

Philosophy of science

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ESS401 Social Science Methodology / MEB431 Metodologie sociálních věd

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Outline

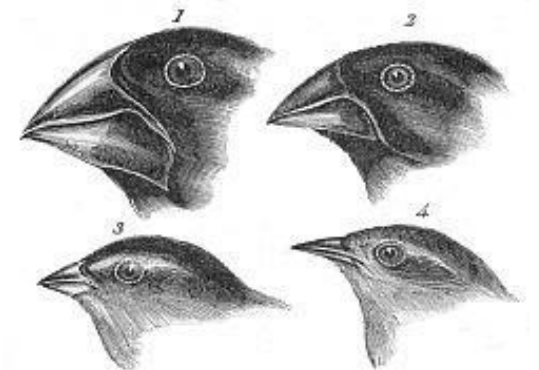
- Philosophy of science: what is it and why do we need it?
- Main debates in ontology and epistemology
- Philosophy of science in social sciences

Philosophy of science

- Philosophy explores fundamental basis of a given field.
- Philosophy of science:
 - (1) Questions which science cannot yet or perhaps cannot never answer.
 - (2) Why science cannot answer the first type questions?

Philosophy of science: do we need it?

- *Philosophy of science is about as useful to scientists as ornithology is to birds.* (Richard Feynman)

