

Design Thinking for Software Developers

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what will we talk about

First, the nature of systems.

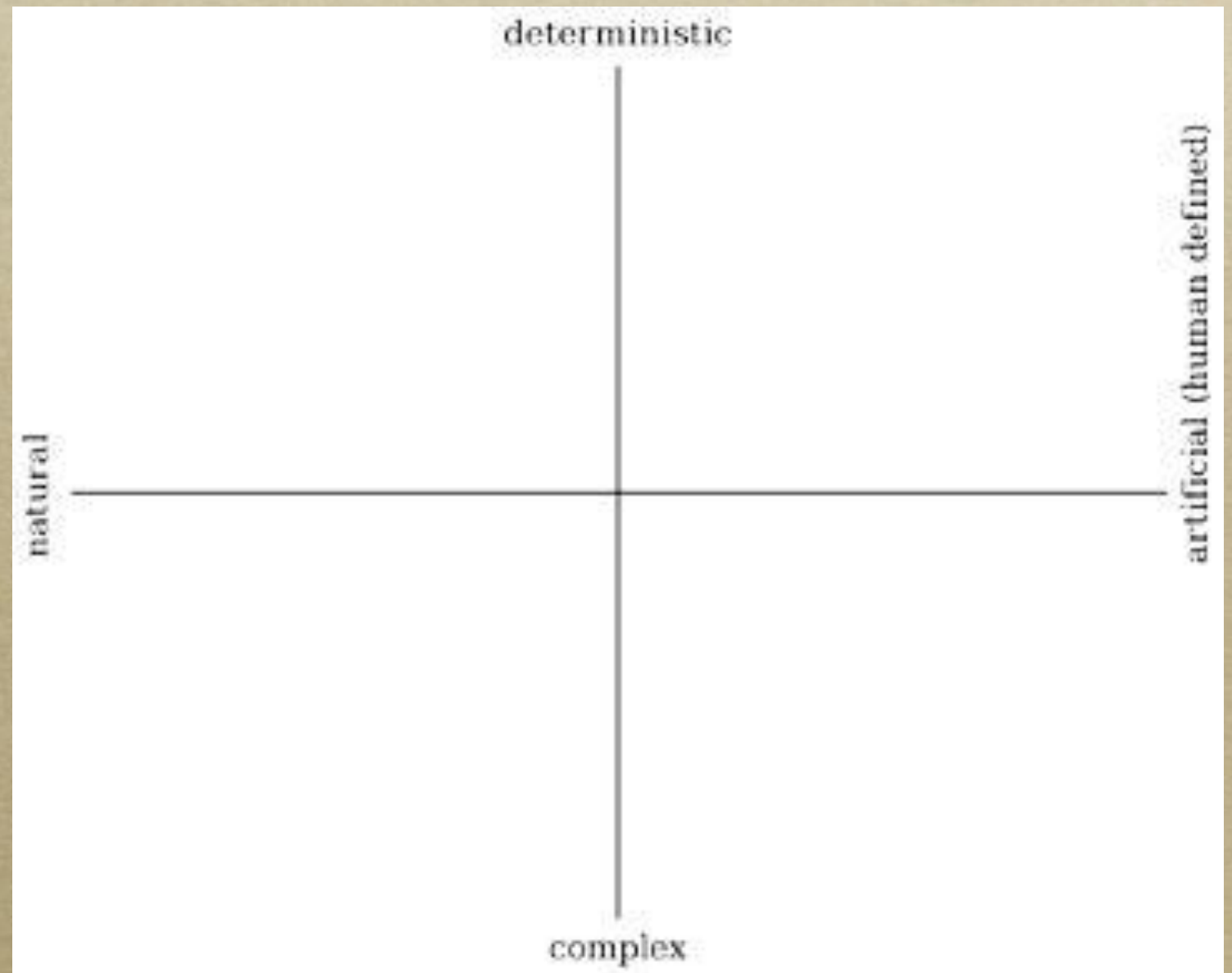
*Second, two perspectives on
what it means “To Design”*

*Third, “Wicked Problems” and the only
possible way to solve them.*

*Fourth, concepts, principles, and practices
essential for successful Design Thinking*

