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Citation Details

Zwick, M. (2007) "Systems Metaphysics: A Bridge from Science to Religion [presentation]." Metanexus conference: Transdisciplinarity and the Unity of Knowledge: Beyond the Science and Religion Dialogue. June 2-6, 2007; Philadelphia, Pennsylvania

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Systems Metaphysics: A Bridge from Science to Religion

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Metanexus Conference June 2-6, 2007

Systems Science Seminar May 16, 2008

Minor edits March 9, 2021

Conference paper at: https://works.bepress.com/martin_zwick/50/

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Transdisciplinarity and the Unity of Knowledge: Beyond the *Science and Religion Dialogue*

June 2-6, 2007 - Philadelphia, Pennsylvania



SYSTEMS METAPHYSICS

- Systems ideas give a new & different scientific understanding of ourselves & the world.

BRIDGE FROM SCIENCE TO RELIGION

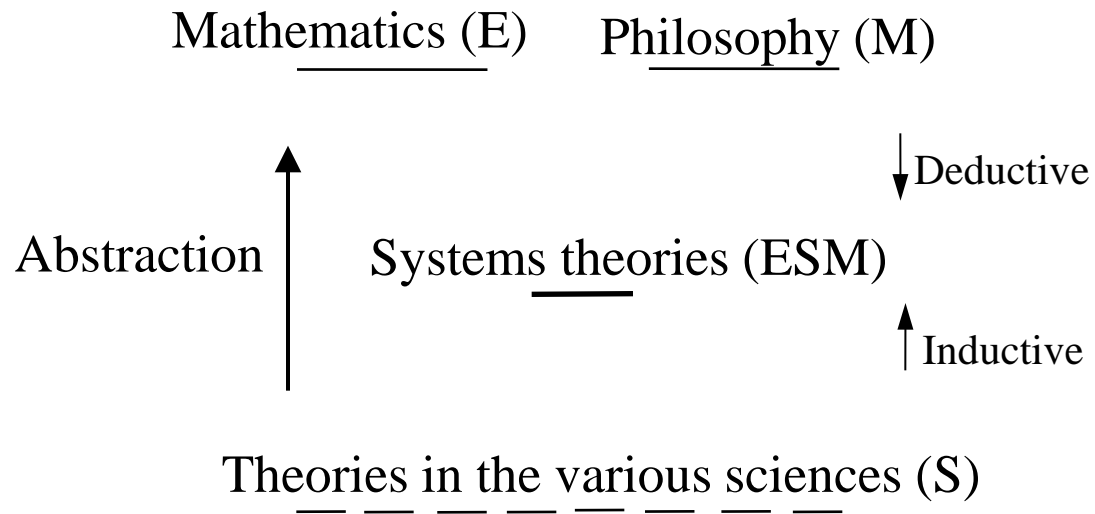
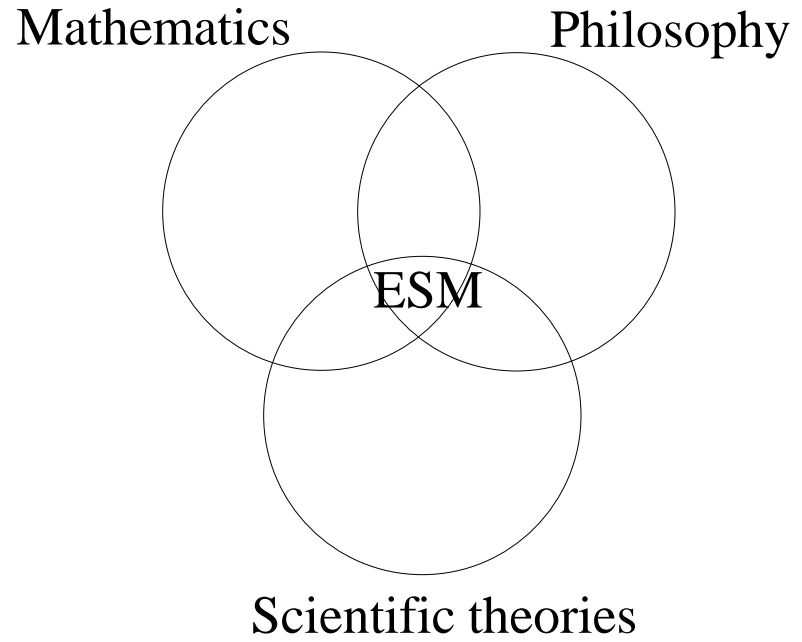
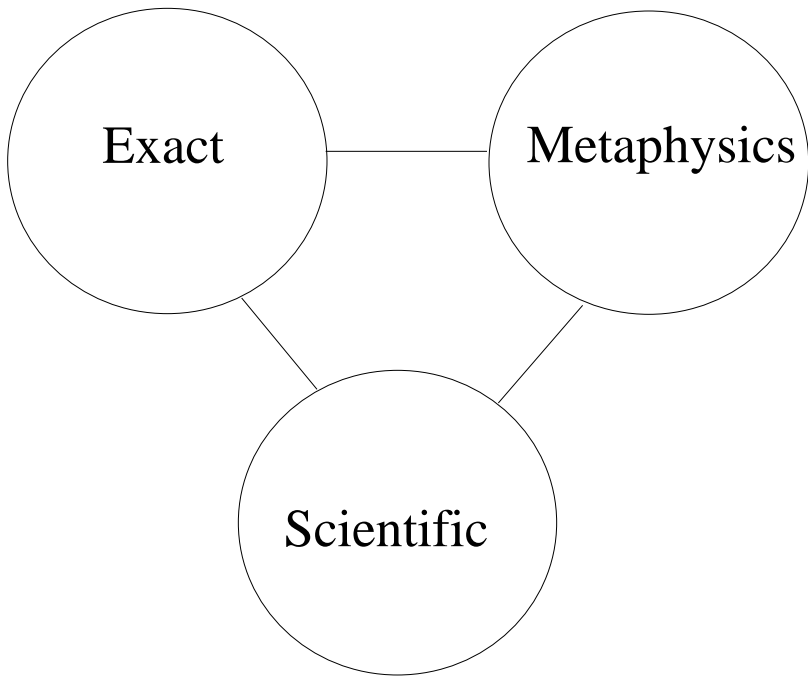
- These ideas are important for science-religion dialog & the recovery of cultural coherence.

