Philosophical Theology 1 (TH5)

Philosophy of Science

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Philosophical Theology 1 (TH5)

Aug. 15 – Intro to Philosophical Theology; Logic
Aug. 22 – Truth & Epistemology
Aug. 29 – Metaphysics
Sept. 5 – ***No Class***
Sept. 12 – Philosophy of Religion
Sept. 19 – Philosophy of Science
Sept. 26 – Ethics: What is Right?;
Aesthetics: What is Beauty?
October 3 – Human Nature; Final Exam

What is philosophy?

- Literally, it is *a love of wisdom* – *phileo* is Greek for “love,” *sophos* means “wisdom.”
- Philosophy is the critical examination of our foundational beliefs concerning the nature of reality, knowledge and truth; and our moral and social values.
- Philosophy is the means and process by which we examine our lives and the meaning in our lives.
- **Philosophy is the attempt to think rationally and critically about life’s most important questions in order to obtain knowledge and wisdom about them.**

Philosophy of Science – Its Nature & Limits

- Most people today (at least in the West) know science provides us with knowledge, and many would view it as an *especially trustworthy* kind of knowledge.

- In fact, as a result of its very visible successes, science has – for most of the Western world – become *the* dominant paradigm and worldview as a means of finding ultimate truth and meaning.

- "Science and religion have one extremely important thing in common – they are both concerned with the search for the truth…. just different aspects of the truth."

  Sir John Polkinghorne

Philosophy of Science – Its Nature & Limits

- **How is science to be defined?**
- Science *could* be defined as "systematic inquiry into the natural world which aims to organize, predict and explain empirical data."
- Assuming that empirical data comes both through direct sensory experience and through analytical tools, how does this differ from other disciplines – like history or journalism – which also seem to fit the definition?
- Attempts to define science as based on repeatability of experiments or testability of hypotheses do not fit scientific fields that deal in *past* events – archeology, paleontology, astrophysical cosmology, etc.

- **So even <u>defining</u> science is not easy.**

Philosophy of Science – Its Nature & Limits

- ***"If you can't see, feel or hear something, it doesn't exist!"*** reflects the view that only what can be empirical verified can be known.
- This "science over all" approach is ***scientism***.
- But *scientism* is self-defeating – because its demand that all knowledge be empirically verified *cannot itself be empirically verified*.
- In addition, science also rests on ***numerous assumptions*** that cannot be empirically verified:
  1. The laws of thought.
  2. The general reliability of sense perception.
  3. The law of causality.
  4. The uniformity of nature.
  5. Values, that support scientific reporting, etc.

Philosophy of Science – Its Nature & Limits

- Regarding the relationship between science and truth, there are <u>two fundamental perspectives</u>:

1. ***Scientific Realism*** is the view that scientific theories properly aim to give a true account of the physical world.

2. ***Scientific Nonrealism*** insists that science is not ultimately about truth, and is not concerned with providing accurate descriptions of reality.

Philosophy of Science – Scientific Realism

- ***Scientific Realism*** is the view that scientific theories properly aim to give a true account of the physical world.
  - ***Inductivism*** proposes that a scientist begins by simply observing and gathering data, followed by generalizations about those observations, leading to an hypothesis or theory which explains the data, followed by experiments to test the theory, which produces more data – until the theory is proven either true or false.
  - The **central claims** of *inductionism* are that *observation precedes theory*; theories are formulated strictly in terms of the *experimental data*; and *science is – or can be – a rational process*.

Philosophy of Science – Scientific Realism

- Despite its attractions, ***inductivism*** has two primary problems:
  1. It naively assumes the possibility of theory neutral observation. Studies have shown that people tend to observe and interpret data in light of preconceptions, no matter how fair-minded they try to be.
  2. It is unclear how much confirming experimental data is required to demonstrate the truth of a particular theory. When is a scientist justified in moving from the claim that a theory is CONFIRMED to the much stronger statement that a theory is TRUE?