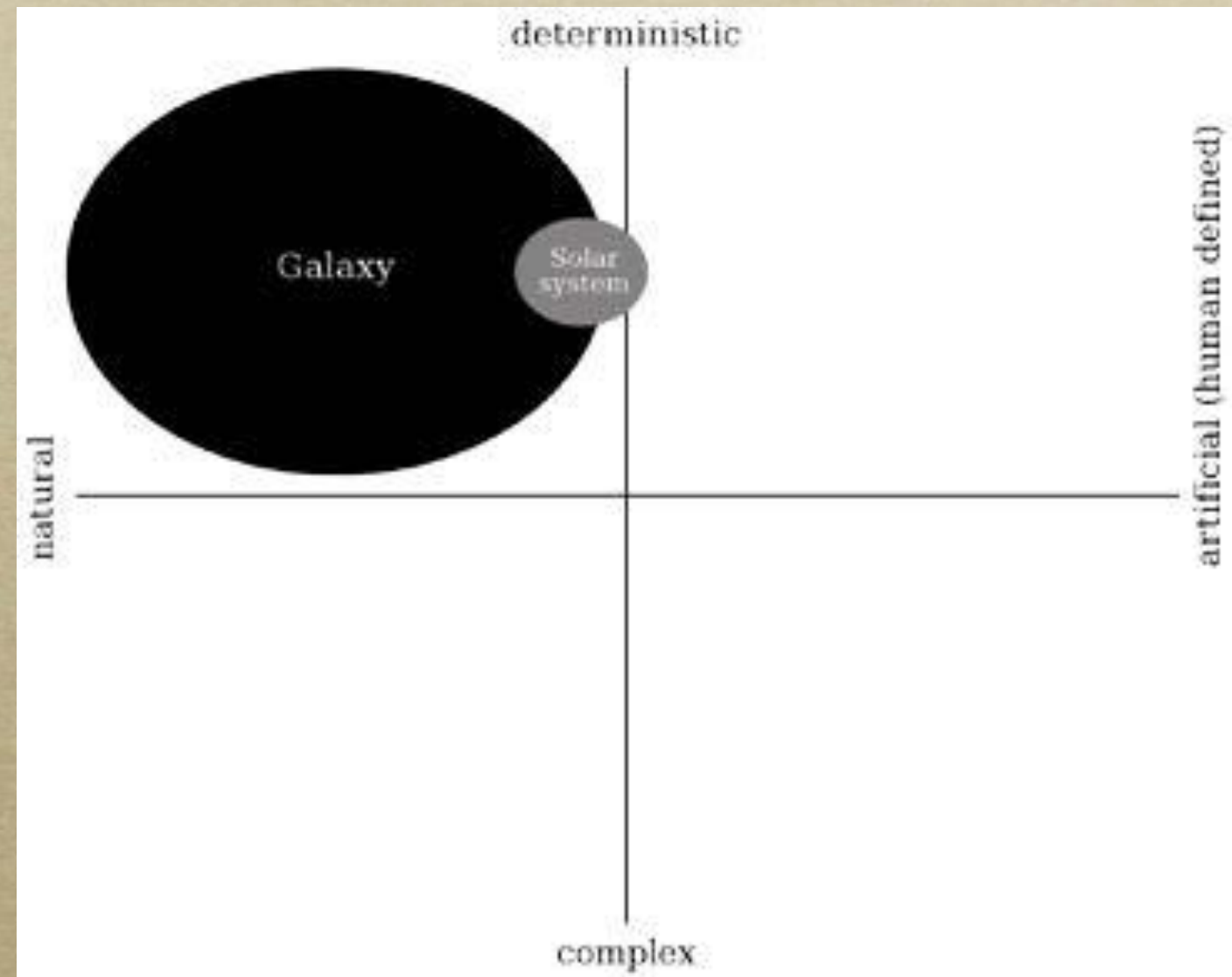
Classifying Systems

A helpful way to classify and compare types of system.



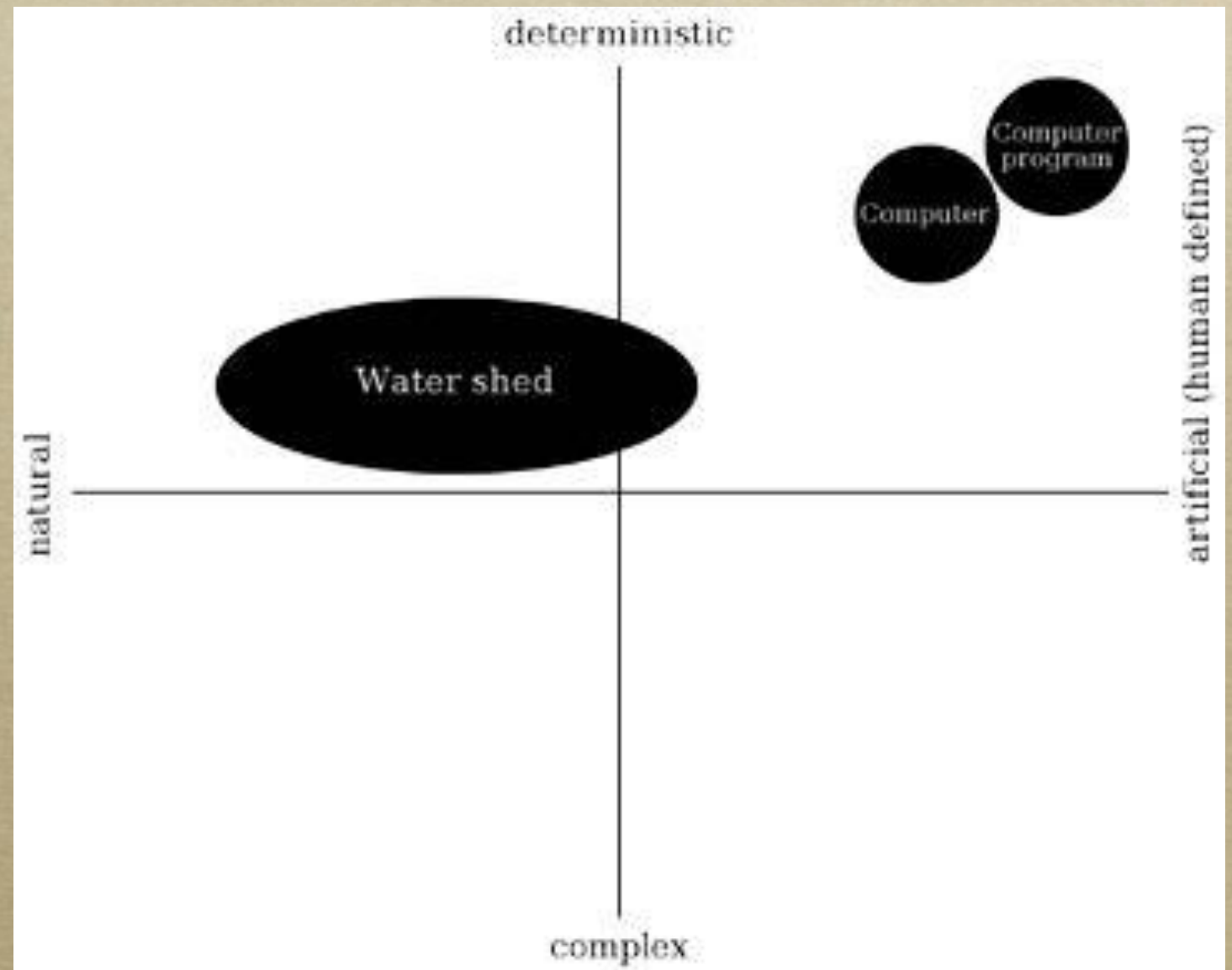
Natural — Deterministic

These are the systems of concern to physicists and the “hard” sciences.



