
- *Value*: Systems generating systems
- *Instrumental*: Unfolding patterns

via Ecological Anthropology

- *Reality*: Lines of becoming, meshworks
- *Value*: Continuity of living alongside other beings
- *Instrumental*: Form-giving as weaving

via Chinese Medicine

- *Reality*: Diseases as internal within body
- *Value*: Wuwei effortless over wei action
- *Instrumental*: Tonifying yin or yang, or expelling pathogenic factors

via Rhythms (movement)

- Reality: Repetition in time, *kairos*
- *Value*: Collective polyrhythmia
- *Instrumental*: eigen-rhythmus or allrhythmus

A Theory of Systems Rhythms

- *Reality judgment*: Systems changes as rhythmic shifts in textures, as (i) dragging or rushing, or (ii) losing coherency through diachronic unravelling
- *Value judgment*: Systems changes as situational propensity, towards when+where of auspicious or unfortunate conditions
- *Instrumental judgment*: Systems changes as reordering pacing, recognizing dyadic diachrony at play

Embraces generativity with concurrent dissipating (emptying) and concentration (filling) processes in a synthetic (putting parts together) mode

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F1. Knowing from Within ≡ physical ∧ systemic

F2. Contextural influences ≡ informational ∧ environmental

F3. Rhythmic disorders ≡ informational ∧ systemic

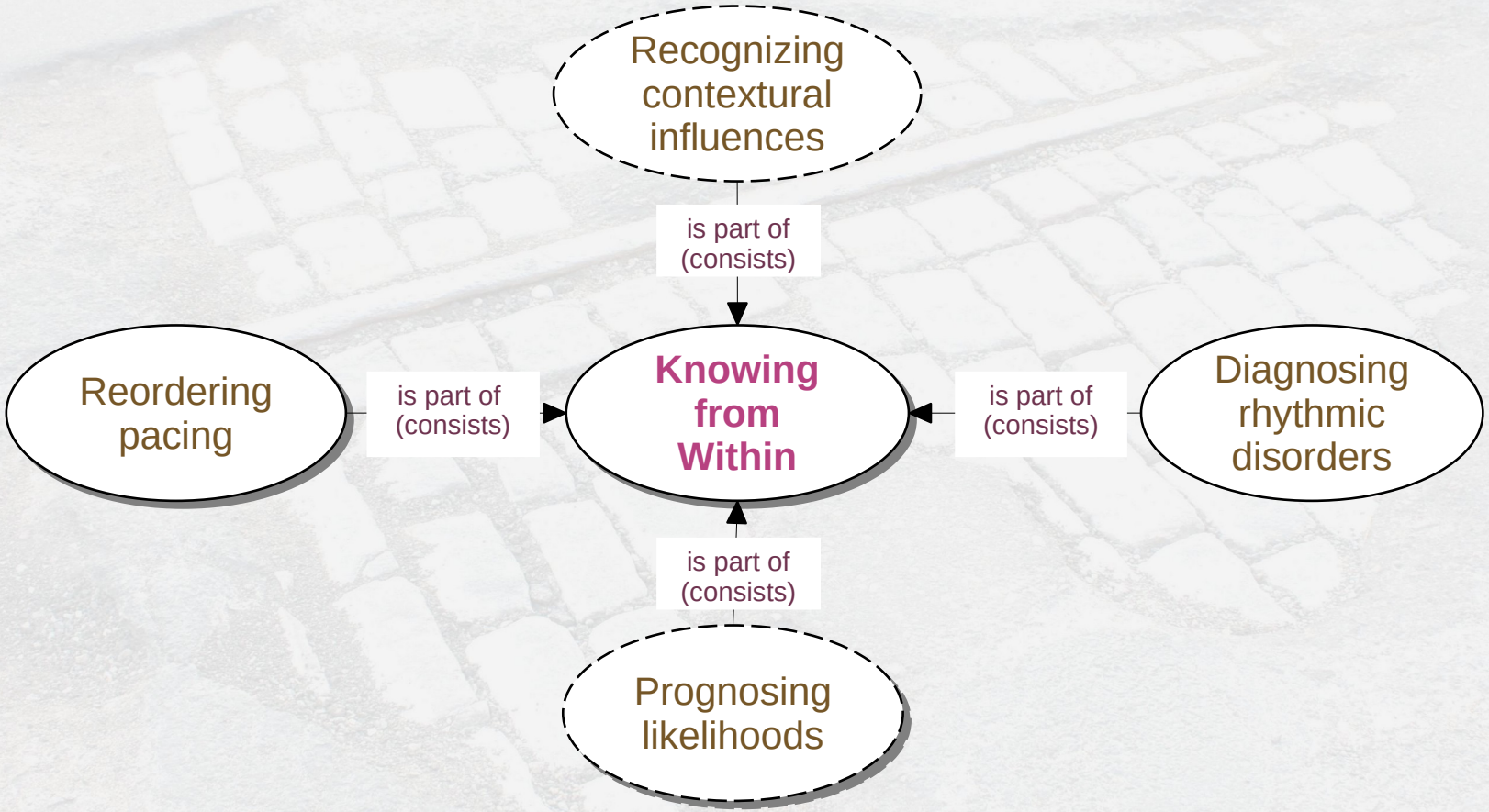
F4. Prognosing likelihoods ≡ physical ∧ environmental

