A SHORT CRITIQUE OF MODERN PHILOSOPHY OF SCIENCE

THROUGH TAYMIYYAN LENS

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A Short Critique of Modern Philosophy of Science through Taymiyyan Lens

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1. Introduction

In the name of Allah, praise be to Allah, and peace and blessings be upon the Messenger of Allah, his family and companions.

With a focus on late philosophical debates, particularly in the nineteenth and twentieth centuries, this paper seeks to summarize the most important philosophical doctrines in the Philosophy of Science, provide a clear and engaging explanation of each doctrine's ideas, and examine them with thorough short criticism from an Islamic perspective, particularly from the Taymiyyan school of thought.

Peter Godfrey-Smith's excellent book Theory and Reality: An Introduction to the Philosophy of Science is a major source for this paper. If the reader wants to learn more about in-depth discussions, I suggest reading that book. However, it should be noted that the author, like most Westerners, holds Darwinian views, which is undoubtedly problematic from an Islamic standpoint. Also, he is a Naturalist, which we will discuss later in the paper. Nonetheless, he is well-versed in the various doctrines of modern scientific philosophy. I also count heavily on the Stanford Encyclopedia of Philosophy.

It is worth noting that, as the title implies, I criticize the isms I discuss from a Taymiyyan perspective. Ibn Taymiyya is a

prominent scholar of the Salafi/Hanbali school. He is one of the few Salafi scholars to have studied philosophy and Kalam. He wrote extensively about metaphysics, epistemology, and ontology. As a Salafi scholar, I will definitely use Ibn Taymiyya's arguments directly or infer them from the principles he wrote.

Before diving deep into the topic, It is worth noting that translating the word Science as 'علم' in Arabic is inaccurate and rather misleading, because 'العلم' in Arabic is much broader in concept and meaning than the word *'Science'* in English. As demonstrated by debates over the Philosophy of Science, there is even disagreement over the definition and concept of the word 'Science'.

Thus, the best translation of the word *'Science'* is 'علوم الطبيعة' and the best translation of the term *'Philosophy of Science'* is 'فلسفة علوم الطبيعة'. The term *'Philosophy of Science'* should not be confused with *'Natural Philosophy'* which is actually a synonym for *'Science'* since what we now refer to as *'Science'* was once known as *'Natural Philosophy'*.

2. Scientific Revolution

Around the 17th century, when what we now call the Scientific Revolution was taking place, many of the fields we now call *'science'* were commonly called '*natural philosophy*', most notably physics. This may come as a shock to some, but indeed, science was once called philosophy!

Other disciplines such as: botany and zoology, those sciences that are descriptive rather than cause-and-effect, were called 'natural history'. In the seventeenth century, Francis Bacon and

René Descartes, among others, tried to give detailed specifications of how scientists should proceed. Those figures had a huge influence in that period of time.

As to regard the term *Scientist*, it was first coined by William Whewell in the 19th century.

Prior to the scientific revolution, Much of Europe had inherited a blend of Christianity and the theories of the ancient Greek philosopher Aristotle from the Middle Ages. Often named for the ‘schools’ (universities) that created and supported it, the combination is known as the Scholastic worldview. The moon, sun, planets, and stars were thought to revolve around the Earth, which was viewed as a sphere at the center of the universe in the Scholastic perspective. The four fundamental elements—earth, air, fire, and water—were thought to be the components of everything on Earth, and each had its own natural tendencies. According to this perspective, everything in the heavens is composed of a fifth element that is ‘incorruptible’ or ‘unchanging’. Things composed of this fifth element move naturally in a circular motion.

This is the Eurocentric view of history; major advances in human history are always made in Europe by Europeans, which is far from accurate. The foundations of science, as a field that relies on experiments and sensory experience, as well as reason, to gain a better understanding of the world and natural laws, existed in Eastern civilizations for centuries before the Scientific Revolution. Proving this point might need a huge volume on its own, but it is indeed acknowledged by most historians, but still a lot of Westerners choose to ignore that fact.

The same type of inaccurate story is told about philosophy, which is said to have originated in Greece by Greeks with no precedents. It is as if Philosophy emerged from nothing at some

point in history. That is far from the truth; Plato believed that the word “Sophia” was not Greek. Pythagoras lived in Egypt and learned from Egyptian priests before moving back to Greece. The same goes for Thales. As a result, some historians believe Pythagoras coined the term “Philosophy” from the Egyptian word “Sophia”. Thales, Pythagoras, and other Greek philosophers benefited from not only Egyptians but also Phoenicians, Babylonians, Persians, and Indians.