SYSTEMS METAPHYSICS

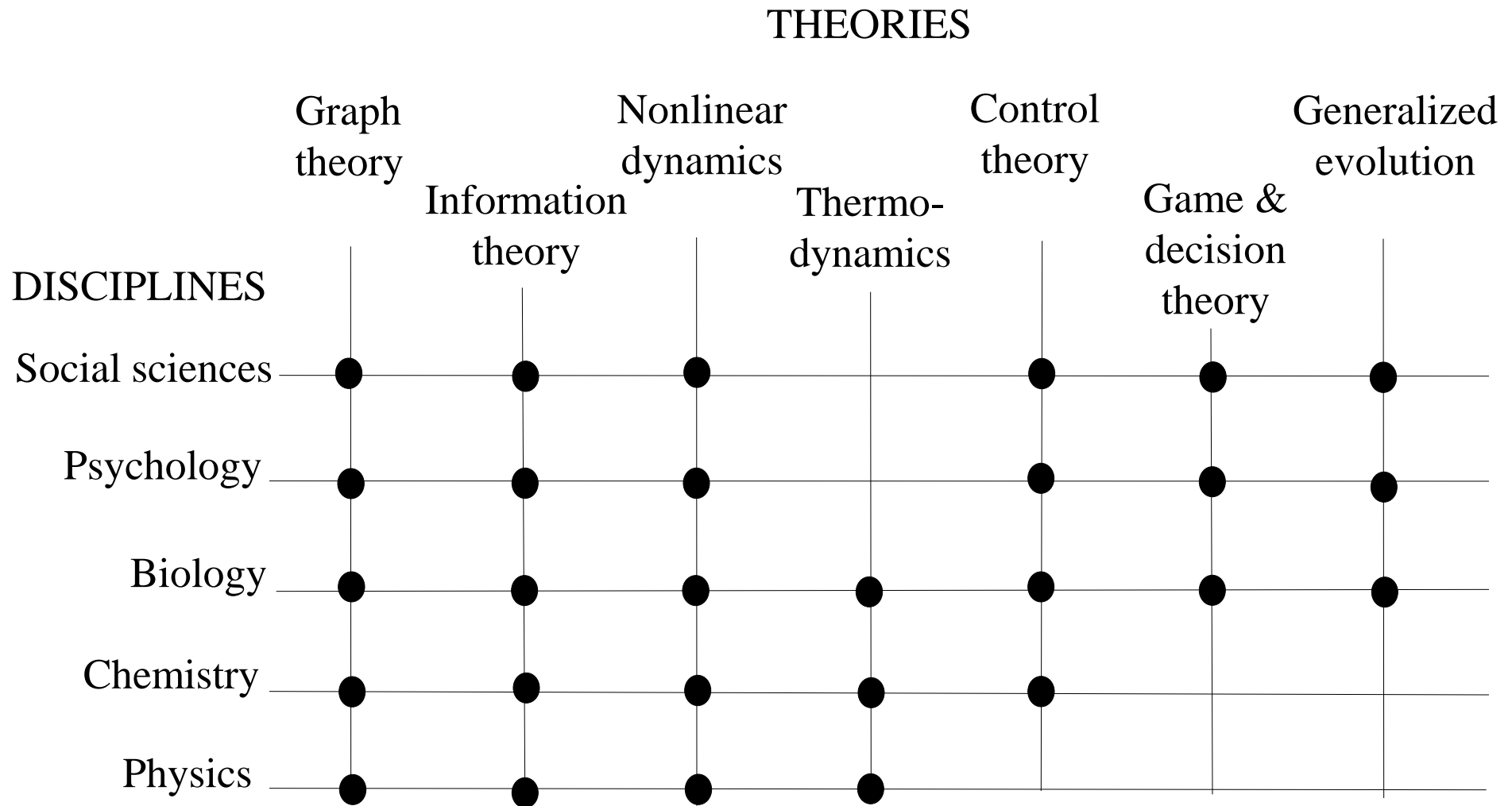
- **The systems research project**
- *Understanding what we know*
- *Fact & value*
- *Personal knowledge*