- A fundamental problem is that science routinely reasons from particular observations to universal conclusions, assuming the uniformity of nature and making assumptions about the future based on the past. (v. David Hume)

Philosophy of Science – Scientific Realism

- ***Falsification*** is the idea that science can (or should be) more in the business of proving what is *false* than proving what is true, in order to make a clear delineation between science and pseudo-sciences, since the latter cannot be verified.
- The ***criterion of falsification*** insists that "statements or systems of statements, in order to be ranked as scientific, must be capable of conflicting with possible, or conceivable, observations."
- This is because scientific theories are never *fully* proven, but some can be deemed *superior* because of their ability to resist refutation through vigorous testing. (IOW, it only takes ONE false test result to prove something is not true, but every positive test result just leaves open the possibility that some future test might prove the theory false… so <u>it's easier to test for falseness than for truth</u>.)

Philosophy of Science – Scientific Realism

- Therefore, the logic of science is about ***modus tollens****:*
  - If P then Q.
  - Not-Q.
  - Therefore, not-P.
- Scientists must resist the logical fallacy of ***affirming the consequent***:
  - If P then Q.
  - Q.
  - Therefore P.

Philosophy of Science – Scientific Nonrealism

- ***Scientific Nonrealism*** insists that science is not ultimately about truth, and is not concerned with providing accurate descriptions of reality.
  - ***Instrumentalism*** proposes that the point of science is in its practical achievements, and not in any effort to demonstrate truth.
    - *"Science is an inquiry system for the solution of problems"* and *"the adequacy of individual theories is a function of how many significant empirical problems they solve."*
  - *Instrumentalism* works if science is seen as a discipline entirely inspired by *practical concerns*, but goes wrong in emphasizing practicality to the exclusion of truth.

Philosophy of Science – Scientific Nonrealism

- Both ***realists*** and ***instrumentalists*** affirm that science is ultimately a rational discipline, properly based on evidence and objective reasoning.
- But *Thomas Kuhn* argued that in actual practice the discipline of science is far from rational in any objective sense of the term…
  - Scientific *observation of the world is theory-laden*, meaning all observations are processed through and influenced by prior scientific and/or personal paradigms, so neutral observation is impossible.
  - Scientific progress occurs not by accumulation of data, but by *paradigm shifts*. When data emerges that does not fit the reigning paradigm and cannot be resolved within that paradigm, a *scientific revolution* occurs.
  - Each paradigm contains its own *standard of rationality*, so there can be no debate across paradigm boundaries – which is why "science is not a rational enterprise."

Philosophy of Science – Scientific Nonrealism

- ***Scientific Anarchism*** is an even more skeptical approach, saying science is not constrained by methodological rules, so "anything goes" (with a strong emphasis on human freedom).
- Each paradigm has its own rationality, so ***Anarchism*** sees no way to compare or assess scientific theories objectively. So it's impossible to show one scientific theory as offering a better explanation than others, or even as being better than *nonscientific* explanations.
- This leads to near complete subjectivity in science – *"what remains are our subjective wishes"* – in a mythology that can't be shown to be better than non-scientific mythologies.
- "Science reigns supreme because its practitioners are *unable to understand*, and *unwilling to condone*, different ideologies, because they have the *power* to enforce their wishes."

Philosophy of Science – Its Nature & Limits

- ***Realism*** as an approach to science struggles because of a necessary reliance on inductive reasoning.
- ***Nonrealist*** views, on the other hand, cannot account for the practical success of science.
- Given the wondrous things science has accomplished, it's hard to account for these without believing science more or less describes or corresponds to the physical world, and in that way does represent truth.
- But science is also about other things and serves other functions; to that extent *nonrealism* has some validity.
- It would appear the best approach is a humble realist view of science, acknowledging that science does offer truth values, even though typically serving other functions, and that scientists, like the rest of us, are fallen and so have only a limited awareness of truth.

Philosophy of Science – Laws of Nature

- Given that the ***laws of nature*** – gravity, nuclear forces, conservation of matter & energy, thermodynamics, aerodynamics, etc. – appear as constant phenomena, how are we to understand their relationship to the scientific endeavor?
  - ***Regularity View*** says that natural laws are a summary of what has happened and what will continue to happen – how nature works, with the question of *why* they work as they do being seen as illegitimate or meaningless.
  - ***Instrumentalist View*** takes the pragmatic approach that apparent universality of nature laws is not of primary importance, but focuses instead on where science goes from there, using natural laws as tools.
  - ***Necessitarian View*** suggests the laws of nature are not just *how* the world does behave, but how it *must* behave, or even that the laws of nature are *logically necessary*.

