Epistemology

Foundationalism vs. Coherentism

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2022-10-05

Epistemology is a subfield of philosophy, which seeks to answer questions regarding the idea of knowledge, by itself. Mainly, the field revolves around explaining what knowledge is, how we can obtain it, and how we can be certain the knowledge we have is true.

One of the most well-known, and generally agreed-upon, idea of what knowledge is and which properties it has is the theory of the Justified True Belief, originally described by Plato, analysis.

While the name of the theory explains itself, we can clarify the meaning in parts: —For something to be a belief, an entity must consider the idea in their mind as truthful. —Knowledge must also actually be true for it to be valid under this school of thought. —Lastly, the subject must have a reasoning justifying their thoughts.

This set of rules seems reasonable, at first glance, and we can probably consider it sufficient... with some caveats.

First, how can we ever reach a point where we know something actually is true? That is, how can we distinguish whether our set of truths about the universe matches reality, and is not misguided by assumptions and mistakes? This is a hard point to answer, but is the main point this essay will focus on.

Another thing which is not explained by the JTB analysis is what makes someone's justification of their beliefs enough. The Gettier problems and Goldman's causal theory go deeper into this problem. In summary, their criticism introduces another variable regarding the justification and the truth: there must exist a relationship between someone's justification and the veracity of their belief.

Two theories of though

As mentioned above, asserting the truthiness of any belief is a difficult task. It is an opinionated topic, and there are multiple schools of thought regarding it.

We can interpret the word belief as the relationship a person has towards their reality, granted by their own perspectives and interpretations. This relationship is personal, in the sense that each person holds their own beliefs, and need not correspond with the actual reality, as explained by Descartes in his Meditations.

When people perceive the outside real world, we do so by the means of our senses, and thus gain experiences we can reason about (Locke, 1954). As noted much earlier by Descartes (1641), these experiences are not immune to misconceptions. Because of this problem, Descartes focused on absolute truths, where there is no doubt about anything, which was hard, granted Descartes didn't even trust his own perceptions to be accurate.

Both Descartes and Locke understood logical reasoning, meaning they would both be able to draw inferences from different pieces of knowledge, and thus gain a third, more complex, piece of knowledge. If some knowledge isn't drawn from anything else, we will consider it basic.

Putting these elemental authors next to each other presents an interesting point of discussion: Can we actually know anything for certain when our perceptions may be misguiding us? What is required to take the leap from a (justifed true) belief to consider it knowledge?

To answer this question, we must make a decision. What does it mean to know something? In other words, what does it mean to possess knowledge? One way we could approach this question is by giving a definition of knowledge, so let's define it as the collection of ideas under a belief system which allow us to reason and comprehend the world around us, and thus be able to make cognate decisions.

This definition does not answer the question, but it lays ground for the base rules on which we can build different schools of thought. Having a purpose gives us some restrictions for what we desire from our definition, after all.

Foundationalism

Understanding knowledge as a set of ideas which we hold to be true is useful, and foundationalists will leave no assumption unhandled. In the previous section, we defined basic beliefs, which is the quintessencial element of this train of thought. Beliefs have to be clear, distinct, and proven rationally for them to be valid.

Although basic beliefs are the core of this branch, that does not mean all knowledge we can arrive at must be basic. In fact, most knowledge under this system is justified by inference. We can justify one unknown fact by another known fact, and thus grow ourselves a large set of known ideas.

While this looks all dandy, there are some problematic situations which we must avoid. If knowledge can be justified by other pieces of knowledge, we could potentially create dependency cycles in our argumentative graph.

Argumentative cycles are disregarded as invalid under foundationalism, because there is no way to enter the graph from outside. In other words, a cycle doesn't come from a basic true belief.

Furthermore, an argumentative string would also be considered invalid if it's impossible to reach a basic belief by the end of it. In other words, we can say that under foundationalism, we must always be able to point at a basic belief (or multiple) from which we drew a conclusion for our more complex beliefs.

Last and trivially, foundationalism does not make any sense as the groundwork for truth if the basic beliefs we're using are not themselves justified.

Justifying basic beliefs

We have defined basic beliefs, but we still haven't shown how to justify basic beliefs. Given our rules for justifying more complex knowledge, this is necessary to gain any knowledge whatsoever.

BonJour (1988) claims it is impossible for any person to justify basic beliefs, since (1) the belief needs to have an explanation as to why it's true (2) the person needs to be aware of this explanation. It's impossible to hold this explanation prior to actually absorbing the idea empirically.

From this, it follow that the only way we can learn truths is to start with *some* empirical belief... which goes against our rules: Basic beliefs must be justified epistemologoically.

Coherentism

While foundationalism, often considered an evolution of the Descartian method, seems like a very stable ground for any given set of knowledge... we have explained how it's complicated, at best, to actually gain any knowledge under the system.

Given the impracticality of foundationalism, and our need for actually having a system which can serve us outside of an ideal epistemological analysis, we need something else.

