

Establishing common ground &  
integrating disciplinary insights -  
the goal or a regulative ideal of  
interdisciplinarity?

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# Degrees of integration as indicator - but what is it, that is integrated?

- multidisciplinary: no integration of theories or findings
- interdisciplinarity: theoretical, conceptual and methodological integration
- transdisciplinarity: ID & integration of stakeholder perspectives

(cf. Van den Besselaar & Heimeriks, 2001)

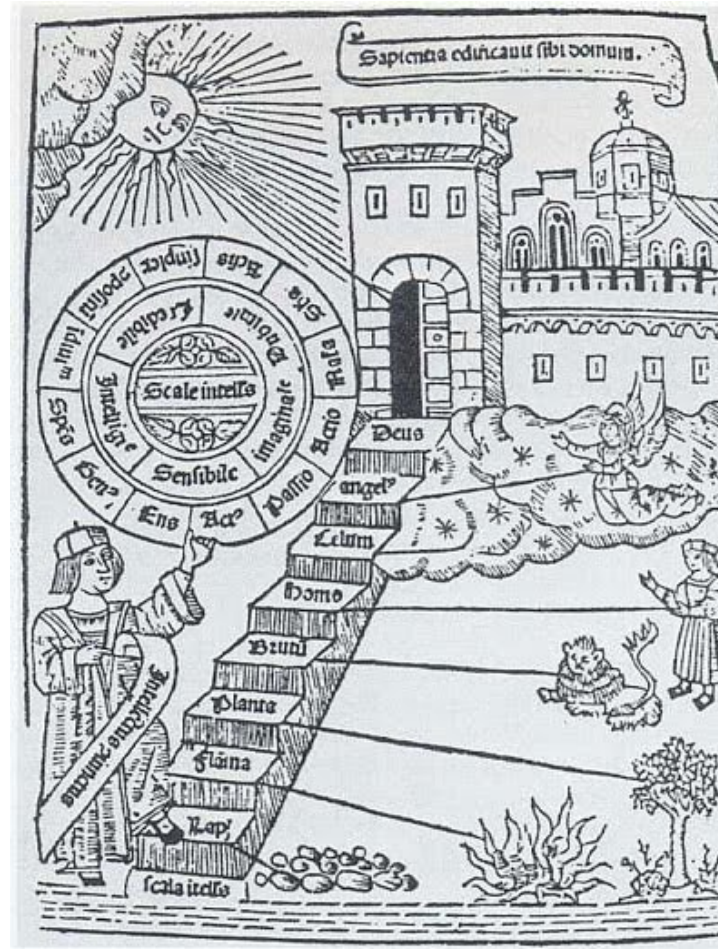
# Techniques of common ground & integration in AIS-model: focus on epistemology

According to the sources of conflict and after discovery of common ground:

1. theory expansion (*addition of a factor e.g.*)
2. re-definition (*create common meaning*)
3. theory extension (*beyond original domain*)
4. organization (*relating re-defined concepts/assumptions*)
5. transformation (*opposing assumptions into variables, e.g.*)

(Newell 2006; Repko 2008)

# Traditional discussion of unity of knowledge: metaphysics & epistemology



Keestra - AIS conference panel Integration -  
Oct. 13, 2012

# 'Unity of Science': based upon conceptual & metaphysical unification

Oppenheim & Putnam (1958):

“the assumption that unitary science can be attained through *cumulative micro-reduction* recommends itself as a working hypothesis”

The accompanying list gives the levels we shall employ; <sup>10</sup> the reader may verify that the six conditions we have listed are all satisfied.

- 6..... Social groups
- 5..... (Multicellular) living things
- 4..... Cells
- 3..... Molecules
- 2..... Atoms
- 1..... Elementary particles

Any whole which possesses a decomposition into parts all of which

# However: 'Unity of science' thwarted by paradigms & pluralism

den keper beschouwd, ledig zijn van „zin”. Het heeft een verdiepte logica gebracht, en het wil zijn streven naar een eenheidstaal der wetenschap tot uitdrukking brengen in een groot-opgezette encyclopedie. Aan al dezen arbeid neemt OTTO NEURATH ijverig deel. Een noeste werker, een koene geest, een beginselvast strijder.

REDACTIE.