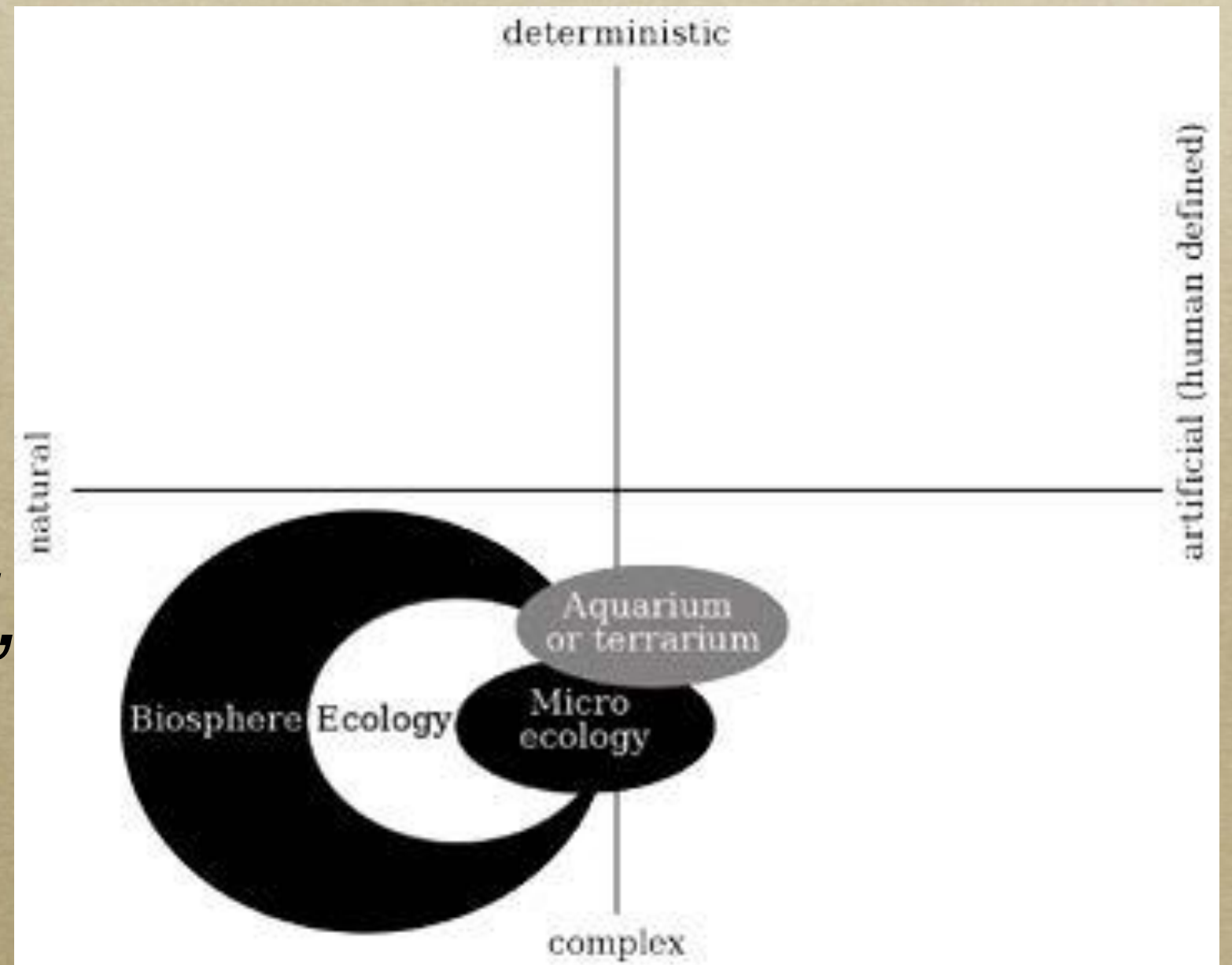
Artificial - Deterministic

Systems altered by humans, or created by humans.



