Ontological realism:
A philosophical overview

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Outline

- Universal realism

- Scientific realism

- Moderate positions in the debate on scientific realism

- Methodological realism in applied ontology

Outline

- **Universal realism**
  - **Plato's form theory**
  - **Aristotle's category theory**
  - **The medieval problem of universals**
- Scientific realism
- Moderate positions in the debate on scientific realism
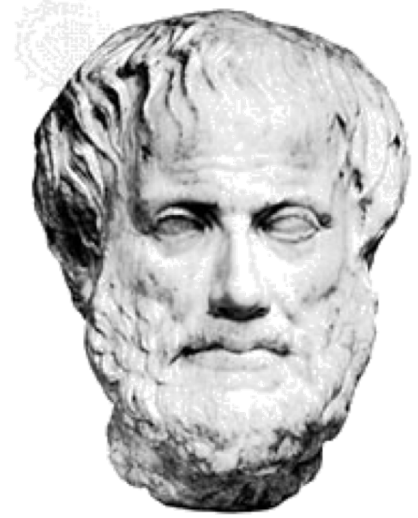- Methodological realism in applied ontology

Plato (424 – 348 BC): Form theory
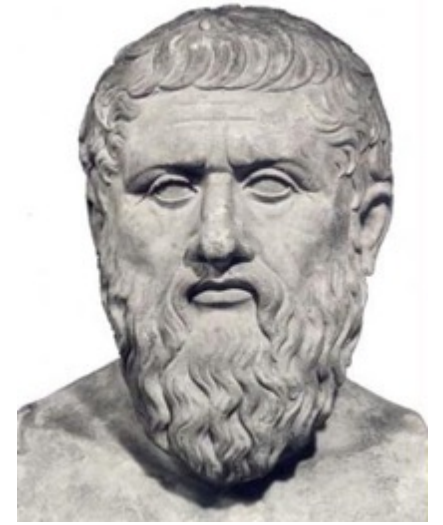
Forms:
- Mind-independent, real, eternal entities
- Can exist even if uninstantiated

Aristotle (384 – 322 av. JC): Category theory

- 10 categories: substance, quantity, quality…

- Do those categories describe reality or language?

- Large influence on medieval scholastics (13th-14th century)

The problem of universals

Are there entities that explain similarity between individuals ?

Position	(Universal) Realism	Nominalism	Conceptualism
How to account for similarity?	Universals	Words	Concepts

Outline

- Universal realism
- **Scientific realism**
  - **Common core**
  - **Three dimensions of scientific realism**
  - **Connections between universal realism and scientific realism**
- Moderate positions in the debate on scientific realism
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Scientific realism

- Large variety of definitions
- Common core: Our best scientific theories give **true or approximately true** descriptions of **observable and unobservable** aspects of a **mind-independent** world.
- Scientific anti-realism rejects one (or several) aspect(s) of scientific realism
- Terms to specify:
    - "**best**": must include criteria of maturity, being non-*ad hoc*
    - "**observable**": how can it be contrasted with non-observable ?

Three dimensions of scientific realism

Chakravartty, Anjan, "Scientific Realism", *The Stanford Encyclopedia of Philosophy* (Summer 2017 Edition), Edward N. Zalta (ed.).

| *Dimension*	Metaphysical	Semantic	Epistemological
Explanation	Mind-independent existence of the world investigated by the sciences.	Scientific claims have truth values.	Scientific theoretical claims constitute knowledge of the world.
Anti-realism school rejecting this dimension	Idealism	Instrumentalism	Skepticism

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Logical empiricism	Rejects	Rejects	Rejects
Constructive empiricism (van Fraassen)	Accepts	Accepts	Rejects

Connections between universal realism and scientific realism: The example of David Armstrong (1926 – 2014)

- Endorses universals (but not Plato's uninstantiated universals)

- Universals are given by physics

- Laws of nature as relations between universals (rather than particulars, to explain counterfactuals)

- Influenced BFO's ontological realism (with reservations)