THE SYSTEMS PROJECT

- Systems theories,
graph theory, automata theory, information theory,
control theory, game theory, generalized evolution, etc.;
More recently: theories of chaos, networks, complexity,
& complex adaptive systems
- aimed at ‘exact & scientific metaphysics,’
- centered in *biology*,
- about the general, not the fundamental,
- *truly* about everything.



Systems theories are transdisciplinary



SYSTEMS METAPHYSICS

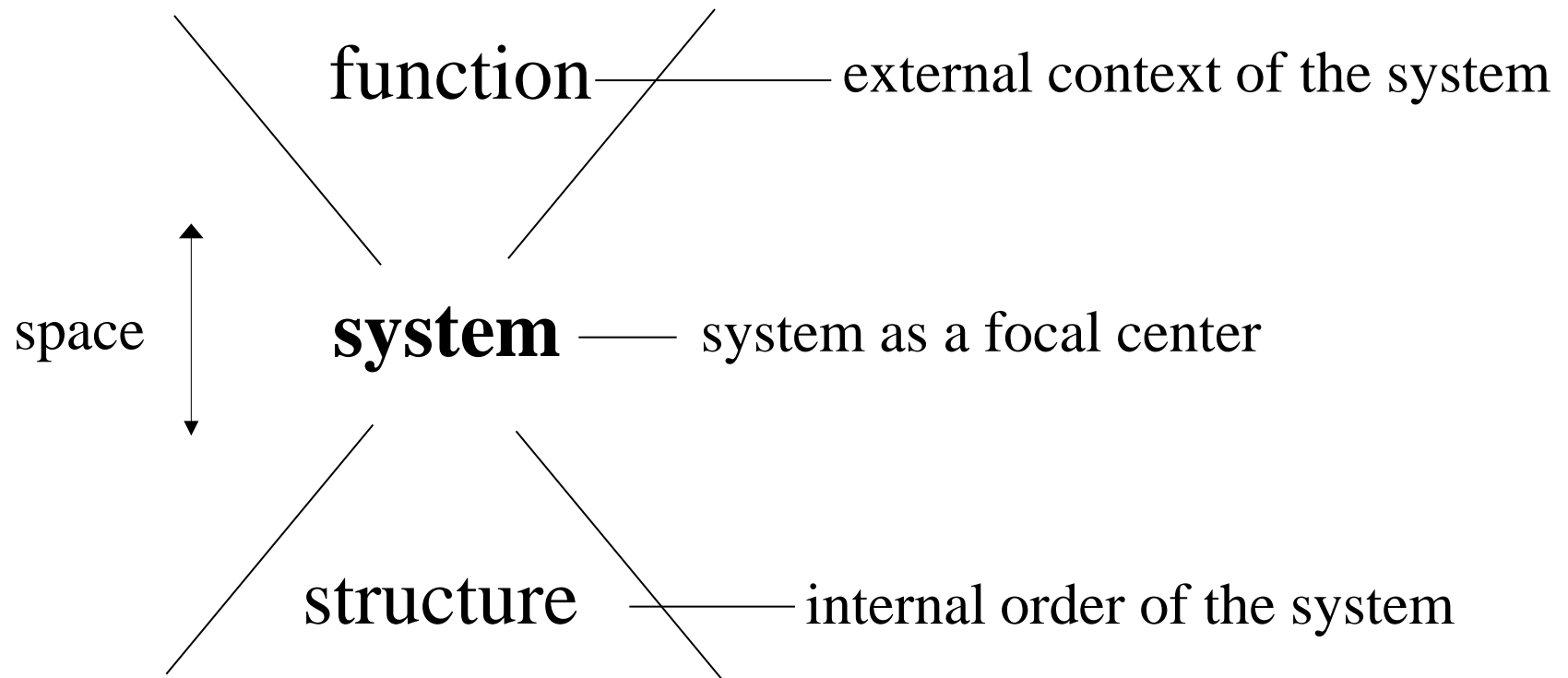
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UNDERSTANDING WHAT WE KNOW