Instead of relying on basic beliefs, we could instead rely on a network of likely beliefs (Quine, 1970). When we refer to a belief that is likely, we're simply saying we believe it to be true because our intuition and experiences have led us to have the idea that the thing is so. It seems to be true, so why not assume it is the case?

Of course, assuming beliefs to be true, nilly-willy, doesn't seem like an assuring justification. In order to fit a belief into this system, it must at the very least be compatible with the other beliefs which we have granted for certain already. Furthermore, given multiple potential cases for a scenario to have occured, we should rely on the most simply and intuitive cause.

In other words, what we are saying here, is that beliefs are allowed to be justified a posteriori, as long as it's coherent with what we already know.

There are some problems with this, though. We can see how knowledge potentially gains inertia in certain directions as knowledge expands. We haven't shown that the bias we're adding to the system is actually correct... which is not ideal. As an example, we could have chosen the most intuitive and simple explanation as the belief we introduce into the network when the correct explanation was never even consider in the list of candidates.

Furthermore, we haven't enforced any relationship between beliefs at this point.

Can a belief really justify another belief if there's no logical entailment between them? Since that doesn't seem very rational, we will require the justification to involve argumentative links between the nodes in the network.

Compromise

After looking at two fundamentally different approaches to the same problem, it seems to be the case that no matter which orientation we pick we will offend one group of people or another. Some people might be fundamentally against the idea of assuming something based on intuition and probability, while others might think development of ideas should happen in a less bureaucratic manner.

To say which group of thinkers is right might be impossible, and might even be a question without any real answer. Thomas Kuhn, although not exactly an epistemological philosopher, presents the idea of paradigms and revolutions of knowledge. His view on knowledge assumes we will eventually reach a dead end because of the path we've taken, and the tools we've chosen to use on a social level.

We can draw an overlap between cohesionism and scientific knowledge, since much of the scientific research is done through experimentation, observation and assumptions. It feels important to note that even though we do our best, we will eventually err somewhere along our reasoning, and therefore coherentism will need to swap out certain components in its system, and we might even need to revise the whole network from scratch. This idea seems exactly what Kuhn describes in his book on Scientific Revolutions (1962).

Pragmatism

In this essay we have discussed what knowledge is, how we can obtain it, and how we can verify our achievements regarding knowledge.

As an ending note, I'd like to ask whether it's actually important to know and share the truth, and promote truth over all else. Can we live without knowing the full truth regarding the universe and its things? Can we teach without being certain about things? If we see someone do something wrong (that is, incoherent to our own network of ideas), or say something we have justified true beliefs which would prove them wrong... how should we act? Is it right to tell them they're wrong?

In some contexts, knowledge is the fuel for thought and action. In other places, it's just a thing we have to deal with. This seems to be forgotten at times.

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Epistemology

Realist responses to underterminism and pessismism

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2022-12-05

Introduction

Realism is a philosophical position that holds that our theories and models accurately represent the world as it truly is, independent of our perceptions or beliefs. In other words, realists believe that scientific knowledge is objective and certain, and that it reveals the true nature of the world. This belief in the validity of scientific knowledge is challenged by arguments such as the underdetermination argument, which suggests that there is always an indeterminacy or lack of decisive evidence when it comes to choosing between different scientific theories. Realists must therefore find ways to respond to these challenges in order to defend their belief in the reliability and truth of science.

The underdetermination argument suggests that there is always an indeterminacy when choosing between scientific theories, making it impossible to know for certain which theory is true. The pessimistic induction argument suggests that the history of science is characterized by a series of failed theories, making it unlikely that our current theories are true.

These arguments raise doubts about the reliability and truth of science and realists must find ways to respond to them in order to defend their belief in the validity of scientific knowledge. The underdetermination argument, as articulated by Duhem and Quine, and the pessimistic induction argument, as developed by Laudan, provide significant challenges to realism and must be addressed by realists in order to defend their beliefs.

The underdetermination argument

The underdetermination argument is a philosophical argument that challenges the idea of realism in science. The argument suggests that there is always an indeterminacy or lack of decisive evidence when it comes to choosing between different scientific theories. This means that it is impossible to know for certain which theory is true and accurately represents the world as it really is, independent of our perceptions or beliefs.

The underdetermination argument is based on the idea that different scientific theories can often explain the same observed phenomena in different ways, and that it is often impossible to determine which theory is correct based on the available evidence. For example, the Ptolemaic and Copernican models of the solar system both accurately predicted the positions of the planets, but we now know that the Copernican model is the correct one (Duhem 1954, Quine 1960).

The underdetermination argument challenges realism because it suggests that our scientific theories and models may not accurately represent the true nature of the world. This undermines the realist's belief in the certainty and objectivity of scientific knowledge, and raises doubts about the reliability and truth of science (Laudan 1981).

Realist responses to the underdetermination argument

A realist might respond to the underdetermination argument by arguing that, while there may be indeterminacy or lack of decisive evidence when it comes to choosing between different scientific theories, this does not necessarily mean that it is impossible to know which theory is true. For example, a realist might argue that the scientific method, as proposed by Popper and Kuhn, provides a reliable way of evaluating the truth of a theory, and that the accumulation of evidence over time can help to determine which theory is more likely to be true.