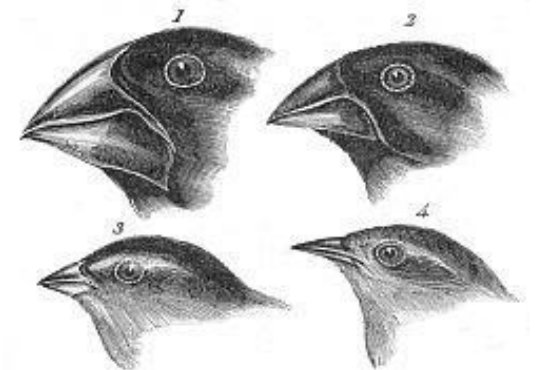


1. Geospiza magnirostris 2. Geospiza fortis
3. Geospiza parvula 4. Certhidea olivacea

Finches from Galapagos Archipelago

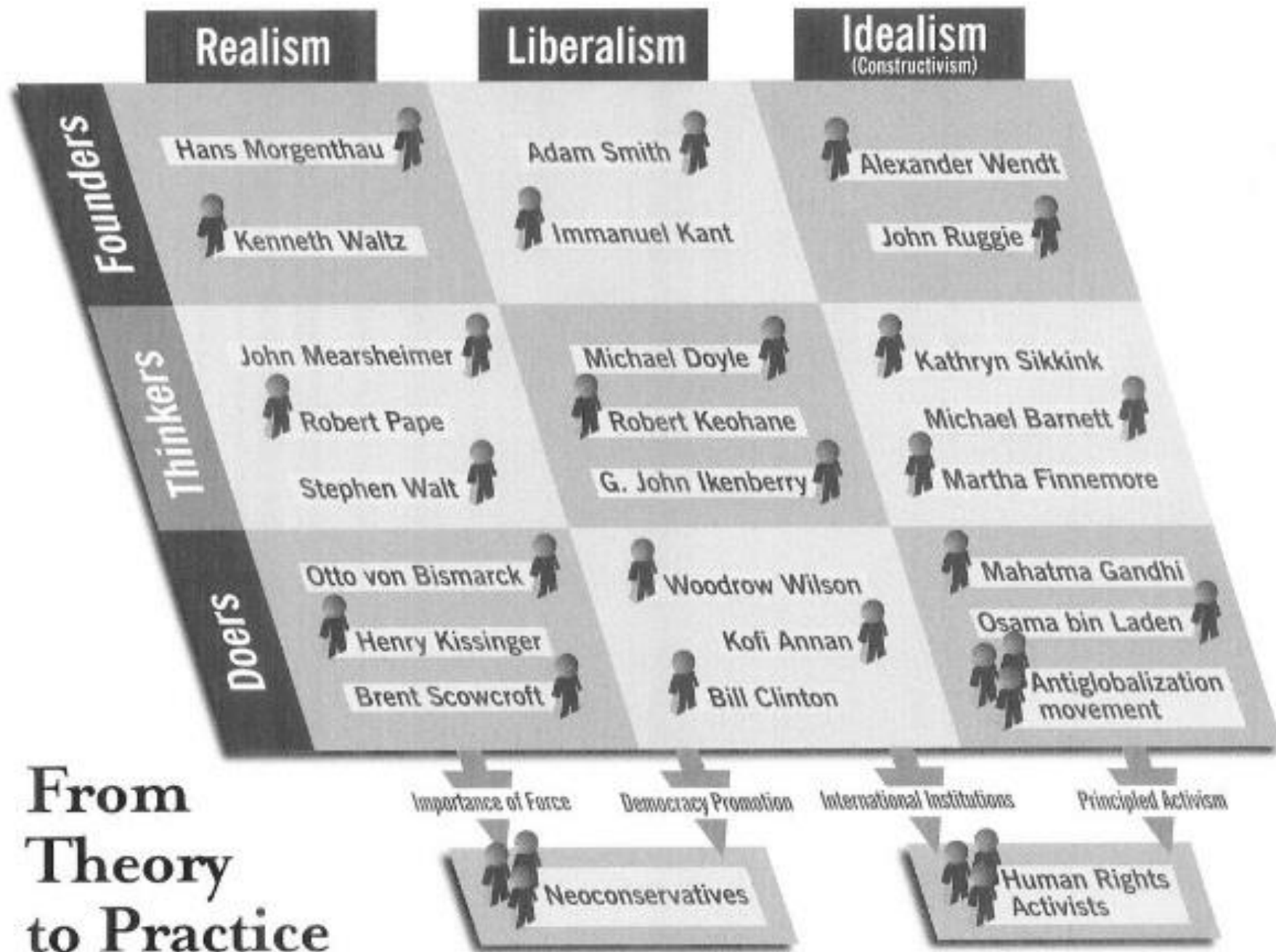
Philosophy of science: do we need it?

- *Philosophy of science is about as useful to scientists that ornithology is to birds.* (Richard Feynman)
- *There is no such thing as philosophy-free science; there is only science whose philosophical baggage is taken to board without examination.* (Daniel Dennett)



1. *Geospiza magnirostris* 2. *Geospiza fortis*
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Finches from Galapagos Archipelago