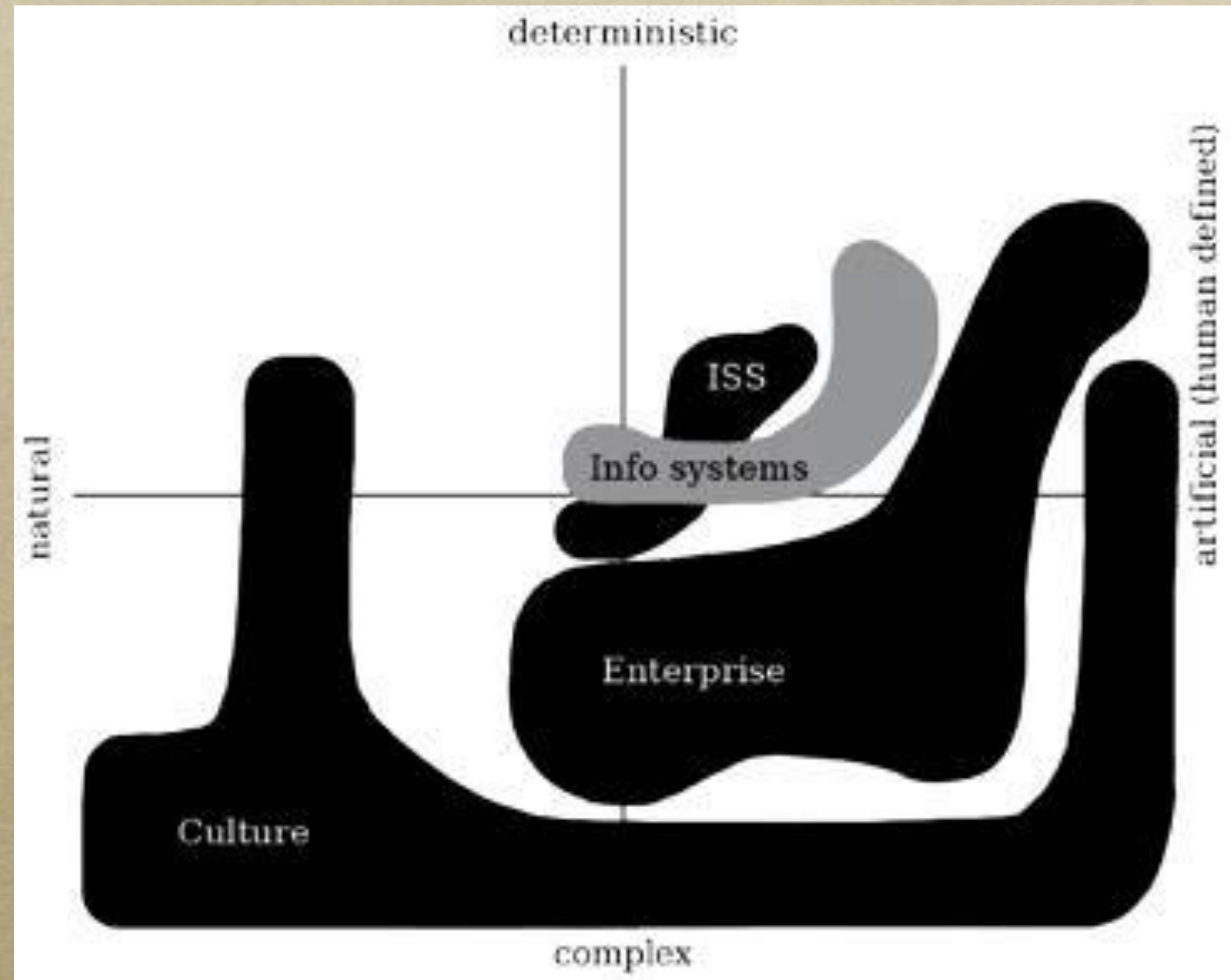
Natural - Complex

Complex adaptive systems. Poorly understood, imperfectly modified, by humans.