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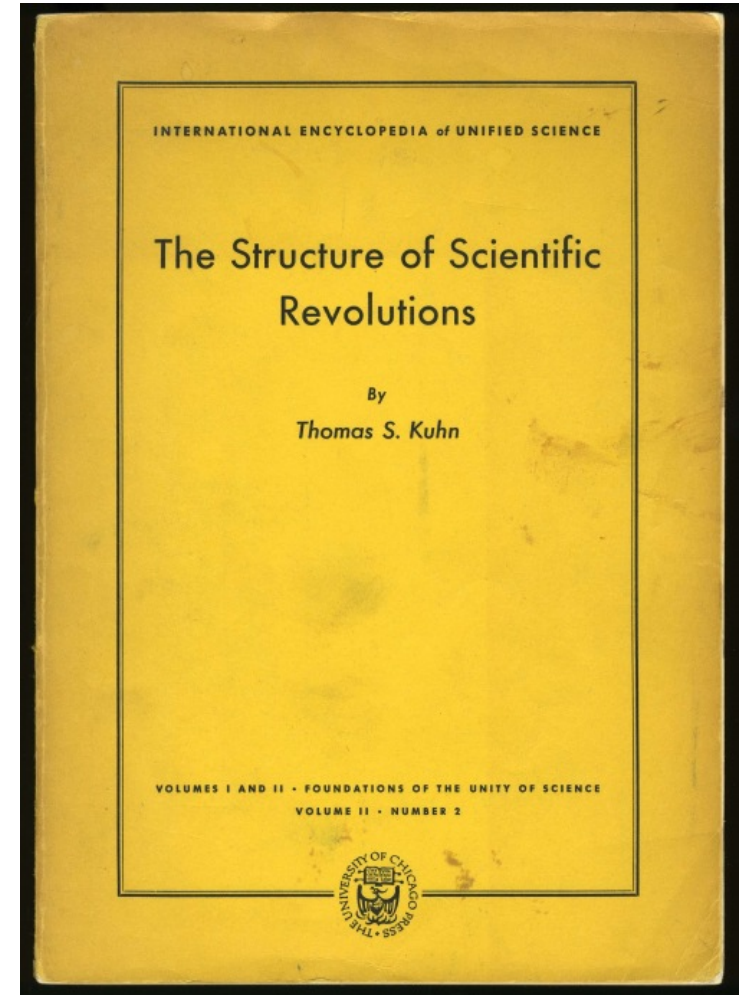
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4th. International Congress for the Unity of Science July, 14th–19th. 1938 Girton College. Cambridge (England) Subject: Scientific Language. Donors: 5 £, Members 1 £, Relatives and Students 5 s (Rotterdamsche Bankvereniging, Den Haag Conto: International Congresses for the Unity of Science).

Head Office: International Institute for the Unity of Science, 267 Obrechtstraat, Den Haag.

Men kan in het College logeeren. Appartement met 3 maaltijden 10/6 s.

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# Instead of Unity: Pluralisms & Entry Points to a Field

No longer unification, but pluralisms of:

- entities
- theories
- models
- methods
- techniques
- goals
- values

that offer “many entry points” to a **field** of research

# Result: multiple – relatively independent - dimensions of integration

E.g in mechanistic explanation we have

- Horizontal integration: contextual aspects
- Vertical integration: constitutional aspects
- Diagonal integration of dynamical aspects
- partly excluding each other epistemologically!

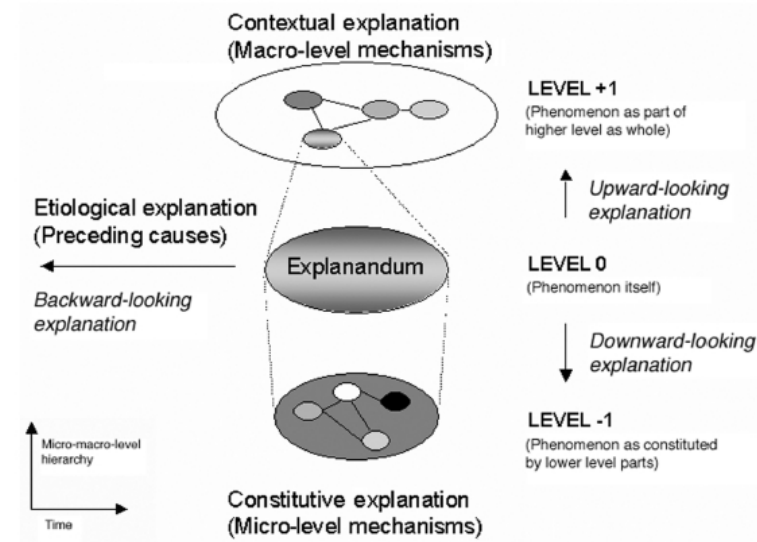


Figure 1. General scheme of multilevel framework of biological explanation.