F5. Reordering pacing ≡ physical ∧ systemic

F6. Cocreating deliverables with examples and hints

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Systems Changes Learning centers on a hub of *knowing from within*, clockwise thread to texture, and/or counterclockwise texture to thread



***Legend*:**
Object Process Methodology

- Essence Physical; Origin Systemic
- Essence Informational; Origin Systemic
- Essence Physical; Origin Environmental
- Essence Informational; Origin Environmental

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From static snapshots (before-after photographs) → kairotic fluidity (video segments spliced together, story editor pacing aesthetics)

Reifying philosophy:
↓ deterministic statics,
↑ polyrhythms + anticipation

- From equilibrium *ceteris paribus* linear cause-effect to another equilibrium → threads nonlinear in polyrhythms
- From biological *homeostatis* stable internal conditions in changing environments → ecological *homeorhesis* quasi-deterministic return to development trajectory
- (Con)textualism-dyadicism as new world hypothesis, diachronic wholes co-responding with wholes

Reifying theory:
↓ structural functional,
↑ threads co-responding

- From (arrangements in space) (contribution part-whole) → (arrangements in time) kairotic with shifts
- Dissolves first defining and system with boundaries
- Threads processually coupling with *yang qi* and *yin qi* dyadic and generative
- Situational propensity of unfolding embedded events
- Reordering pacing of laws of nature with legal order and commitments

Reifying methods:
↓ unfreeze-move-refreeze,
↑ (con)textural dyadic action learning

- Hub of “knowing from within”
- Four spokes clockwise for thread falling pace out of texture → reweaving
- Four spokes counter-clockwise adjusting texture to thread → accommodating
- Parallel to Socio-Technical Systems perspective, society adjusting to soldiers returning

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Living systems foreground processes, emphasizing changes over time with a recognition of natural rhythmic pulses

Philosophical implications:
↑ when+where;
↓ what+why

- School of Naturalists 318-284 BCE → Chinese Medicine
- Premise of natural course of events unfolding over time
- Auspicious periods interspersed with unfavorable intervals.

Theoretical implications:
↑ kairotic rhythms
+ situational propensity
+ dyadic diachrony,
↓ future state ← current state

- Patience for windows of opportunity, or proactively reshaping textures ahead
- Cycles of dissipating and concentrating, anticipating generativity

Methodological implications:
↑ doing no harm,
↓ bias for action

- Prognosis option for system to recover or repair itself
- Nature first, decoupled from human judgment on morality, ethics, aesthetics

Recast systems thinking from defining *systems* + *boundaries* → *threads* + *textures*
Resequence *changes* first, *systems* second?

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