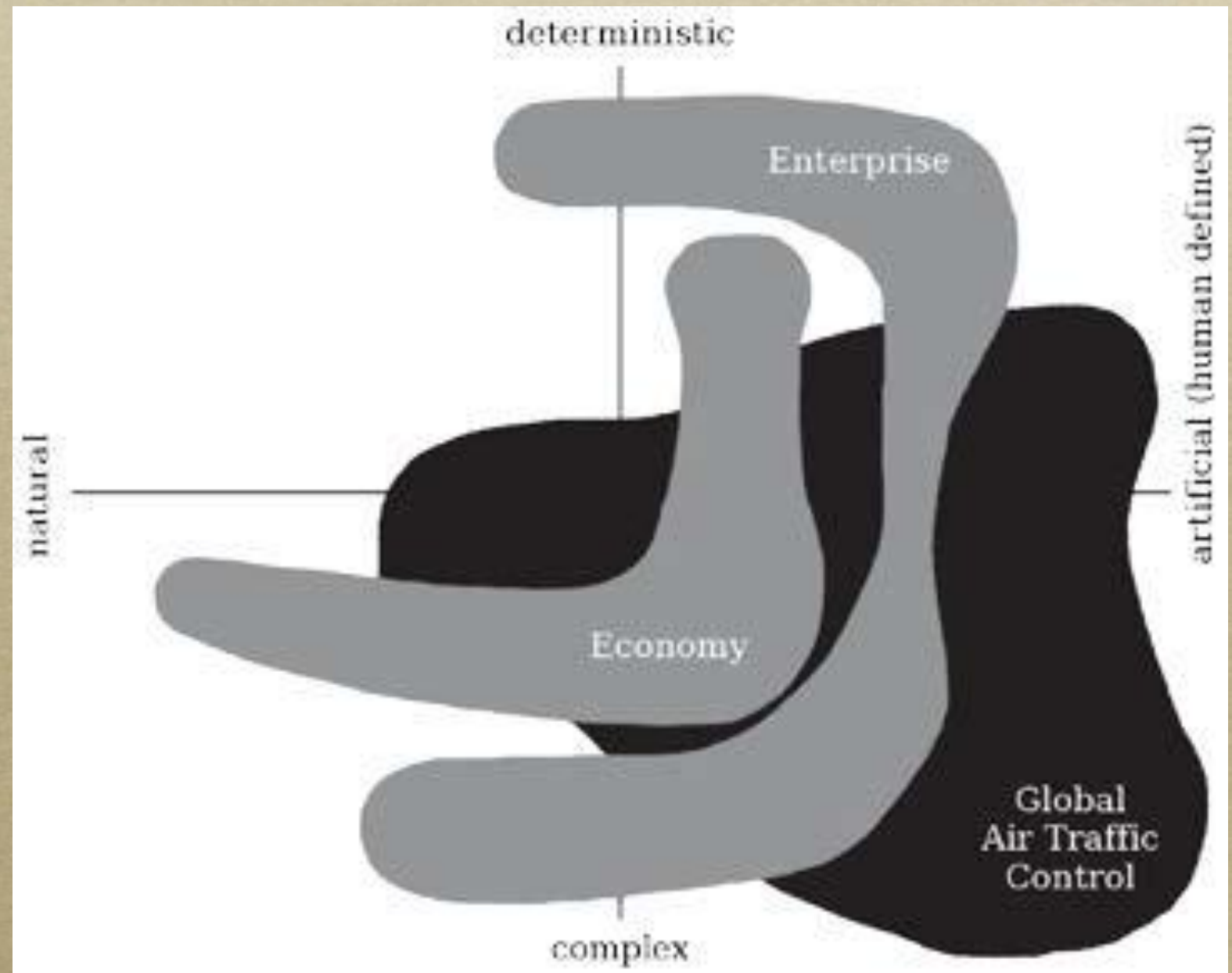
Artificial - Complex

*Complex,
composites.*



Ultra Large Scale

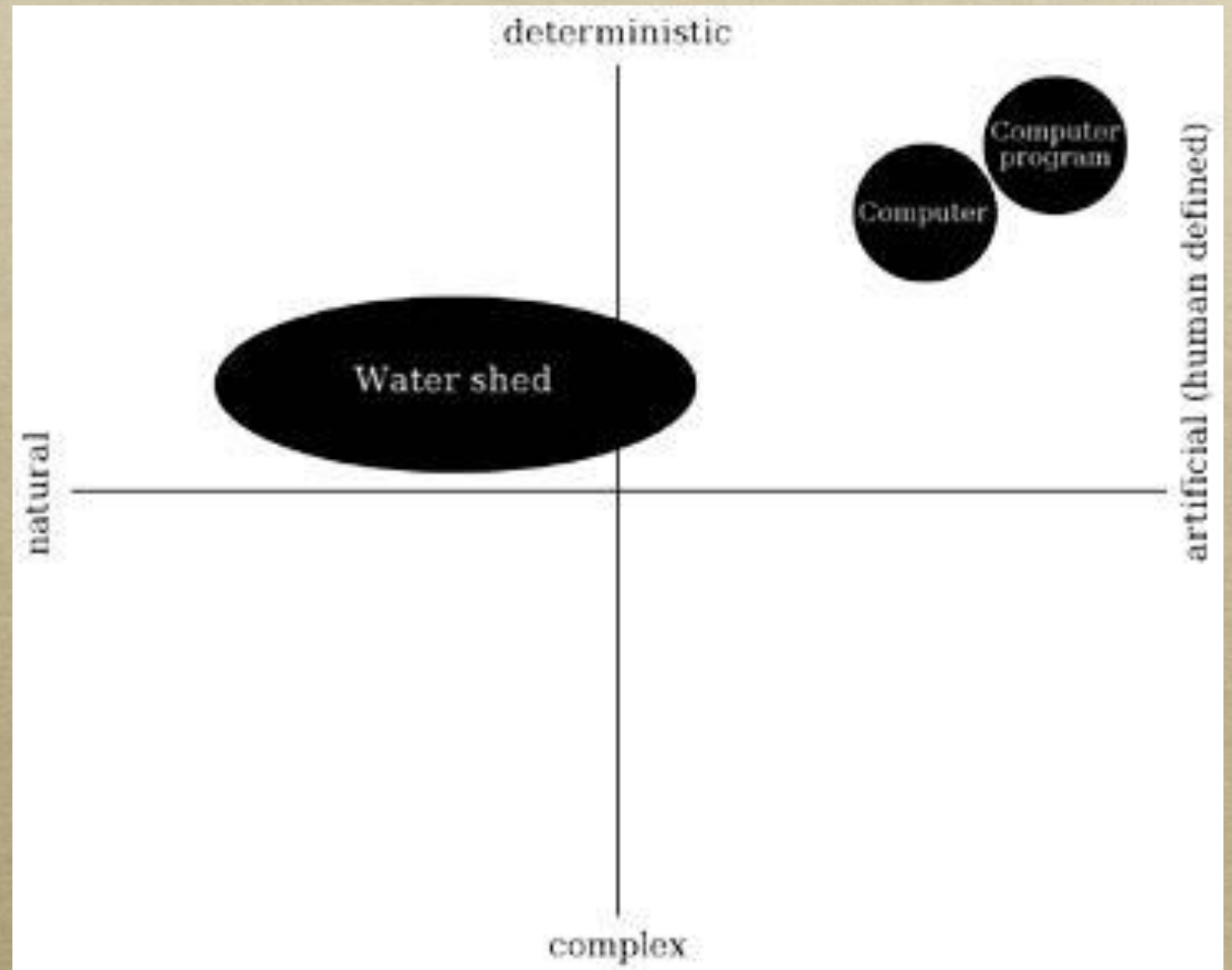
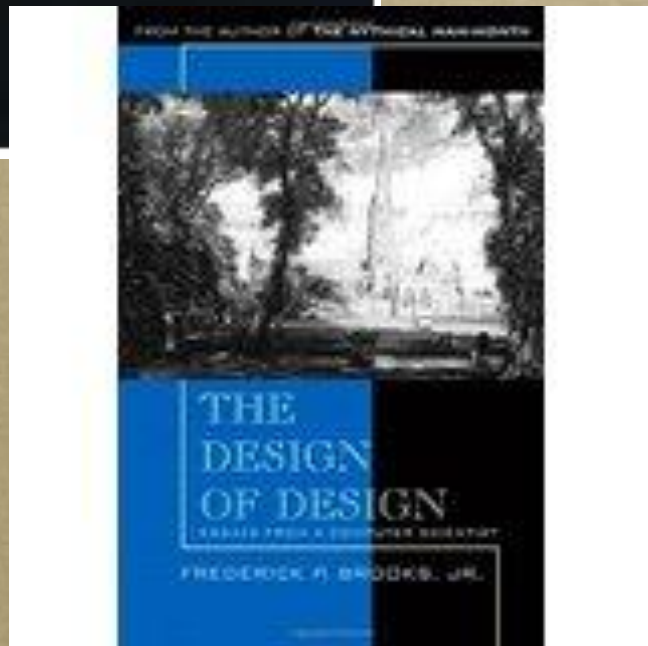
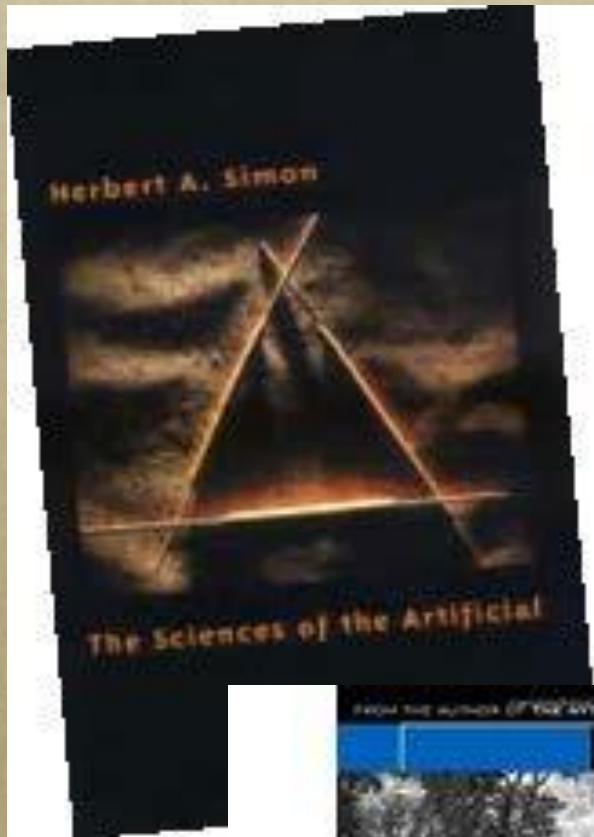
*Complex,
composite, and
global scale.*



