



DFG-Graduiertenkolleg GRK 2073
Integrating Ethics and Epistemology of Scientific Research



Speed, error, and the epistemic cost of suspended judgment

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“You try to discriminate. You can get one idea a day, or... or one a week, and you discriminate (in terms of) your time and your ability to use it. You know, we have idea files, either in our minds or on paper, but you can’t spend a lot of your time on things you don’t have the opportunity to perform, or to prove or to verify. So you try to limit your interest to the idea you know is going to be most productive as quickly as possible within the frame of facilities at hand.”

(Knorr-Cetina 1981: 75)



- What is the role of time in scientific practice?
- How is science speeding up its practices and results?
- Is that justifiable?
- On what grounds – ethical, epistemic, pragmatic?
- What is the relationship between speed and error?



Outline

1. Time-sensitivity
2. Elliott and McKaughan's arguments
3. Steel's response
4. Concluding remarks



1. Time-sensitivity



Time-sensitivity: non-epistemic role

- Steel 2016, in response to Elliott and McKaughan 2014

A characteristic of situations in which it may be better to accept the results of a quicker-but-less-reliable method rather than wait for a slower-but-more-reliable one because of a pressure to draw inferences in a timely manner, which comes from practical and social concerns.



1. example: Expedited risk assessments

- Cranor 1995 – examines trade-offs between more and less accurate modelling approaches for assessing risks

—————> Expedited approach to risk assessment is better than traditional risk assessment approaches if one's goal is to minimize social costs.
- E. & McK. 2014: Rapid and less accurate information is prioritized over accurate but slower information.



2. example: Rapid assessment methods for wetland banking

- Ease of use
- In mitigation banking process regulators have to decide whether restored wetlands are sufficiently similar to the destroyed wetlands in order to justify trading the two.
- They need to employ models as part of assessment methods that yield comparisons of different wetlands in terms of their key socially relevant features.
- Models for characterizing wetlands in the banking context differ from those that one would employ if one were aiming for the most ecologically sophisticated characterization.
- “Authoritative, cheap, and quick”



Time-sensitivity: epistemic role

- Avoiding the cost of suspended judgment
- Steel 2010, 2016

Sometimes waiting for a slower but more reliable method is detrimental for scientific progress because there would never be enough reliability to claim knowledge, since time will always presumably provide for a more reliable option.



- A similar argument with respect to underdetermination by evidence is put forward by Biddle 2009, 2013

“There are also epistemic costs to the strategy of remaining agnostic in the face of underdetermination (...) If scientists were truly agnostic about a theory – if they were, for example, just as likely to respond to anomalies by seeking a new theory as by attempting to overcome the anomalies – scientific progress would slow, if not grind to a halt.”

(Biddle 2013: 130)



2. Elliott and McKaughan's arguments



Non-epistemic values have a legitimate role to play in assessing scientific scientific models, theories, and hypothesis.

Either because:

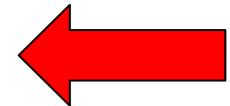
1. There is **no distinction** between epistemic and nonepistemic values.
(Longino 1990, 1996)

or

2. Nonepistemic values are employed only as **a secondary consideration** for resolving epistemic uncertainty.
(Douglas 2009, Steel 2010, Steel & White 2012, Elliott 2011)

or

3. Nonepistemic values can play a legitimate role as factors that **override** epistemic considerations in assessing scientific representations for practical purposes.
(Elliott & McKaughan 2014)





Trade-offs and the multiple goals of science

Is it easy enough to use this model?

Is this hypothesis accurate enough for our present purposes?

Can this theory provide results in a timely fashion?

Is this model relatively inexpensive to use?

- Mapmaking analogy: Which map should I choose?

E. & McK: Pragmatic and non-epistemic values sometimes trump the epistemic ones.



E. & McK: Scientific representations can legitimately be evaluated not only based on their *fit with the world*, but also with respect to their fit with the *needs of their users*.

—→ based on analysis of scientific representation by Ron Giere (2004, 2006) and Bas van Fraassen (2008)

—→ and two examples:

1. expedited risk assessment
2. rapid assessment methods for wetland banking



Potential objections (E. & McK)

- 1) Non-epistemic judgments are allowed at the goal setting level.
- 2) The argument is trivial.
- 3) The cases considered are examples of bad science.
- 4) More clarity is needed about the conditions under which non-epistemic values can legitimately override epistemic values.



Two guiding principles

1. To be explicit about the goals of assessments and the roles that non-epistemic values play in those assessments as a result.
2. Non-epistemic values should receive priority only to the extent that they advance the goals associated with the assessments that are in play.



A potential worry

The two principles allow questionable influences of nonepistemic values on theory assessment.

“Suppose, for example, that a think tank working for the petroleum industry performed a study and was explicit about the fact that the study conclusions were based on simplifications designed to advance their practical goal of underestimating the risk associated with climate change.”

(Elliott & McKaughan 2014: 17)

This satisfies the two principles! ☹️



E. & McK.'s answer

These sorts of interest groups are never truly explicit about about their practical goals. If they were, it would alleviate much concern about their activities.

“Other scientists, policy makers, and journalists could “backtrack” and point out how one would obtain different results if one employed more epistemically reasonable assumptions... Once the practical goals of the think tank were made explicit, the scientific community could reflect on whether those practical goals were reasonable enough to merit significant consideration.”

(Elliott and McKaughan 2014: 18)



A problem concerning speed

- It is wrong to think that being explicit about wanting to prioritize speed in a certain respect would make others deliberate about it in an expedited way.
- Precisely this kind of reflection is time consuming and struggles to deal even with urgent matters.
- The distinctive feature of speed doesn't allow for the usual open-ended critical reflection, unless it is done retrospectively once the action is already taken.
- E. & McK.'s guiding principles leave space for illegitimate influences of values on science



3. Steel's response



Accepting an epistemically inferior option (AEI)?

Are the two cases examples of AEI?

Daniel Steel: **NO**.

Why?

There are two hidden and problematic premises in E. & McK's argument.



The pattern of AEI

A and B are mutually exclusive and A is epistemically inferior to B, but A is accepted.

Hidden premises

(1) It is epistemically better to wait for the results generated by a more reliable method if one exists.

(2) It is bad from an epistemic perspective to select a simpler, less detailed model over one that is more complex and more detailed.

Steel: But (1) and (2) are not true.



Why (1) and (2) are not true?

Because (1) overlooks the epistemic cost of extended suspension of judgment.

Because (2) violates Ockham's razor.

Should scientists ever accept any judgment?

“Whether a simpler or more complex hypothesis is preferable from a strictly epistemic standpoint can depend on the epistemic purpose to which that hypothesis is put.”

(Steel 2016: 611)



4. Concluding remarks



- There are different epistemic and practical purposes to which hypothesis are put, or models built (predictive capacity, explanatory potential, speed, precision,...)

So...

Time-sensitivity comes in

- somewhere between serving our practical and epistemic needs
- as an inevitable condition of doing science
- as a politically correct version of speed
- as an underlying feature of other values, like simplicity, ease of use, and predictive success



Why talk of time-sensitivity (rather than speed)?

- To do more justice to the epistemic role
- To do more justice to the ethical role
- To account for expediency and efficiency, among else – institutional expediency and efficiency
- To account for efficiency and productivity in the context of underdetermination
- To avoid negative connotations of speed: error, imprecision, short-term goals



Thank you!



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