This is a common theme that I frequently criticize: the Eurocentric narrative, which is at conflict with how history works in the first place. The bottom line is that science and philosophy did not begin in Europe as if no one else possessed such intelligence.

3. Should philosophy of science be a prescriptive or descriptive discipline?

There are two types of theories that the reader must differentiate between: Normative theories and descriptive ones. A descriptive theory is one that tries to describe what happens in a field without judgement, that is, it tries to build a perception of that field without interfering with what should or should not be done by those working in that field, and what is considered valuable or not for that field. Normative theory, on the other hand, simply makes judgments, telling us what a scientist should and should not do, what is considered real science and what is considered pseudoscience, what is considered progress and what is not. Some descriptive theories often carry normative aspects, albeit informally.

Thus, in philosophy of science, we will find both normative and descriptive theories, and many descriptive theories often have normative aspects, as we have noted.

The normative aspects are more important, however. Describing how science worked in history is not difficult, but theorizing the epistemic aspects and foundations of science, as well as the ontological claims, is critical, and this is usually done in normative theories or the normative aspects of it.

4. Main themes in Philosophy of Science

What is Science? What distinguishes Science from other fields of knowledge like Philosophy, Sociology and Humanities? In general, there are three main themes of the various theories that try to answer this basic yet complicated question. The first theme forms empirical theories, the second forms theories concerned with mathematics, and the third forms the theories concerned with social structure.

The first is the view that the only source of true knowledge about the world and reality is through experience. One of the most important empiricist philosophers of the twentieth century was Carl Hempel who was, among others, a central figure in the Vienna Circle which we'll talk about later in this paper.

You might think that these kinds of empirical principles were a common aspect that Europeans were considering and implementing in various fields of knowledge right before the twentieth century, but it was not really the case. For instance, Semmelweiss, who worked in a hospital in Vienna in the mid-nineteenth century. He was able to show by simple empirical tests that if doctors washed their hands before delivering babies, the risk of infection in the mothers was hugely reduced. For this claim he was opposed and eventually driven from the hospital. Thus, one would argue that, before the twentieth century, there

was a problem with basic empirical principles implementation in the West.

The second is the view that what distinguishes science from other types of knowledge and research is that science uses mathematics to understand reality. This school is clearly represented by Galileo Galilei.

The third is the view that what distinguishes science from other types of knowledge and research is the structure of the community of scientists.

5. Empiricism

The concept of empiricism has a long history with humanity; it was neither created by Europeans nor sparked in a single person's mind throughout history. Westerners often claim that philosophy and scientific method have been developed in Europe, which is, in my opinion, a Eurocentric view of history. However, real historians would not agree.

5.1 Taymiyyan Epistemology & Empiricism

Epistemology has been discussed by many prominent Muslim scholars in the middle ages, especially Ibn Taymiyya, who thought that experience through senses is the root, but not the only, source of knowledge. Ibn Taymiyya does not, by any means, think that experience is the only source of human knowledge, but it is rather the fundamental root of knowledge. Ibn Taymiyya thinks that the reliable sources of knowledge, besides experience through senses, are Testimony, Memory and Reason. He also considers feeling thirsty, tired or excited to be a form of sensation, but an internal

form. Thus in a way, it is a sense with which you feel a sentiment that gives you knowledge about reality, because it gives you knowledge about yourself which is a part of reality itself, but this form is undeniably unalike humans' five senses. For him, Senses are not solely the five ones. The five senses are *external*. The other senses, on the other hand, with which individuals feel if they are thirsty or hungry or excited, are *internal senses*.

Ibn Taymiyya also stresses on the significant importance of experience through senses as one of the most trusted sources of knowledge. He argues that other sources of knowledge -Testimony, Memory and Reason- count on sensory experience as the root and outset. If you testify on a particular issue, then the chain of the testimonies should come to an end in which a trustworthy individual had a sensory experience that he told others about.

He also argues that reason is not an essence, but rather an operation in which the human mind processes his sensory experiences to extract generalizations. He also thinks that *'Mind'* is not an essence, but rather a name for the form of processes the brain applies to sensory experiences.