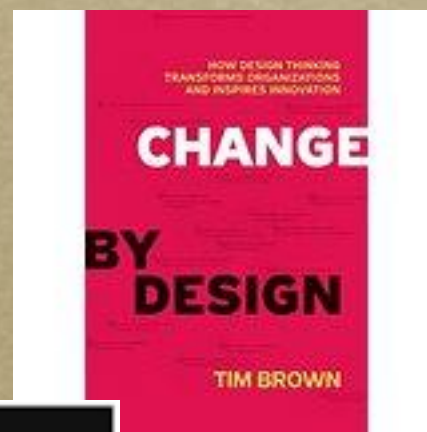
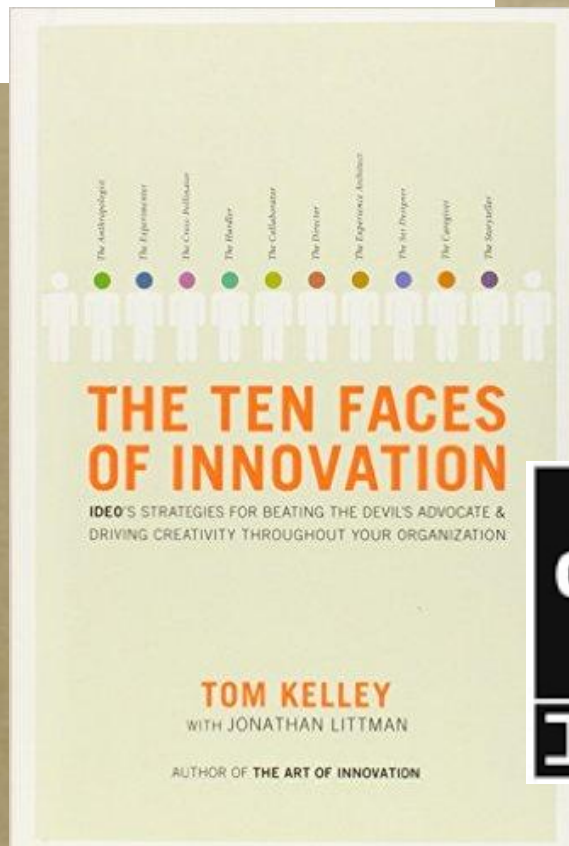
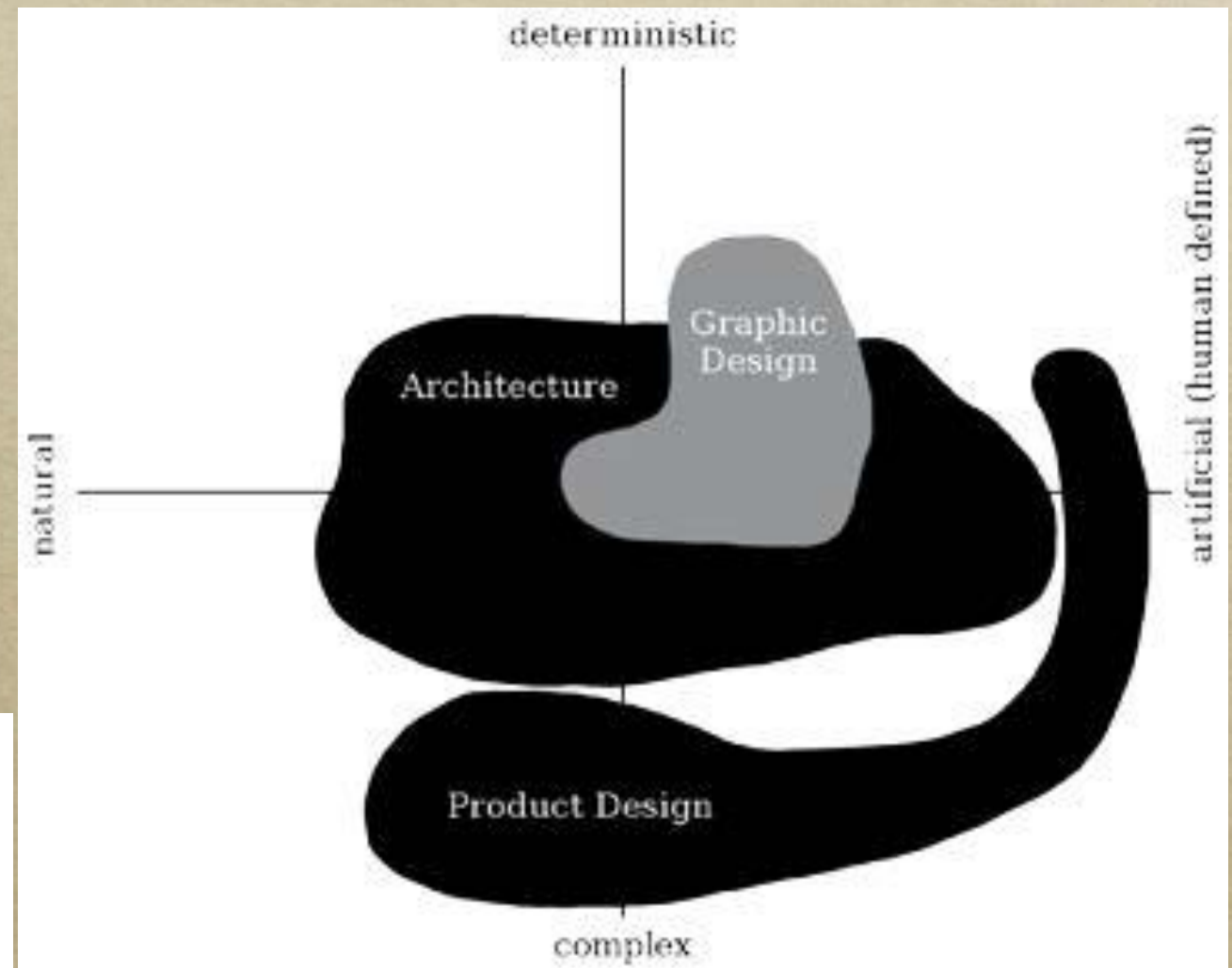
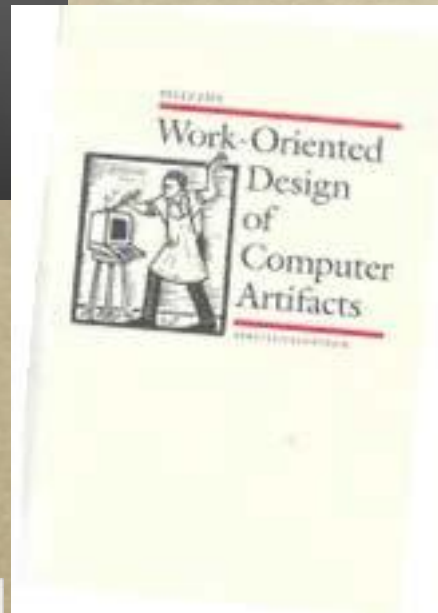
Design

Design is the informed and deliberative modification of a system by adding, deleting or modifying one of its elements, or, adding, deleting, or modifying a relationship among elements — in order to establish the system in a more desirable state.