Smith, Barry (2005). Against Fantology. In L. J. C. Marek and M. E. Reicher (eds.), *Experience and Analysis*, Vienna: HPT&ÖBV, 153–170.
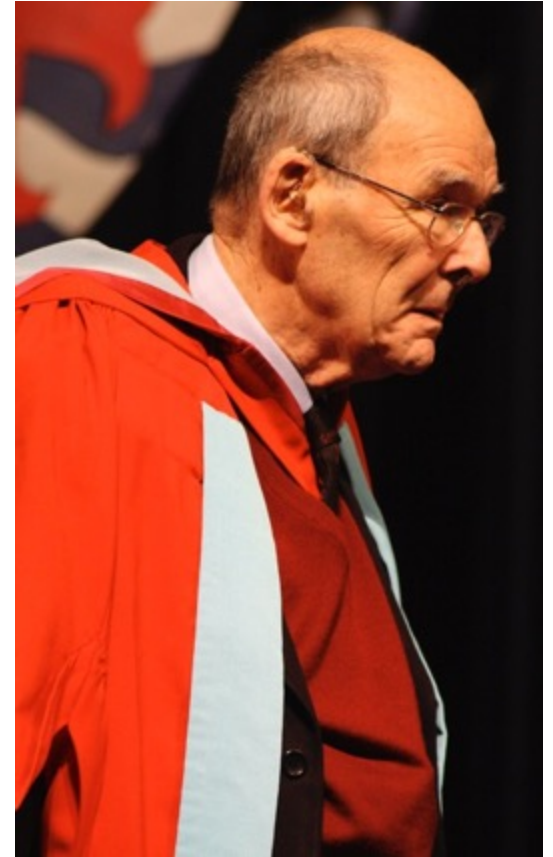
Outline

- Universal realism

- Scientific realism

- **Moderate positions in the debate on scientific realism**
    - **Entity realism**
    - **Structural realism**

- Methodological realism in applied ontology

Entity realism

Cartwright, Nancy, 1983, *How the Laws of Physics Lie*, Oxford: Clarendon.
Hacking, Ian, 1983, *Representing and Intervening*, Cambridge: Cambridge University Press.

- Does not commit to the truth or approximate truth of theories.

- Commits to the reality of scientific entities in case of "**manipulative success**": entities involved in phenomena that can be routinely used to create effects.

- Ian Hacking : "if you can spray them, then they are real."

- Entity realism might be compatible with some realist positions in applied ontology.
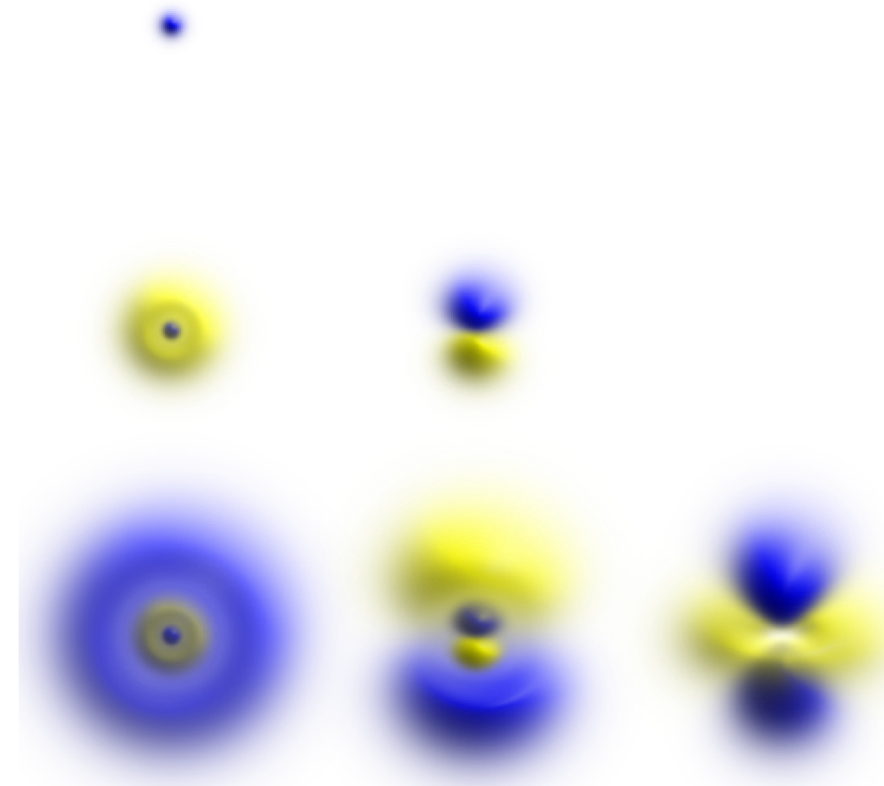
Structural realism

Worrall, John, 1989. "Structural realism: The best of both worlds?" *Dialectica*, 43: 99–124.
Ladyman, James, 1998. "What is structural realism?" *Studies in History and Philosophy of Science*, 29: 409–424.

