
Travis Stevick: Reading Group Discussion, May 20, 2021

Travis Stevick author link on website:

<https://tftorrance.org/taxonomy/term/2489>

Last fall you appeared to talk about your chapter in the Torrance *Handbook* which was devoted to Torrance's book *Theological Science*.

Travis M. Stevick, "Theological Science Then and Now," in T&T Clark Handbook of Thomas F. Torrance, ed. Paul D. Molnar and Myk Habets (London, New York: T&T Clark, 2020), 111-124; <https://tftorrance.org/2020-TMS-1>

Today we'll pick up from that discussion, with:

Travis Stevick, "The Function of Scientific Theory in the Thought of T. F. Torrance," *Participatio* 7, Science, Epistemology, and Natural Theology (2017): 49-70; <https://tftorrance.org/2017-TMS-1>.

Abstract: T. F. Torrance's interest in the nature of natural and theological science is well known, but his position relative to major contemporary philosophers and philosophical traditions is not. This paper surveys the positions advocated by several of the most important philosophers of science in the twentieth century and locates Torrance's views within that landscape. While few, if any, of the consequences of Torrance's understanding of scientific theory are unique, when taken as a whole they provide a compelling view of science that is rooted in distinctly Christian convictions.

Positivism

Is it appropriate to describe the Positivist demarcation program as trying to distinguish between science (knowledge) vs. all other fields?

What are some common characteristics of positivist theories?

Theories are summaries of experience.

No metaphysics allowed, particularly in scientific theories.

Who are some landmark figures of early positivism?

August Comte

Ernst Mach

Vienna Circle

Why did induction fail as a scientific method?

Perception is theory laden.

All theories are underdetermined by data.

We cannot explain the creative leap required in the formulation of a theory.

There is no logic of discovery.

How then, can science be rational?

Focus not on the context of discovery, but on the context of justification.

Context of justification: Verification criterion (A. J. Ayer)

Karl Popper

Was Popper's demarcation program an attempt to distinguish between science vs. pseudo-science?

What does it mean to say that, for Popper, scientific progress is a process of "conjecture and refutation"?

Context of discovery: Conjecture.

Context of justification: Falsification criterion.

What are the main criticisms that were made against Popper's falsification criterion?

A theory cannot be easily refuted.

Duhem-Quine Thesis: Theories are assessed in a holistic way.

No *experimentum crucis*; auxiliary theories can always be adjusted.

Thomas Kuhn

Did Kuhn reject the positivist demarcation program by distinguishing not between science and non-science, but between paradigm science vs. pre-paradigm science (in any field)?

Demarcation: a field is scientific when it has a guiding paradigm.

Pre-scientific if it does not yet have a paradigm.

What did "Paradigm" mean for Kuhn?

Like Popper and Polanyi, no logic of discovery.

Not just theoretical: Practices, instruments, and iconic interpretations of past discoveries are part of a paradigm and are used to convey it inarticulately.

How is a paradigm according to Kuhn both similar to and different from Tacit Knowledge according to Polanyi?

What we know cannot be made fully explicit. We all know more than we can say. We focus on some things we know, but we always have subsidiary knowledge involved.

What is "Normal science" according to Kuhn?

Puzzle solving within a paradigm.

What is "Revolutionary science" according to Kuhn?

Change of paradigm due to the persistence of anomalies.

What is the role of "anomalies" in scientific change according to Kuhn?

Anomalies: problems that persist and prompt the change of paradigm.

Compare and contrast anomalies with Popper's falsification criterion.

Is Revolutionary change according to Kuhn...

Continuous? Revolutionary change means that theory change is *not continuous*: What seems to be a puzzle may turn into an anomaly that prompts an overthrow of the paradigm. Scientific change is not incremental.

Cumulative? Revolutionary change means that knowledge is *not cumulative*. Some achievements just become meaningless under a new paradigm and are forgotten.

Progressive? Scientific change is *not necessarily progressive*: No way to tell if a problem that seems to be resolved under the current paradigm may resurface as an anomaly for a future paradigm.

What does it mean to say that Kuhnian paradigms are “incommensurable”?

Scientific change is *not piece-meal*.

(On incommensurability not to be taken too strongly: In an early response, philosopher Margaret Masterman distinguished 21 different meanings of paradigm in *SSR*. For Torrance, previous accomplishments may be seen as limiting cases.)

How was Kuhn’s model of scientific change seen as a challenge to the rationality of science and a challenge to the demarcation program?

After Kuhn there is an emphasis on social and psychological aspects of knowledge. Scientific change now a process like a “mystical conversion” (Lakatos). Believing is seeing.

Imre Lakatos

Why did Lakatos believe Kuhn’s model imperils the rationality of science?

One cannot specify rational criteria for when a theory should be accepted or when it should be rejected. Rather, Kuhn’s approach subjects science to history, culture, and society in ways that cannot be distinguished from the non-sciences.

Did Lakatos’ work mark a return to a demarcation program? How did Lakatos distinguish between science and non-science?

Research program: Hard core + auxiliary hypotheses

Lakatos conceded that there is no “instant rationality.” How is this a weakness of his model?

Rationality of an incipient research program is not easily ascertained; how much weight to give to possibility of future growth? At what point does it become rational to pursue or to accept or to reject? Perhaps only in a future generation. Rationality can only be assessed after the fact. This is not much more helpful to the demarcationist than Kuhn.

You point out that theologians and theologically-minded Christian philosophers like Nancey Murphy have found Lakatos’ model of theory change helpful. Why is this the case?

Might it be because Lakatos is being read in a post-foundationalist manner?