Another possible response by a realist is to argue that, even if there is some degree of indeterminacy or uncertainty in science, this does not necessarily undermine the validity of scientific knowledge. A realist might point out that all forms of knowledge are fallible and subject to revision, and that this is an inherent feature of the scientific method, as articulated by Feyerabend. Therefore, the fact that there is some degree of uncertainty in science does not necessarily mean that our scientific theories are not true or accurate, since this is a matter of how we define truth.

Additionally, a realist might respond to the underdetermination argument by highlighting the successes of science in explaining and predicting the world around us. For example, a realist might point to the numerous technological advances that have been made as a result of scientific research, and argue that these successes, as demonstrated by Cartwright, suggest that our scientific theories are, on the whole, accurate and reliable.

Overall, a realist might respond to the underdetermination argument by emphasizing the ability of science to provide reliable knowledge of the world, despite the inevitable uncertainties and limitations of the practice of science.

The pessimistic induction argument

The pessimistic induction argument, as developed by Laudan, suggests that the history of science is characterized by a series of failed theories and abandoned models, which means that it is unlikely that our current theories are true. This is in contrast to the underdetermination argument, as articulated by Duhem and Quine, which suggests that there is always an indeterminacy or lack of decisive evidence when it comes to choosing between different scientific theories.

One way to understand the pessimistic induction argument is to consider the history of science. For example, the Ptolemaic model of the solar system was once considered to be the correct explanation of the motion of the planets, but it was later abandoned in favor of the Copernican model. Similarly, the phlogiston theory of combustion was once considered to be the correct expla-

nation of how fire works, but it was later abandoned in favor of the oxygen theory. These examples suggest that scientific theories are often revised or discarded over time, which raises doubts about the reliability and truth of science.

The pessimistic induction argument challenges realism because it suggests that our current scientific theories may not be true, even if they seem to be supported by the available evidence. This undermines the realist's belief in the certainty and objectivity of scientific knowledge, and raises doubts about the reliability and truth of science. As a result, realists must find ways to respond to the pessimistic induction argument in order to defend their belief in the validity of scientific knowledge.

In contrast to the underdetermination argument, which focuses on the indeterminacy or lack of decisive evidence when it comes to choosing between different scientific theories, the pessimistic induction argument focuses on the history of science and the fact that our current theories may be revised or discarded in the future. This suggests that the pessimistic induction argument is more skeptical and pessimistic about the reliability and truth of scientific knowledge, while the underdetermination argument is more focused on the limitations and indeterminacies of the scientific method.

Realist responses to the pessimistic induction argument

One way that a realist might respond to the pessimistic induction argument is by arguing that the history of science does not necessarily imply that our current theories are false. For example, Laudan argues that the history of science is characterized by a process of continuous improvement, in which our scientific theories are gradually refined and made more accurate over time. Therefore, the fact that some scientific theories have been abandoned in the past does not necessarily mean that our current theories will be abandoned in the future.

Another possible response by a realist is to argue that the successes of sci-

ence outweigh its failures. For example, Musgrave points out that science has made numerous important discoveries and predictions, such as the existence of atoms, the structure of DNA, and the expansion of the universe. These successes suggest that our scientific theories are, on the whole, reliable and accurate, even if they may be revised or abandoned in the future.

Additionally, a realist might respond to the pessimistic induction argument by emphasizing the importance of realism for the progress of science. For example, Leplin argues that realism is essential for the development and testing of scientific theories, because it provides a standard of truth against which scientific theories can be evaluated. Therefore, the realist might argue that we should not abandon realism in the face of the challenges posed by the pessimistic induction argument, because this would undermine the ability of science to make progress.

Overall, a realist might respond to the pessimistic induction argument by emphasizing the importance of realism for the progress of science, and by arguing that the history of science does not necessarily imply that our current theories are false. This response would allow the realist to defend their belief in the reliability and truth of science, despite the challenges posed by the pessimistic induction argument.

Conclusion

To summarize, the arguments from underdetermination and pessimistic induction are significant challenges to the idea of realism in science. The underdetermination argument suggests that there is an indeterminacy or lack of decisive evidence when it comes to choosing between different scientific theories, while the pessimistic induction argument suggests that the history of science is characterized by a series of failed theories and abandoned models. These arguments raise doubts about the reliability and truth of scientific knowledge, and challenge the realist's belief in the certainty and objectivity of science.

Realists have attempted to respond to these arguments in various ways, such as emphasizing the ability of the scientific method to provide reliable

knowledge of the world, and highlighting the successes of science in explaining and predicting the world around us. However, these responses do not necessarily address the underlying concerns raised by the arguments of underdetermination and pessimistic induction. As a result, the debate between realists and their critics is likely to continue, as both sides seek to defend their beliefs about the nature and validity of scientific knowledge.

In the end, the question of whether our scientific theories are true and accurate remains an open one, and is likely to continue to be a topic of debate among philosophers of science.

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