I would argue that Ibn Taymiyya would be regarded as a radical empiricist by many philosophers. However, that, in my view, is not at all the case. It is a common mistake made implicitly by many philosophers to not distinguish between sensory experience being the root of knowledge with sensory experience being the sole source of reliable knowledge. Ibn Taymiyya's position is compatible with the former rather than the latter, and his views are more in line with common sense, which is what most people would agree with. In my view, this is not radical at all.

My point is, as you can see, it is the Muslim scholars who discussed Epistemology and Empiricism whilst most of the

Europeans at the time were still captives of the Scholastic views of Christianity and Peripatetic philosophy.

However, these philosophical conversations that occurred in Muslim communities are not widely known in the West for a variety of reasons. As a result, many philosophy authors believe that philosophy, including natural philosophy, originated in Greece, with Thales being the first philosopher ever recorded. Again, that is undoubtedly not the case. Numerous historical sources acknowledge that many of those early Greek philosophers studied in the East, particularly in ancient Egypt, which seems to support my claim. Also, it does not make sense that great civilizations, like Egypt or Persia, were built without any natural philosophy (aka Science).

5.2 Early Western Empiricism

According to Godfrey-Smith and most Westerners, the work of David Hume, George Berkeley, and John Locke during the seventeenth and eighteenth centuries marked the most significant era in the evolution of empiricist philosophy. I would argue that it is not true at all because many Muslim scholars in the early Islamic era were well-known empiricists, and their remarkable contributions to natural philosophy—which were primarily grounded in sensory experience and experiments—cannot be ignored.

The *classical* forms of empiricism during the time of David Hume, George Berkeley, and John Locke, were founded on theories regarding the nature of the mind. They are sometimes referred to as '*sensationalists*' for their perspective on the mind. According to that view, the mind only has access to sensations, which manifest

as patches, particularly, patches of color and sound. In another word sensations are the mind's internal impressions formed from what we see, hear, or feel, they are the basic building blocks of all knowledge. Tracking and reacting to patterns in these sensations is the function of thought. Using a phrase that was unknown then, but useful anyway, we could say that classical empiricism saw the mind largely as a pattern-recognition device.

Moreover, an important distinction among empiricists lies in their differing ontological commitments. Not all empiricists held the same view about the nature of reality. There are two main schools: epistemological phenomenalists, like Hume and later Kant, who argue that we cannot gain knowledge of things as they are in themselves (*noumena*), but only of their appearances (*phenomena*). According to this view, we are limited to knowing how things appear to us, not the reality behind those appearances. This position is known as epistemological phenomenalism. In contrast, ontological phenomenalists, such as Berkeley, take a stronger stance by claiming that only appearances exist — that is, reality itself consists solely of perceptions.

The majority of western classical and modern empiricists share certain characteristics. Most notably, the propensity for sophistic arguments and skepticism.

A) Early Western Empiricists' Skepticism and Sophism.

The tendency to lapse into *skepticism*—the belief that we cannot know anything or can know far less than is typically assumed about the world and its workings—has been a problem for empiricism both during these classical discussions and more recently. Although skepticism comes in many forms, two are particularly significant in this context. One is skepticism about the external world, which asks whether we can ever learn anything

about the physical world that could be hiding behind the stream of sensations we experience. Inductive skepticism is the second type, which Hume vividly described. Why do we have grounds to believe that the events observed in previous experiences will continue to exist in the future?

Some Western empiricists held sophistic skeptic beliefs; they claimed that since we can only deal with the flow of sensations, there is no reliable method to determine whether there is a reality behind the flow of sensations. Others said that we should not be concerned whether there are actual objects in reality or not. Thus, we could say that those empiricists had three main themes: one argued for the existence of objective reality and real objects in the world; another claimed there is no reliable way of knowing that; and another claimed we should not be concerned and just deal with sensations.

'Phenomenalism' is the term used to describe the idea that our perception of '*the world*' may actually be a concept of a patterned collection of sensations. Unfortunately, that view still has a tremendous influence on modern science theoretical explanations. Einstein's theories, for example, have some blatantly strange and sophistic elements that defy common sense. Much of that can be attributed to the influence of the well-known scientific phenomenalist (a view that reduces scientific claims only to statements about observable phenomena (sensory experiences or measurable data), rejecting any reality "behind" appearances.) Ernst Mach, an Austrian philosopher and physicist who greatly influenced Einstein's philosophy and, consequently, his perspective on his scientific work, even though some of his opinions are illogical and could be explained in a different way.