Perhaps one might imagine a science of the blessed, that is, an eschatological science, which would be consistent with a Christian view of the creation?

What does “Rational reconstruction” mean and what is its role in Lakatos’ work?

Kuhn useful to historians; Lakatos not so.

Radically unhistorical use of history. Denial of contingent order.

Paul Feyerabend

What is the meaning of the title of Feyerabend’s book, *Against Method*?

Against prescriptive rules for rationality?

For Feyerabend, must science and rationality be assessed *a posteriori*, not *a priori*?

“Rich material provided by history” — anything goes.

Cf. Stephen G. Brush: "Should the history of science be rated X?" *Science* 183 (1974): 1164-1172. A classic essay by a historian of science who argues that the history of science does undermine traditional accounts of the rationality of science, and should not be "rationally reconstructed," yet should not for that reason be "rated X" by scientists and philosophers of science.

Is it fair to say that, in arguing for the contingency of scientific practice, Feyerabend affirms the contingent order that Lakatos, with his rational reconstruction, denies?

Bas Van Fraassen

What is Van Fraassen's "Constructive empiricism"? How does it differ from the positivists' approach to empiricism?

Theories are constructed rather than discovered.
Theory acceptance requires commitment.

Why is Van Fraassen regarded as an anti-realist?

Scientific Realism: T. F. Torrance

To defend realism in many circles today is not a simple task, given the work of historians, sociologists, and philosophers of science.

David Downing tells the story of a speaker who said, "There is no absolute truth." A Christian who was sitting in the front row, stood up and said "I know absolute truth." A Muslim a little further back stood up and said, "I have absolute truth." A materialist scientist a few rows farther back stood up and said, "I know absolute truth." The speaker replied, "thank you, gentlemen, for making my point."

So what is scientific realism? You write that there are so many versions of scientific realism that it is hard to know what the term means. Is that because there are different versions of truth?

Explain the difference between: Truth of being vs. truth of statements.

What are some features of Semantic Realism?

Syntactical relations (truth of statements) is important, but not enough (as in a coherence theory of truth).

Semantic reference (truth of being) makes a theory realistic. Yet models are not literally true (as in a correspondence theory of truth), but they bear witness to reality in some respect. Semantic reference takes priority over syntactic relations. "Reality itself must always take precedence over our theoretical representations of it."

We know God, not just statements about God. Similarly, in natural science, we know the universe, not just statements about the universe.

"Dogma is the guardian of mystery" (Dorothy L. Sayers).

Compare and Contrast

Compare and contrast the starting points for Positivists, Kuhn, most realists, and Torrance.

Positivists: experience of natural phenomena

Kuhn: history of science, scientific practice

Other realists: scientific apologetics

Torrance: Christian convictions

“Torrance develops his understanding of the function of scientific theory as an overflow of his Christian convictions” (p. 64). Semantic realism is demanded by the Christian faith that the Eternal Word was made flesh.

Does this mean that Nicene theology is a supreme exemplar of scientific knowing, and that the same kind of semantic realism will apply to the natural sciences?

Compare and contrast the end points for Torrance and other realists:

Torrance: the function of theories is to help us make contact with reality, not to be literally true.

Other realists: a literally true theory (correspondence)

Comment on how, for Popper, theories fail when they are false; yet for TF a theory is expected to fail even when it succeeds?

In this respect, does TF has some resonances with pragmatist philosophers of science such as Larry Laudan, *Progress and Its Problems*? For Laudan, science is not truth, but just works.

Torrance allows all of the insights of a history of science that is “rated X” for other realists, and yet still upholds a dynamic realism in an open frame of knowledge.

Why are “disclosure models” according to TF not “picturing models”?

The latter are versions of correspondence theory of truth. Rather, models are transparent to reality, and point us away from themselves.

What was the significance, according to TF, of a change in legal questioning from *questio* to *interrogatio*?

Giving rise to new knowledge, not merely shuffling existing knowledge around into a form that is more clear or logical. Does a similar weakness sometimes arise within modern analytical philosophy?

Let’s compare and contrast Torrance’s disclosure model with other models.

With the positivists: You write that, for TF, “The very first step of theory development involves going beyond a strict representation of experience... and [involves] the role of personal judgment in deciding which experiences are central and which are peripheral” (p. 68). Compare with the positivists.

With Popper: You write that, for TF, “A theory can be inadequate (even significantly, or non-trivially inadequate) and yet not necessarily be false” (p. 68). Compare Torrance’s disclosure model and Popper’s criterion of falsification.

With Kuhn and Van Fraassen: You write that, for TF, “the goal is for us to be able to encounter without distortion reality itself and come under the compulsive authority of its own inherent rationality” (p. 68). Compare with Kuhn and Van Fraassen.

With other realists: You write that, for TF, “The goal is not to develop theories that are characterized by the truth of statement but that allow us to make contact with the truth of being” (p. 68). Compare with other realists.

Conclusion

Torrance is similar to others in that:

Lakatos: not to tumble into relativism given historical contingencies

Feyerabend: radically *a posteriori* approach

Van Fraassen: the goal of theory does not rest in capturing truth in our statements

Realists: coherence is not enough; theories will have empirical correlates

You write in the last paragraph that Torrance “provides a helpful model of a theologian who is sufficiently engaged with scientific practice and philosophy of science so as to be able to provide his own account of science that is worthy to be considered alongside the greatest contemporary philosophers of science.” (p. 70)

Why does this matter?

For Torrance scholars?

For scientists and for philosophers of science today?

For you in your ministry?

What projects are you now working on that you’d like to tell us so that we can be looking forward to them?