Philosophy of Science – Laws of Nature & Faith

1. Laws of nature as constants are necessary for life to exist – without gravity, thermodynamics and other laws human life (or any life) would not be possible.
2. Since natural laws are necessary for human survival, they may be seen as evidence of the existence of a purposeful, intelligent, powerful and benevolent mind at work behind the scenes.
3. If natural laws are the product of a benevolent God, we can be sure they will continue – meaning that the future will be consistent with the past.
4. Therefore, given the dependence of science on the assumption of natural laws as constants, it can be seen that rational scientific investigation inherently presupposes reliance upon God, and that all scientific inquiry implicitly demonstrates this faith. The question is not *whether* scientists exhibits faith, but *what kind of faith* is being exhibited.

Philosophy of Science – Science and Theology

- **Two kinds of Naturalism**
  - Those who object to bringing theological convictions into the practice of science do so for one of two reasons:
  - ***Metaphysical naturalists*** believe only the physical world exists – no supernatural beings of any kind.
  - ***Methodological naturalists*** believe science should be practiced without reference to theological concepts (even if the supernatural *does* exist), because the goal of science is to explain natural phenomenon in terms of other natural phenomenon, without recourse to theological premises.
    - ***Functional integrity*** is a type of *methodological naturalism* that insists the cosmos has within itself all that is needed to explain itself, and that even if God did create the universe, there is now no need to reference the supernatural as an element in scientific inquiry.

Philosophy of Science – Science and Theology

- **Reflections on Methodological Naturalism**
  - This does prevent the "God-of-the-Gaps" approach, dominant in the past, in which God could be appealed to as an explanation for anything unknown or mysterious, without further scientific effort.
  - But just because errors of this sort were made in the past does not mean legitimate theological considerations, exercised with appropriate discipline, cannot now be part of science. (A principle tenet of Intelligent Design.)
  - *Functional integrity*, in trying to eliminate theological premises in science, is *self-defeating* in that it is, itself, a theological premise – based in a particular view of God and his relationship to the world.
  - Why should we accept *functional integrity*, especially given the strong testimony of Scripture that God remains active in the world he created?

Philosophy of Science – Science and Theology

- **Reflections on Methodological Naturalism**
  - Some methodological naturalists would insists that functional integrity is not required – that instead science should be seen as a *sort of game*, with specific rules – and that those rules are violated when theological considerations are introduced.
  - But who says those are the rules, and that the game must be played in that particular, non-God way? Is this not simply an inference at the start that supernatural considerations are always illegitimate in the context of science? Who made that a rule?
  - In fact, it can be said that scientists deal with "supernatural" aspects all the time – the principles of logic, mathematics, the laws of thought, abstract concepts of infinity, etc. – all are non-concrete and so could be considered supernatural ("above nature").

Philosophy of Science – Theistic Science

- **Theistic science** seeks to take theological considerations into account when doing science.
  - Alvin Plantinga: *"The rational thing is to use all you know in trying to understand a given phenomenon."*
- For example, advocates of Intelligent Design propose two kinds of biological complexity in support of a theistic science approach:
  - ***Irreducible complexity*** is the presence of complex interactive parts that combine to perform a necessary function, and from which no component could be removed without making the entire system completely nonfunctional. (That such a system could not be produced by continuous improvement on some initial function defies evolution by natural selection.)
  - ***Specified complexity*** refers to the aligning of an *event* and a *pattern* in such a way that they indicate intentionality – such as the way the complex sequencing within DNA molecules (*pattern*) are exactly necessary for human life to occur (*event*).

Philosophy of Science – Theistic Science

- **Theistic science** seeks to avoid the "God-of-the-gaps" by trying to ensure an intelligent cause (God) is only appealed to when it is impossible for a given phenomenon to have a natural cause.
  - The challenge is how to know <u>when</u> a given phenomenon can be judged as not being explicable by natural means. How far must a scientist go before all natural explanations are considered exhausted?
  - Critically important is that theistic science can be open to ALL evidence that is found through scientific inquiry (God could have used some for of evolution in Creation), while methodological naturalists are *by definition* prevented from any consideration of non-natural causes.