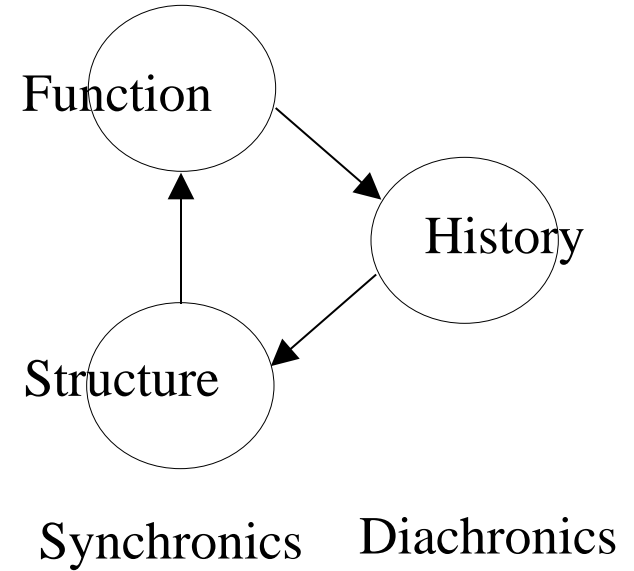
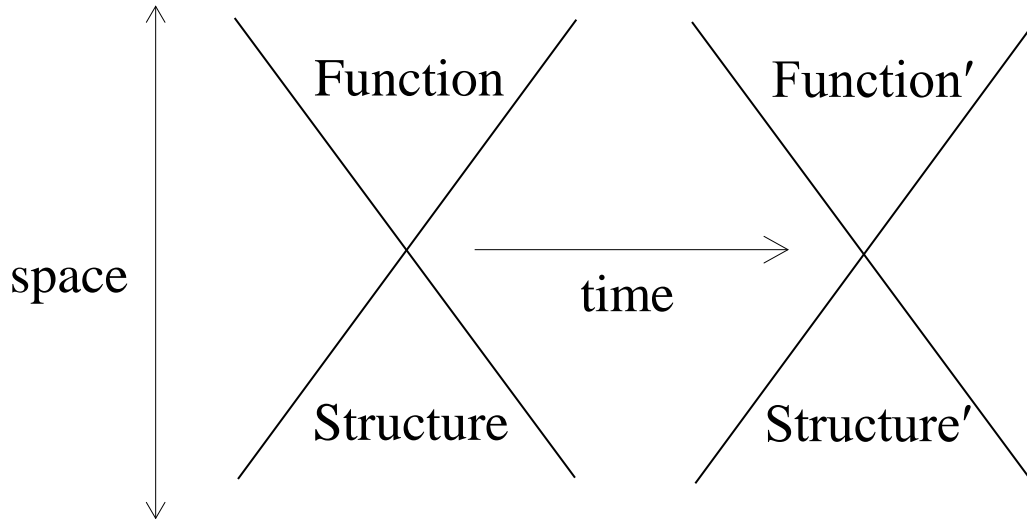
Consider the full implications even of just...