“Design” You Know



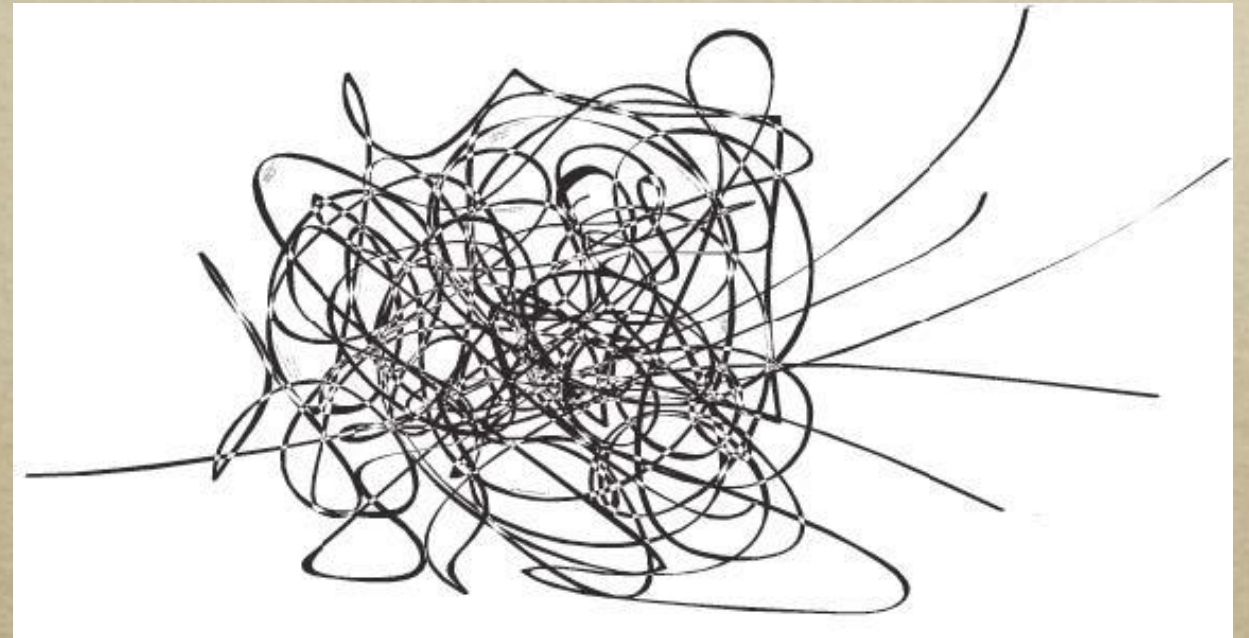
Design You Do Not Know



Wicked Problems

C. West Churchman introduced the concept of a wicked problem, based on the work of Horst Rittel.

A wicked problem, “is difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognize.” The domain that prompted the first formulation of the characteristics shared by wicked problems was urban planning — city design.



Wicked Problems: variables are unknown and often unknowable; everything is entangled; solutions frequently redefine problems and change requirements.