Science: some definitions

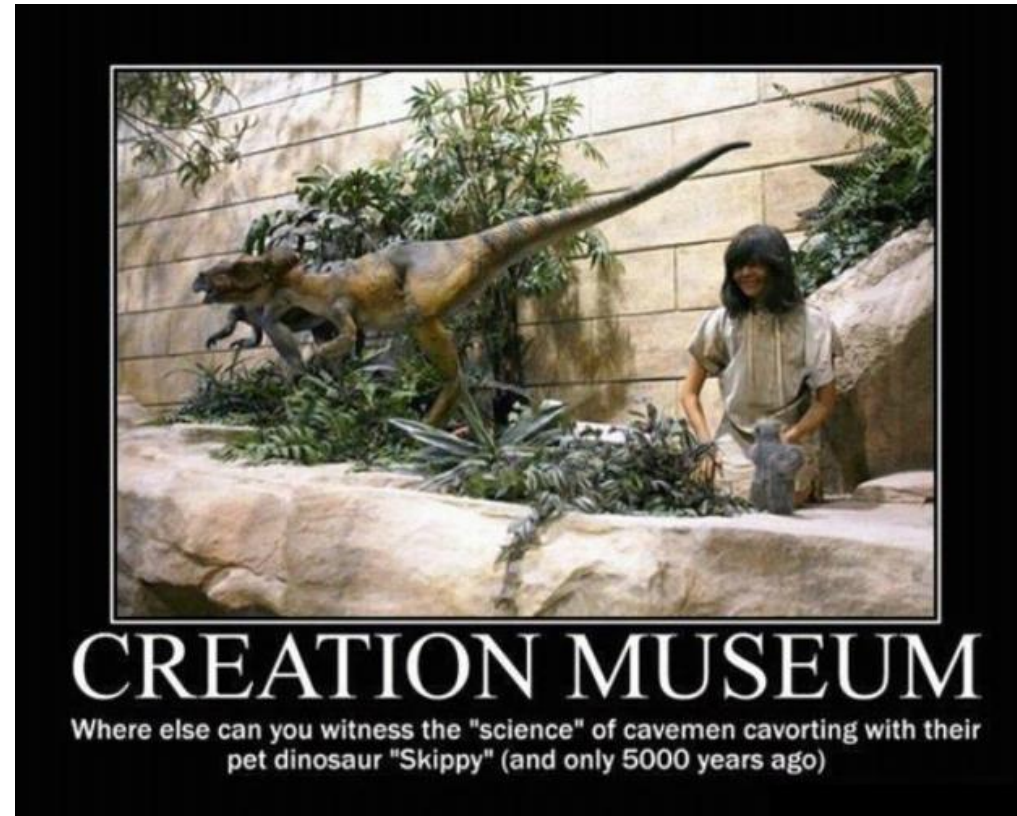
Science: some definitions

- “The use of evidence to construct testable explanations and predictions of natural phenomena, as well as the knowledge generated through this process.” (Charles Darwin)
- “The net of science covers the empirical universe: what is it made of (fact) and why does it work this way (theory).” (Stephen J. Gould)
- “Science alone of all the subjects contains within itself the lesson of the danger of belief in the infallibility of the greatest teachers in the preceding generation . . . As a matter of fact I can also define science another way: Science is the belief in the ignorance of experts.” (Richard Feynman)

Science: problem of demarcation

- How does science differ from other knowledge systems?