- Structure, function, & history
- Matter, energy, information

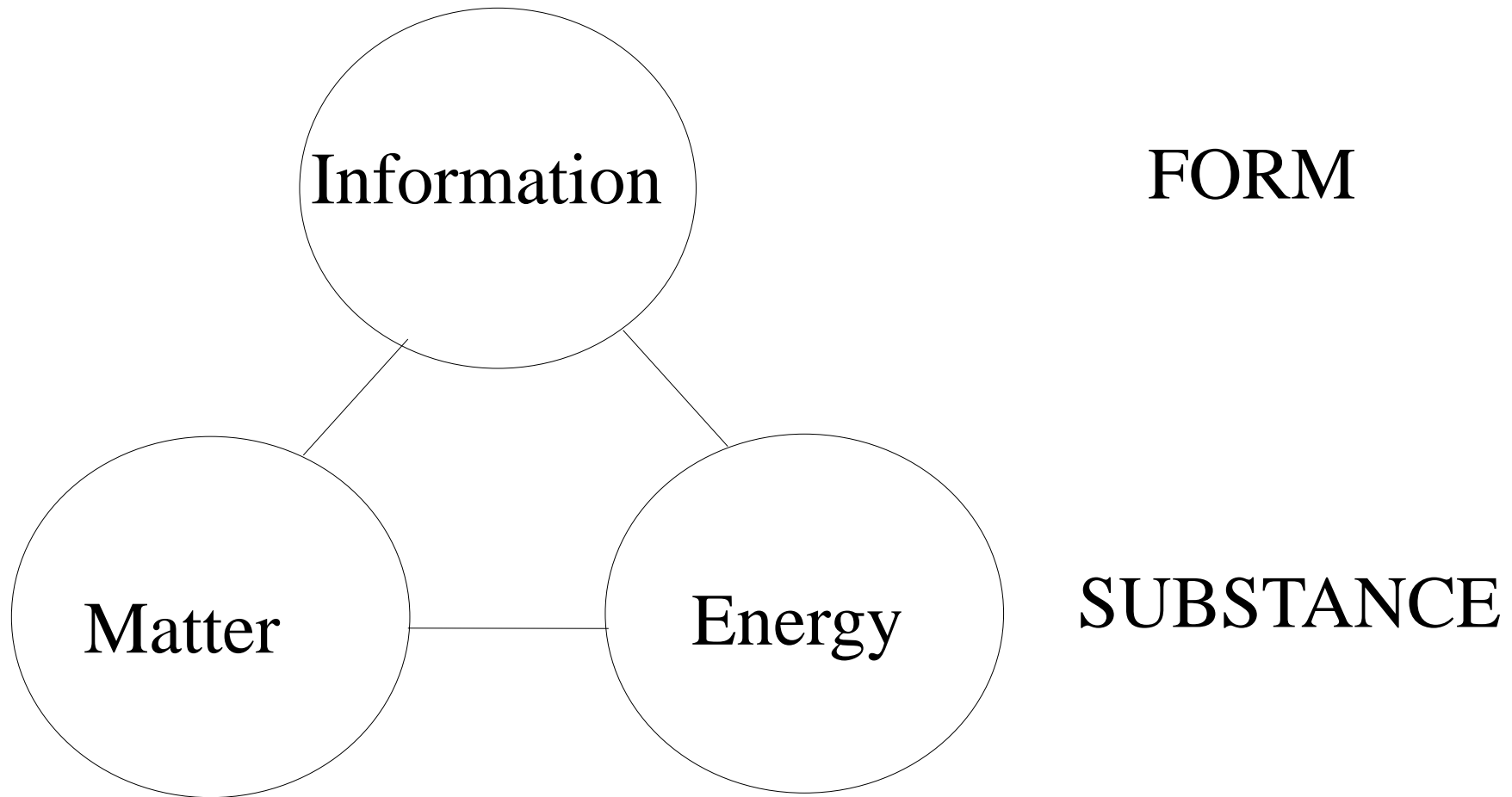
Structure & function



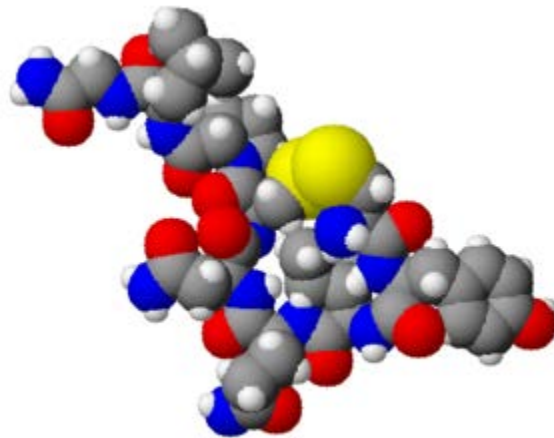
Adding history



Matter, energy, information



Oxytocin



Challenging Dogmas of Scientific Interpretation

These assertions are ideological, not scientific:

- There is no progress in evolution.
- Random mutation → evolution is random.

Dogma of 'no evolutionary progress'

- “All beings alive today are equally evolved. All have survived over three thousand million years of evolution from common bacterial ancestors. There are no ‘higher’ beings, no ‘lower animals’... Even the ‘higher’ primates are not higher. *We Homo sapiens sapiens* and our primate relations are not special, just recent; we are newcomers on the evolutionary stage. Human similarities to other life-forms are far more striking than the differences.”

- Margulis (1998)