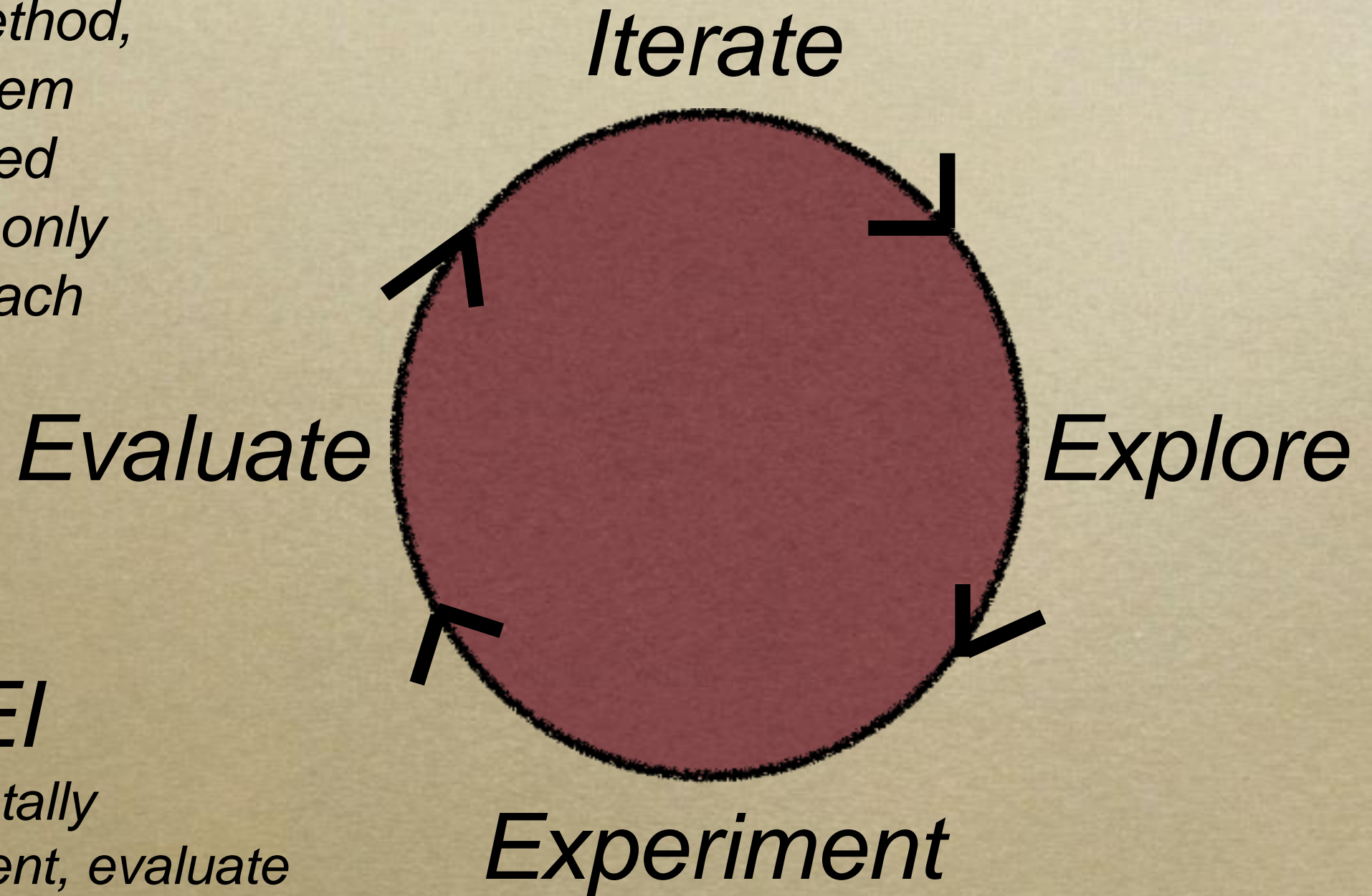
Solving Wicked Problems

There is **NO** method, formula, or system for solving wicked problems. The only possible approach is *EEEEI*.

EEEEI

incrementally

explore, experiment, evaluate then iterate.



Doing EEEI

*There are principles, practices,
and techniques that can guide
you and facilitate your efforts to
successfully follow the EEEI
approach.*

Essential Concepts



Form

*Inside of all, there is form.
Timeless, elegant, and efficient.*

Unfolding

*Essence preserving transformations,
ala mathematics or Christopher Alexander*

Zen Mind

*Quiet perception.
See what is and not what you “know” to be.*

Logos

*Language and vocabulary essential.
No single language is sufficient.*

People First

*If it does not enhance the human,
advance humanity,
AND is not humane —
IT IS NOT THE SOLUTION!*

Principles

Russian Dolls

fractal self-similarity

Gestalt

the WHOLE, always

Magical Liminal

where design emerges

Personae

points of view

appearances to others

Forever Jung

Embodied Mind

the brain is NOT the only thinking organ

Everything an Object

Common metaphor and model

It's About Time

remember the temporal

Glossolalia

speak in many tongues

Thick Description

evocative, dense, intertwined story

Room of One's Own

working space matters!

Tribes

*peer group organization
and management*

Practices



Participant Observation

Gemba - go where the work is.

Prometheus Bound

*Understanding constraints
frees creativity*

It Takes a Village

*multiple specialities
modern polymaths*

Show Me

models and prototypes

Design Brief

*The seed that that,
fertilized with imagination,
yields the flower of solution*

System Metaphor

*core story that guides
discussion and exploration*

Story Telling

*narrative perspective,
context,
plot,
denouement*

Evaluation

Fit

lens and template
Christopher Alexander

Invisibility

intuitive
no cognitive dissonance

Seed Recognizes Flower

(and vice versa)
design is product of robust
essence preserving transformations

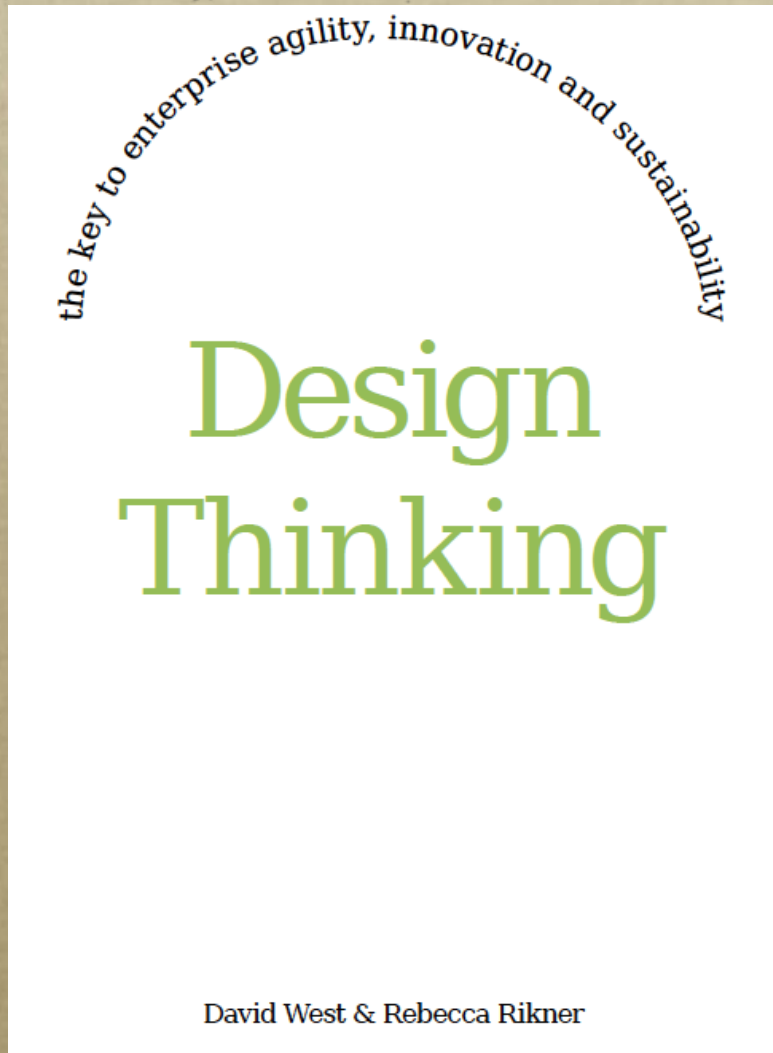
Attractiveness

It Does need to look
and feel
desirable

Joy

enhances me and
my world

The Details



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<http://feralcogitation.com>

Questions — Discussion