Post-truth / post-factual society



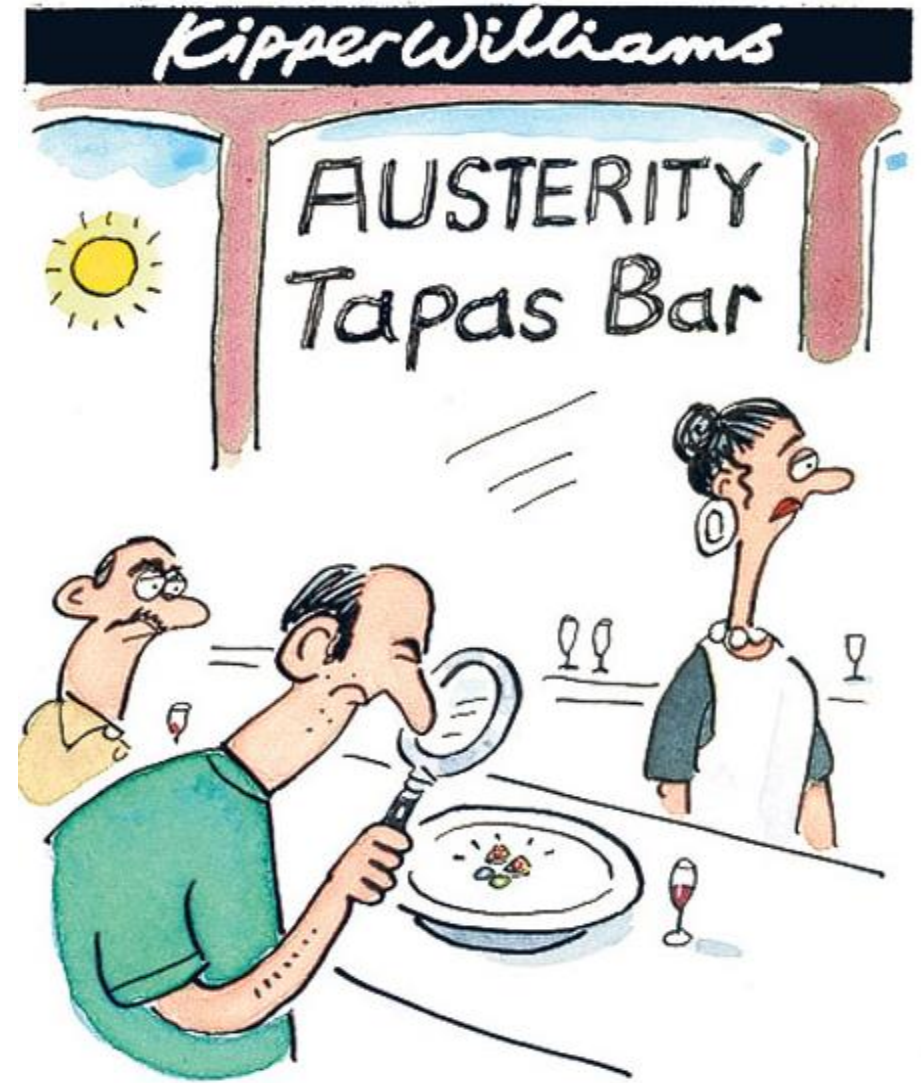
Scientific vs. traditional knowledge

Scientific knowledge	Traditional knowledge
Sources of knowledge: secular	Sources of knowledge: sacral and secular
Knowledge as a best approximation or useful fiction	Knowledge is truthful
Formal education and scientific method	Experience and “learning by doing”
Reductionism: analytic perspective, explanations of specific problems	Holism: closed, total, all-explaining system
Knowledge-production: open, formalized, revisable	Knowledge-production: closed, codified, definitive
Abstract, generalizable, replicable	Literal meaning, cultural embeddedness, “one-use” character
Tools: experiment, statistical analysis, case studies, ethnographies etc.	Tools: stories, metaphors, analogies etc.