- Origins in Poincaré, Duhem…
- Way to have "the best of both worlds" in the debate about scientific realism:
  - **no-miracles argument**: the success of science would be miraculous if scientific theories were not at least approximately true
  - **pessimistic meta-induction**: history of science suggests that our best current scientific theories will be abandoned
- Structural realism: We should epistemically commit ourselves only to the mathematical or structural content of our theories.
- E.g.: Newtonian physics vs. Einsteinian relativity
- Structural realism might be less easily compatible with realist positions in applied ontology.
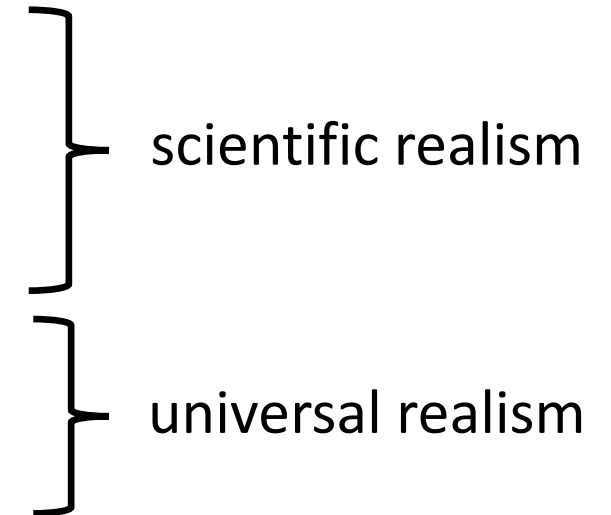
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Ontological realism as a methodology

Smith, Barry & Ceusters, Werner (2010). Ontological realism: A methodology for coordinated evolution of scientific ontologies. *Applied ontology*, *5*(3-4), 139-188.

Endorsement of:

- View ontologies as "representations of the reality that is described by science", to promote:
  - mutual consistency of ontologies over time.
  - that ontologies are aligned with science.

scientific realism

- "Types or universals […] are to be understood as counterparts in reality of (some of) the general terms used in the formulation of scientific theories "

universal realism

- "even the metaphysical anti-realist can, we believe, view all putative references to types or universals […] as mere *façons de parler* about other, more commonplace entities – such as scientists' beliefs or linguistic usage – and still gain full practical advantage from our methodology"

Non-realist approaches of the ontological realist methodology

- Smith & Ceusters are realist, but one may have a non-realist approach of their realist methodology in the spirit of:

  - **Fictionalism**: Things in the world are and behave *as if* our best scientific theories are true.

  - **The Natural Ontological Attitude**:
    - acceptance of a common core of realist and antirealist attitudes of acceptance of our best scientific theories
    - rejects further metaphysical and epistemological diagnoses to this shared position
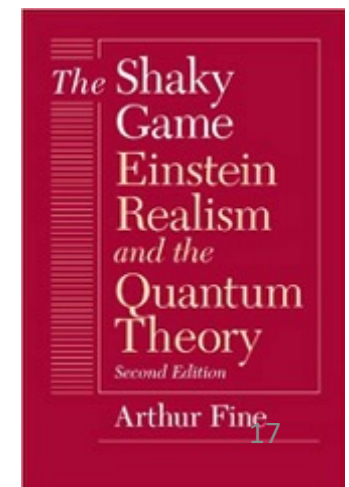
Conclusion and open questions

- Overview of:
  - universal realism
  - scientific realism
  - moderate positions in the debate on scientific realism
  - methodological realism.

- Which precise dimensions of realism/anti-realism are endorsed by DOLCE, UFO, GFO, YAMATO and other upper ontologies?

- Practical consequences of such dimensions?

Thank you for your attention!

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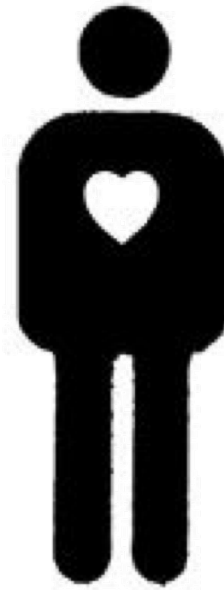
Optimist   Pessimist   Realist
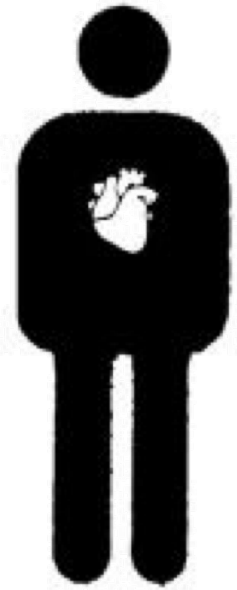
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