

Science and Values

LFILO2602 – Philosophy of Science
Session 8

The Big Question

What is the relationship between ethical value judgments and the practice of science?

- **The classic view:** There is **no role at all** for value judgments in science.
- **The new view:** The practice of science is profoundly influenced by ethical value judgments, and we need to seriously reflect on the ethical responsibilities of scientists!



Teller to Szilard

First of all let me say that I have no hope of clearing my conscience. The things we are working on are so terrible that no amount of protesting or fiddling with politics will save our souls.



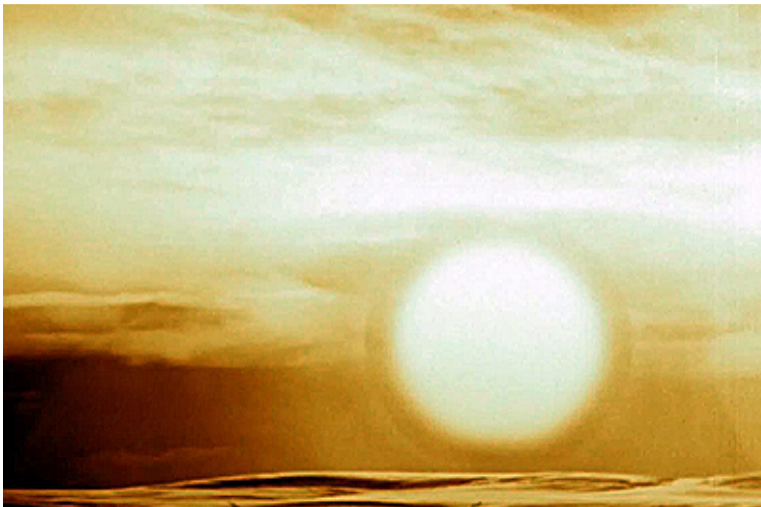
Teller to Szilard

The accident that we worked out this dreadful thing should not give us the responsibility of having a voice in how it is to be used. This responsibility must in the end be shifted to the people as a whole and that can be done only by making the facts known.

(E. Teller to L. Szilard, July 2, 1945)



Teller to Szilard



Value Judgments

First: What exactly **is** a value judgment?

- *to evaluate* something (*évaluer*) — compare a thing with a collection of fixed criteria (for example, this is a “good” motor for this car, because it has enough power)
- *to value* something (*valoriser*) — to judge something according to a *value*



Now, what is a value? Two criteria:

- ① Different people can disagree about the **importance** that we give to a value (i.e., in relationship with other values)
- ② Different people can disagree about **how to value** something, even if they agree about the value (i.e., to what extent a thing expresses a value)



A First Distinction

- judgments *external* to the practice of science — decisions about which scientific questions deserve an answer, which problems to solve, which things the government should finance, etc.
- judgments *internal* to the practice of science — decisions that one makes while actually doing science, or in the laboratory



The Classic View, version 1.0

The Classic View: There are no internal ethical value judgments in science.



The Value-Free Ideal, version 1.0

There are no internal ethical value judgments in science.



Epistemic and Non-Epistemic Values

There's a set of characteristics of theories that seem to act like "values," but don't seem to be "ethical:"

- accuracy
- consistency (either internal/logical, or external, between different theories)
- simplicity
- fertility

We don't accept these for social or cultural reasons (because we think they lead to a just society or a good life). We accept them because we think that theories that have them are **more likely to be true.**



Epistemic and Non-Epistemic Values

- *epistemic values* — values that we adopt because theories that have them are more likely to be true
- *non-epistemic values* or *social values* — values that we adopt because the theories that have them will lead us to a better life or a better society



The Value-Free Ideal, version 2.0

There are no internal, non-epistemic value judgments in science.

The debate:

	internal	external
epistemic	✓	✓
social	???	✓



The Value-Free Ideal, version 2.0

There are no internal, non-epistemic value judgments in science.

- Why did this idea become so common? What's its history?
- What goals did it serve for the people who proposed it?
- Who benefitted from the idea that science was completely without ethical or social values?



Arguing Against the VFI

In reality, science seems to be **extremely** influenced by social values. If the Value-Free Ideal is correct, scientists are not very good at following it.



Inductive Risk

You're responsible for the analysis of two new herbicides for the ECHA (l'Agence européenne des produits chimiques). Herbicide A is a replacement for a product that already exists, which could be a little cheaper, but in general changes very little. Herbicide B is an entirely new product, which destroys a weed that threatens the food supply in a developing country.



Inductive Risk

All your analyses (like any other analysis) entail a risk of false negatives (to release a dangerous product by accident) and false positives (to forbid a safe product for no reason).

Should you have different experimental standards for product A and product B?



Inductive Risk (Douglas)

- 1 *Of course* you should. If the consequences of removing a product from the market are only a bit of lost profits, you shouldn't be strict about false positives, and you should be *very* strict about false negatives. The opposite is true for the other herbicide. This is called **inductive risk** – the risk that an inductive judgment could be incorrect.



Inductive Risk (Douglas)

- ② **These are moral judgments.** We think this is right because of how we *morally* evaluate the difference between lost profits and famines.
- ③ **These are internal value judgments.** Things like the standards for false positives and negatives, when to stop or continue a scientific experiment, etc. are paradigmatic internal questions.

The value-free ideal is therefore false. At the very least, here is one example of an internal, non-epistemic value judgment in science.



The Value-Free Ideal

Why did we think for so long that there weren't any internal social value judgments in science?

- 1 The idea that the philosophy of science is nothing more than the logical analysis of scientific reasoning
- 2 Connections between Marxism and the ethical dimensions of science (especially important in the mid-20th century in the USA)
- 3 The idea that scientific reasoning is only about evaluating the probabilities of hypotheses



The “Pandora’s Box” Problem

The prohibition on any role for ethical values *did* serve to prevent the introduction of bias, and to support one very particular kind of objectivity. Science isn't just discovering the things that we want to discover!



What Do We Do Now?

If there really are social values in science, but we don't want “the wrong values,” how do we let in “the right values?”

- Rebuild the distinction between epistemic and non-epistemic values?
- Establish social or moral norms for the practice of science?
- Better understand the goals of science in society?
- Improve engagement between scientists and society as a whole?