Scientism

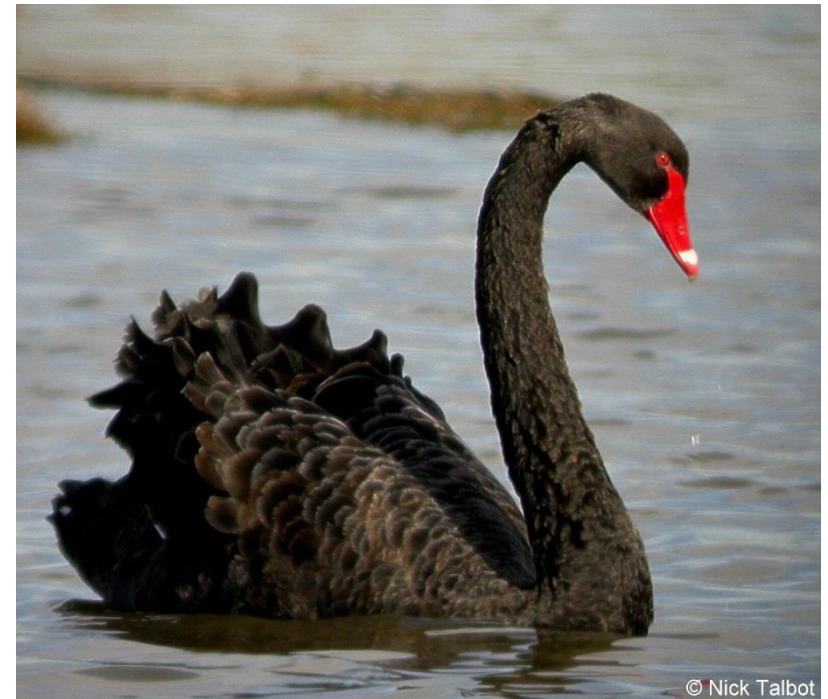


Science and politics



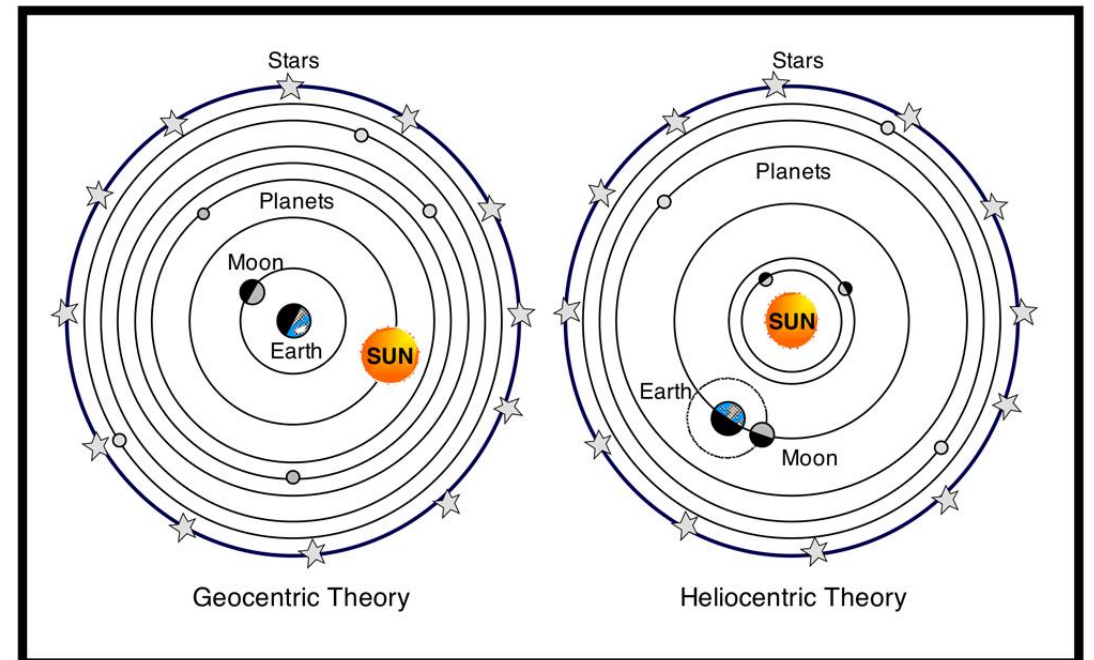
How science works?

- Karl Popper
- Falsification
- Scientific progress as a truth-approximation



How science works?

- Thomas Kuhn
- Scientific revolution / paradigm (normal science)
- Scientific progress as a problem-solving



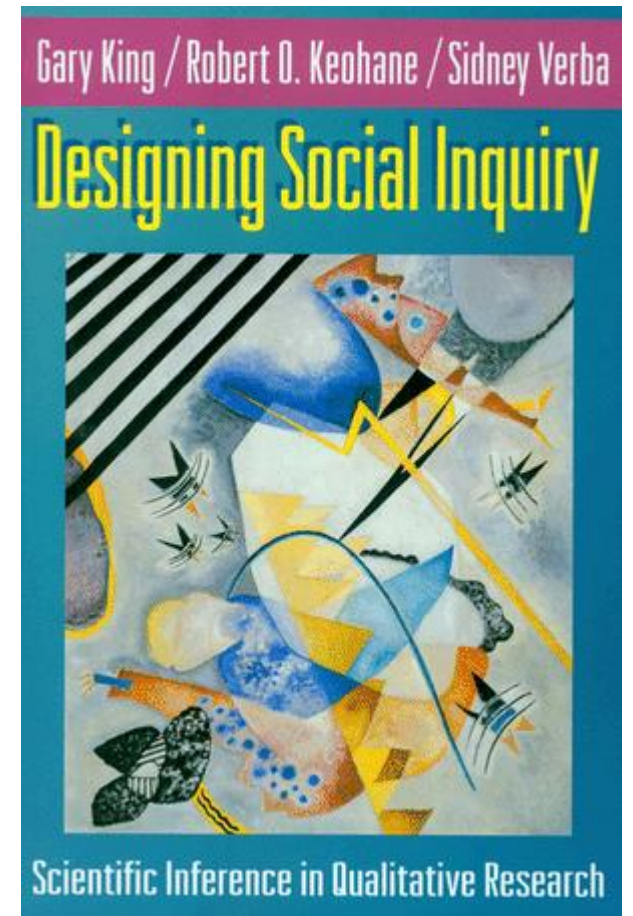
How science works?