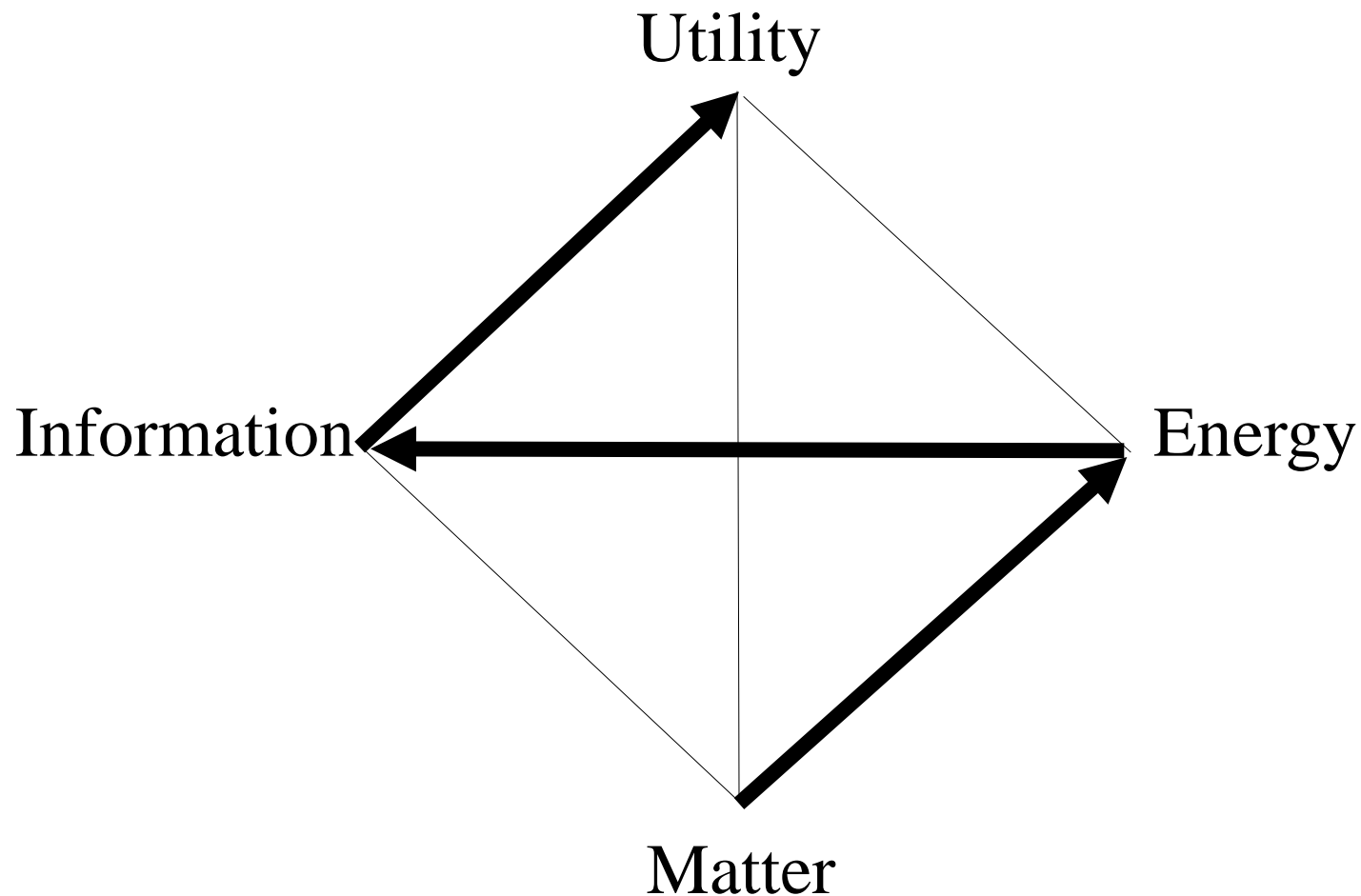
SYSTEMS METAPHYSICS

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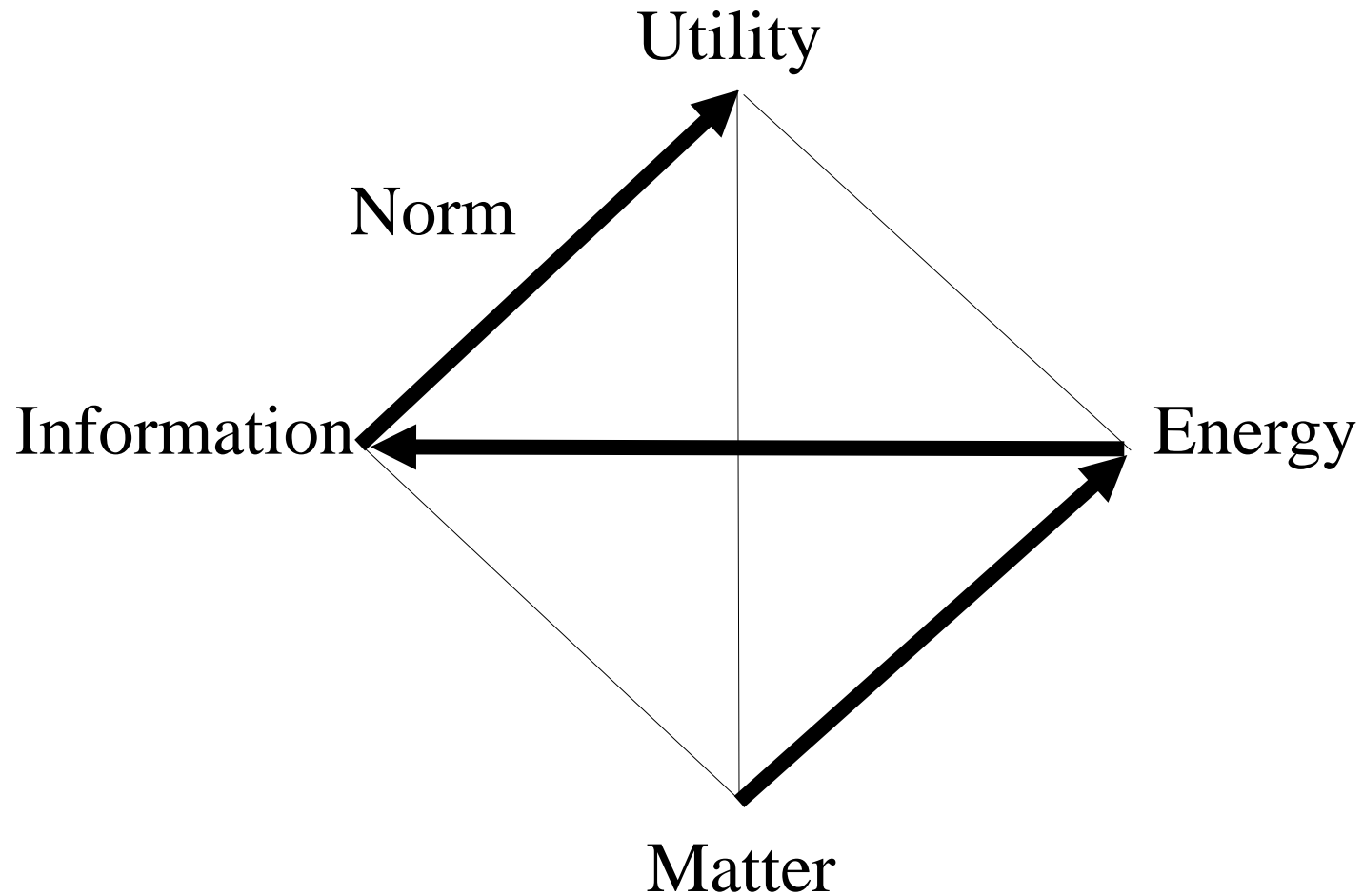
FACT & VALUE

