

Agenda

Scientific realism

1. Administrative
2. Types of scientific realism (Hacking)
3. Reading discussion

Mid-term peer evaluation

- ⋮ Later this week, each student will receive a rubric for evaluating your group-mate's contribution
- ⋮ The results ***will not affect the final grade***
- ⋮ But the format of the evaluation will match the peer evaluation at the end of the term

Types of scientific realism

Ian Hacking's realism

| ∴ Hacking is one of the major proponents of scientific realism in STS.

“... if you can spray them then they are real”

| ∴ A “soft” rather than “hard” realism.
| ∴ Focus on entities and causal reality.



Realism about *entities*

- ∴ The unobservable, abstract ***entities*** that science theorizes about can be real.
- ∴ An entity's reality does not depend on "direct" observation.
- ∴ Atoms, gravity, and genes can be real.
- ∴ *Not* a statement that *all* theoretical entities are real.

Realism about *theories*

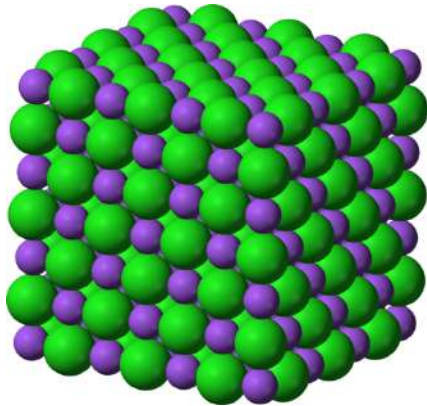
- ∴ Scientific theories about ***entities*** are either true or false.
- ∴ The truth or falsehood of a theory reflects an underlying, real world.
- ∴ Geocentrism, quantum theory, and Mendelian inheritance are each either true or false.

Can be realist about *entities*
but not *theories*

Can be realist about *theories*
but not *entities*

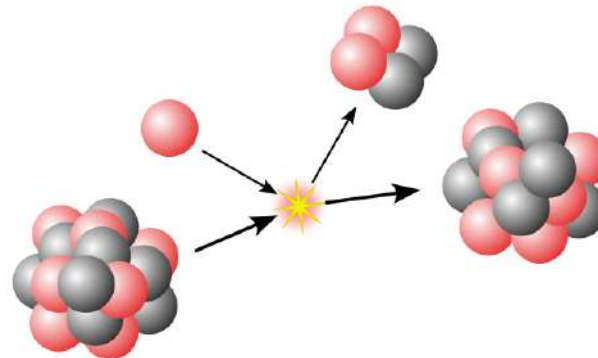
Materialism

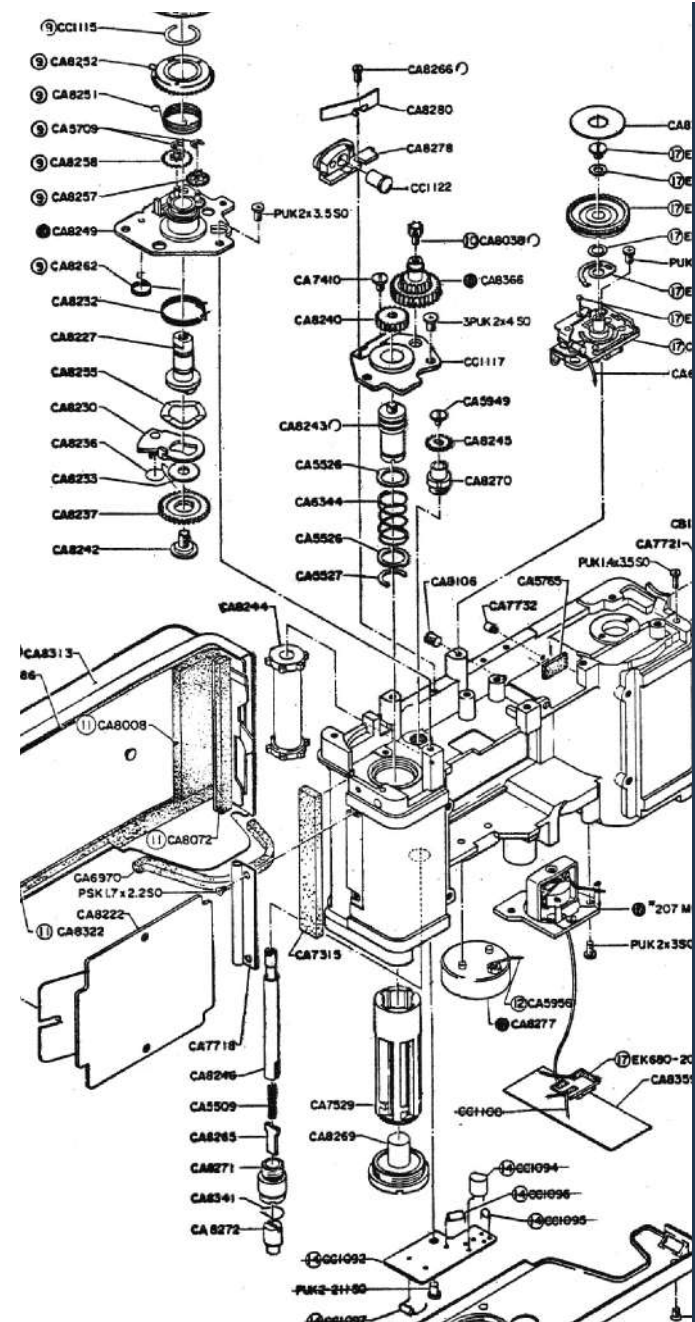
- ∴ For an entity to be 'real' it must have a *material* reality.
- ∴ Historically, this was about actual matter/mass.
- ∴ Contemporary materialism is about physical composition.
- ∴ Electrons are real because things can be made of them.



Causalism

- ∴ For an entity to be real it must have effects on the world.
- ∴ Often focuses on *mechanism*.
- ∴ Hacking: to say that A *causes* B, you need to say *how* A causes B.
- ∴ Implicitly about theory.





Representing

- ∴ One aim of science is to create 'correct' (in some sense) representations of the world around us.
- ∴ Realists and anti-realists argue about what that 'correct' means.

Intervening

- ∴ But another aim of science is to create experimental and technological interventions in the world around us.
- ∴ Less epistemological debate around this aspect

Ways of understanding

- ∴ Hacking presents the realism / anti-realism distinction in terms of "movements."
- ∴ He proposes a practical approach based on how scientists work with scientific knowledge.

Tacit knowledge and experimental reproduction

∴ Collins (1975)

*The Seven Sexes: A Study in the Sociology
of a Phenomenon, or the Replication of
Experiments in Physics*

Image credit



Animation via Giphy
from [Mean Girls \(2004\)](#)

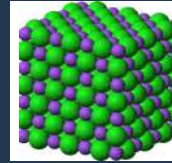


Image via [Wikimedia](#)

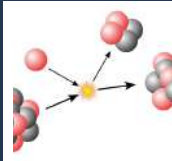
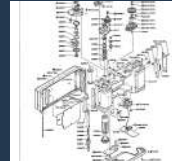


Image via [Wikimedia](#)



Repair diagram for an
Olympus 35DC camera,
via [ElektroTanya](#)