- Paul Feyerabend
- Epistemological / methodological anarchism
- Scientific progress as opportunistic “anything goes” strategy



King, Keohane, Verba (1995)

- The goal is inference.
- The procedures are public.
- The conclusions are uncertain.
- The content is method.



Philosophical basis of science

- Ontology
- Epistemology
- Axiology
- (Methodology)

Ontology: main discussions

- Realist vs. anti-realist
- Materialists vs. idealists
- Agent vs. structure discussion

Realists vs. anti-realists

- Realists:
 - There is a real world “out there”, independent on our knowledge.
- Anti-realists:
 - We live in multiple socially constructed worlds.

Materialists vs. idealists

- Materialists:
 - All phenomena is ultimately made of matter.
 - Social world is driven by material forces.
- Idealists:
 - Reality is mentally/socially constructed.
 - Social world is driven by ideational forces.

The agent vs. structure debate

- To what extent we are able to shape our lives against to what extent our lives are determined by external forces?
- Individualism:
 - Complex social phenomena can be explained on the basis of individual behavior.
- Structuralism (holism):
 - Social phenomena cannot be reduced to actor interactions, actors are determined by structures.

Epistemology: main questions / discussions

- Can we identify real or objective relationships between social phenomena?
- Can we do this by direct observation or are there some relationships that exist but are not directly observable?
- Explanation vs. understanding?

Positivism

- Realism
- Naturalism
- Empiricism
- Objectivism

- Weaknesses?



Interpretativism

- Anti-realism
- Constructivism
- Rejection of objectivism
- Rejection of naturalism

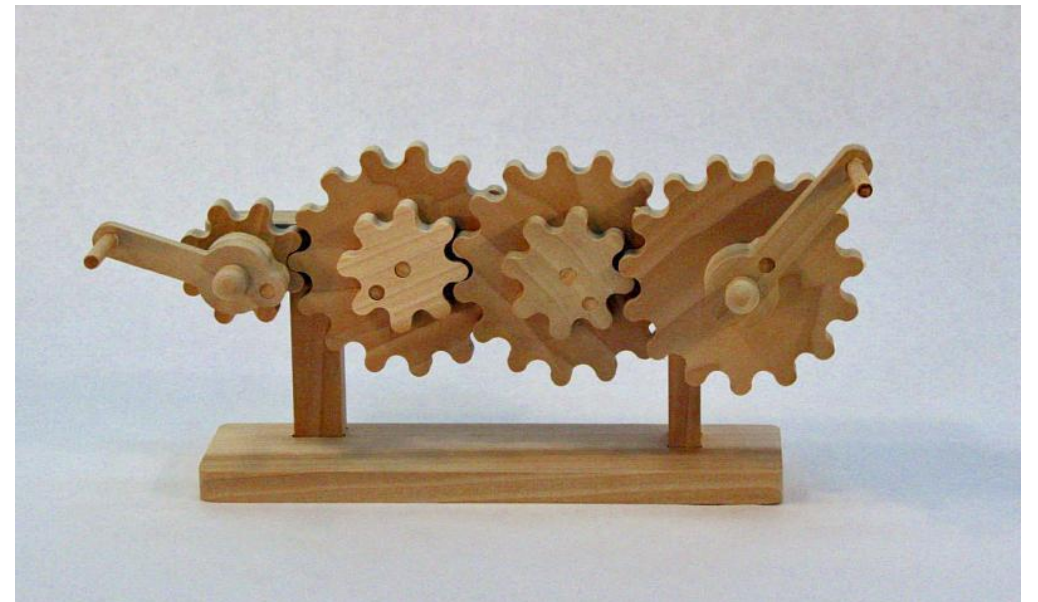
- Weaknesses?



Realism

- Realism
- Dichotomy between reality and observed world
- Causal mechanisms vs. causal effects

- Weaknesses?



Literature

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