- Systems theories: descriptive & normative
- Values inhere in living systems (utility)
- 'Purpose' is a scientific phenomenon.
- Metabolism → freedom & vulnerability

Utility as a 4th fundamental scientific category



Norms link information & utility



Above information & utility, what?

- ?!
- Utility
- (Norm)
- Information
- Energy
- Matter

SYSTEMS METAPHYSICS

- *The systems research project*
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PERSONAL KNOWLEDGE

- From Michael Polanyi:
objective – personal - subjective
- What scientific knowledge could be *personally* meaningful?
- General scientific *principles* are more valuable than specific scientific *facts*.

Which is more important to know?

what explains the world are fundamentals, e.g., superstrings	<i>what explains the world are general features, e.g., order and distinction;</i>
atoms are made up of protons, neutrons, & electrons; protons & neutrons are made of quarks	<i>all things are both wholes and parts and wholeness and partness are in tension</i>
excess phosphates dumped into lakes cause eutrophication	<i>systems pollute, i.e., excrete disorder into their environment; these waste products can be neutralized only by assimilation in cycles on a larger scale</i>
viruses inject their DNA/RNA into cells and by doing so take over cellular metabolism	<i>distillation of an informational domain distinct from matter-energy base opens up the possibility of parasitism</i>
bacteria inoculated into a nutritive medium grow exponentially but eventually level off at some population size	<i>growth in systems (biological, social, technological, etc.) is dominated first by positive and then by negative feedback, producing an S-shaped growth curve</i>
Overgrazing of land or overfishing of ocean stocks depletes these resources.	<i>In many situations, individual rationality causes collective irrationality (the PD).</i>

A BRIDGE FROM SCIENCE TO RELIGION

- **Secular theodicy**
- *Sacred isomorphisms*
- *Inner science*
- *Summary*

SECULAR THEODICY

- Theodicy: reconciling divine goodness & divine power with the existence of evil
- **Secular** theodicy: understanding 'evil'
- Evil (imperfection) *from perspective of life*
- Reductionism dissolves 'problem of evil.'
- Systems ideas explain universality of 'difficulties' that afflict systems.

Systems ideas about imperfection (1/2)

- Incompleteness - inconsistency
- Imbalanced dualities: variety vs. constraint, order vs. disorder, unity vs. multiplicity
- Boundary problems; imbalance of openness vs. closedness
- Instability, disorder from chaos, catastrophes; rigidity
- Pathologies & inadequacies of feedback/feedforward control
- Dependence upon & constraint by the environment
- Dysfunctional hierarchies; imbalanced centralization vs. decentralization or differentiation vs. integration
- Informational parasitism (internal or external)

Systems ideas about imperfection (2/2)

- Competition/predation/exploitation by other systems; tensions between autonomy & interdependence; collective irrationality, coalition instability
- Agency problems: multiple deciders &/or objectives, problems of global optimization, counter-intuitive effects & unanticipated consequences
- Modeling problems: uncertainty, intractability, undecidability; pathologies of self-reference
- Embeddedness in & control by more encompassing systems
- Fragility/vulnerability to events on smaller/larger scales

Perfection vs. perfecting: theodicy & responsibility

- ‘Metaphysical evil’
 - explains ‘natural evil’
 - which encompasses moral evil
- *Perfection* is not attainable;
perfecting is always possible
- Possibility + need → responsibility
- Religious traditions are also imperfect.