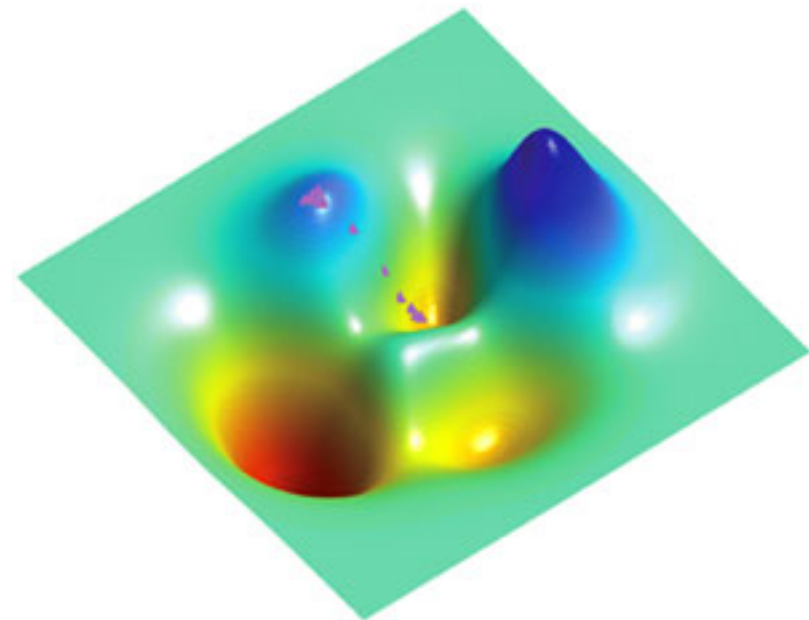


# Other example: optimization function for bio-socio-political issues

E.g. fisheries policy requiring integration & optimization of constraints re:

- environmental
- economical
- social
- ethical

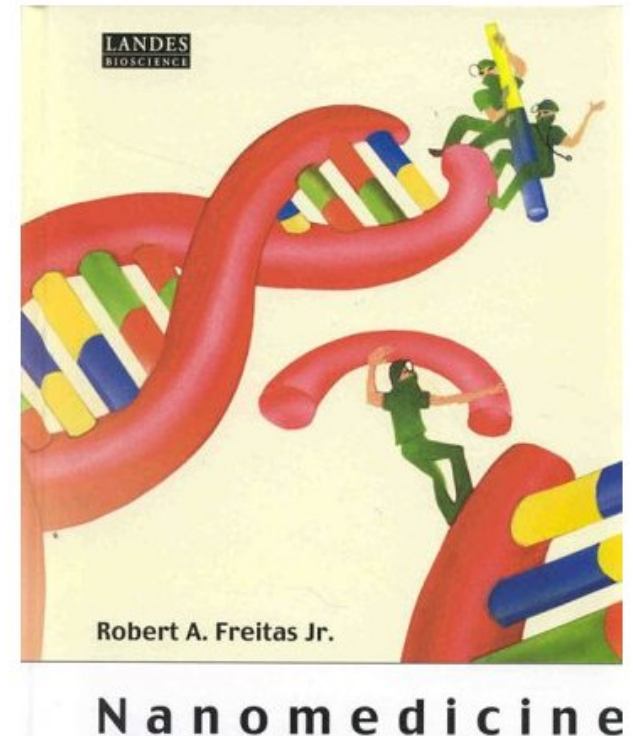
issues



# Or: creation of nano-medical treatment

Integration necessary of constraints set by:

- molecular medicine
- nano-physics
- chemistry
- pollution studies
- risk assessment
- political decision making for production of therapy



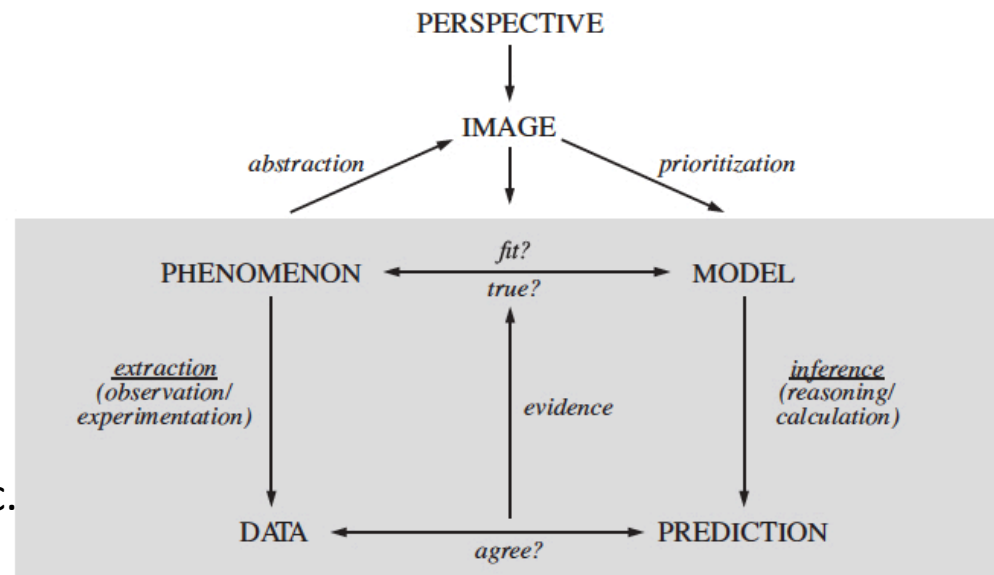
# Ergo: pluralisms will require multiple & fragmented forms of integration

Scientific group efforts at developing:

- data
- interventions
- models
- theories

while having to acknowledge:

- disagreement on the phenomenon
- different scientific goals
- lack of consensus in interest, values etc.



(fig. from Callebaut, SHPSC 2012)

# Integration of knowledge: only a regulative ideal?

Thanks!