A BRIDGE FROM SCIENCE TO RELIGION

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SACRED ISOMORPHISMS

- Limited relevance of physics to science-religion dialog
- Strong relevance of biology-centered metaphysics that focuses on the general
- Ontological parity: ‘real’ does *not* mean ‘fundamental’
- New isomorphisms; ‘*As above, so below*’ means both order & *disorder*

Weak relevance of cosmology to science-religion dialog

- “...Davies's claim [that ‘science offers a surer path to God than religion’] depends on treating virtually all religious questions as depending on cosmological propositions centering on the Big Bang. But actually, not many questions of general importance do depend on views about that bang, however big... Most religious questions arise within human life and begin by asking about its immediate meaning...Our metaphysical ideas are rooted in the life that we know.” - Midgley (1992)

A BRIDGE FROM SCIENCE TO RELIGION

- *Secular theodicy*
- *Sacred isomorphisms*
- ***Inner science***
- *Summary*

INNER SCIENCE

- Experiential religion, but not dogma, is (partially) scientific in character.
- Spiritual practice involves experiments, theory, discovery.
- This theory has often been systems-theoretic (e.g., based in isomorphisms, number symbolism).
- Since science is dominant in culture, religion needs scientific forms.

Spiritual practice as inner science

- experimenter oneself
- experimental object oneself
- experimental apparatus oneself
- initial goal self-knowledge
- methods practice
- theory doctrine
- research community spiritual community
- research supervisors experienced seekers

Spiritual practice & systems theory: fiction or future?

- “Members of the [Castalian] order must seek to coordinate all the arts and sciences into a whole which transcends the sum of the constituent parts; something akin to what Robert Bridges, I presume, had in mind, when in ‘The Testament of Beauty’ he wrote of the ‘accord of Sense, Instinct, Reason, and Spirit.’ For those who attain a proficiency in it, [the Glass Bead Game] is raised to the level of a mystic rite, in which the acutest mental awareness is coupled with a Yoga-like discipline of meditation. Music – in particular the ‘pure’ music of Bach – and mathematics are the foundation stones upon which the whole complicated structure is erected.”

-Herman Hesse, *Magister Ludi (Glass Bead Game)*, 1943

SUMMARY

- Idea of *'two magisteriums'* (Gould) is the counsel of despair.
- Science is neutral ground for dialog between different religious traditions.
- Systems metaphysics can contribute to the *“correction, refinement, & augmentation of the great sacred approximations.”*

Selected further reading (1/2)

- **Axelrod**, Robert (1984). *The Evolution of Cooperation*. New York: Basic Books. A systems classic which shows the relevance of game theory to ethics.
- **Bennett**, John G. *The Dramatic Universe, Volume One: The Foundations of Natural Philosophy* (1956); *Volume Two: The Foundations of Moral Philosophy* (1961). London: Hodder & Stoughton. A systems-oriented synthesis of scientific, philosophical, and religious ideas at an intellectual level equal to that of Whitehead.
- **Bunge**, Mario (1973). *Method, Model, and Matter*. Boston: D. Reidel. An account of the systems research program as an attempt to construct a 'scientific metaphysics.'
- **Deutsch**, Karl (1966). *The Nerves of Government*. New York: Free Press. Primarily a book about systems theory and political science, an exploration also of some systems ideas that resemble religious concepts.
- **Hesse**, Herman (1943). *Magister Ludi (The Glass Bead Game)*. Holt, Reinhart & Winston. An imaginative and perhaps prophetic account, and cautionary tale, of systems theory as spiritual practice.

Selected further reading (2/2)

- **Jonas**, Hans (1966). *The Phenomenon of Life: Towards a Philosophical Biology*. Evanston: Northwestern University Press. A knowledgeable and deep fusion of Continental thought about 'being' and Anglo-American scientific rigor.
- **Neiman**, Susan (2002). *Evil in Modern Thought: An Alternative History of Philosophy*. Princeton: Princeton University Press. An accessible, indeed eloquent, view of philosophy as an attempt to answer the 'problem of evil.'
- **Polanyi**, Michael (1958). *Personal Knowledge: Towards a Post-Critical Philosophy*. New York: Harper & Row. An exploration of the radical idea that knowledge should be, can be, and to a large measure always is, personal.
- **Toulmin**, Stephen (1982). *The Return to Cosmology*. Berkeley: University of California Press. An argument that, far from being 'dead,' metaphysics is about to be reborn in a new scientific incarnation; read in conjunction with Bunge.
- **Wright**, Robert (2000). *Non-Zero: The Logic of Human Destiny*. New York: Pantheon. A demonstration of the richness and human relevance of game theory, just one component of systems thought; read in conjunction with Axelrod.