As you will see later, many prominent philosophers of science held skeptic opinions that are generally unknown to laypeople but well-known to experts in the field. Most notably, I would argue that Thomas Kuhn and Karl Popper were both radical skeptics.

B) Hume's Induction Problem & Cause-and-Effect Denial.

Regarding the induction problem that David Hume highlights, it is a significant topic that was covered by numerous Muslim scholars long before Hume. Once more, however, the majority of Western philosophers are unaware that Muslims have already addressed it. The problem of induction, for example, was already being discussed by Muslim scholars before and during the Middle Ages as they studied and contributed to Aristotelian logic. The majority of them claimed that if you fully induce all of the research subject's samples, then generalization from this induction research is unquestionably true and error-free; however, if you only examine a portion of the samples, then there may be some room for error.

Ibn Taymiyya, however, disagreed with that viewpoint. He argued that deduction and induction are essentially two ways of looking at the same thing. Therefore, the cause of the conclusion, not the form, determines how reliable the generalization is. In other words, in deduction we could say: All men are mortal, Socrates is a man, therefore, Socrates is mortal. As for the majority of philosophers, that would be a trustworthy thought process because of the form of deduction. However, Ibn Taymiyya asks a great question, How did you come up with the first premise that says All men are mortal? It must have been an induction, but no one can look into every man in history to ensure that there is no possibility of error in this induction. Therefore, if one premise is uncertain, then the conclusion should be uncertain. Ibn Taymiyya basically argues that it is all about the cause-and-effect, in our

scenario we should be looking for the cause of mortality, if we know the cause that makes the necessity of Socrates' mortality, then we can generalize mortality to all beings that have the same cause. For him, if we investigate more samples and check if mortality is a necessity for beings that have that cause, then the generalization is not just trustworthy, but rather a rational necessity because of the necessity of cause-and-effect.

As you can see, Ibn Taymiyya is subtly implying that anyone who claims that induction is unreliable is ignorant of the correct way to conduct it in the first place because induction is merely another method for discovering the necessity between two things, usually a cause and an effect, in such view, a generalization would be logical and reliable due to the the necessity of cause-and-effect.

Another significant issue raised by Hume's argument is that we cannot rely on the cause-and-effect relationship because even the causation principle is an induction. How can we determine that any cause must lead to any effect? Ibn Taymiyya argues that any sophistic argument is inherently self-destructive, and that argument is essentially just another type of sophistic philosophy. Applying Ibn Taymiyya's claim to the issue Hume brings up, we can say: Is denying cause-and-effect a theoretical conclusion or a necessary proposition? It must be a theoretical conclusion since no one can argue that it is a necessary principle or proposition to deny cause-and-effect. But, what is the relationship between the premises and the conclusion in Hume's theory? If he denies the cause-and-effect, then his premises and arguments do not lead to his conclusion, so his conclusion is invalid. Thus, as you can see, if we arguably accept his conclusion, his conclusion refutes itself because we would not accept the conclusion based on his arguments unless there is a cause-and-effect relationship between

the arguments and the conclusion. Other refutations could still be used here, but I won't add any more because I want to keep it brief and straightforward.

Another way to think of Hume's argument is that the reliability of induction itself counts on induction. Alan explained this problem as follows:

> *"The problem arises when we raise the question of how induction itself is to be justified. How is the principle of induction to be vindicated? Those who take the view under discussion have only two options, to justify it by an appeal to logic or by an appeal to experience. We have already seen that the first option will not do. Inductive inferences are not logical (deductive) inferences. This leaves us with the second option, to attempt to justify induction by an appeal to experience. What would such a justification be like? Presumably, it would go something like this. Induction has been observed to work on a large number of occasions. For instance, the laws of optics, derived by induction from the results of laboratory experiments, have been used on numerous occasions in the design of optical instruments that have operated satisfactorily, and the laws of planetary motion, inductively derived from the observation of planetary positions, have been successfully used to predict eclipses and conjunctions. This list could be greatly extended with accounts of successful predictions and explanations that we presume to be made on the basis of inductively derived scientific laws and theories. Thus, so the argument goes, induction is justified by experience.*
>
> *This justification of induction is unacceptable. This can be seen once the form of the argument is spelt out schematically as follows:*

The principle of induction worked successfully on occasion x1

The principle of induction worked successfully on occasion x2 etc.

The principle of induction always works.

A general statement asserting the validity of the principle of induction is here inferred from a number of individual instances of its successful application. The argument is therefore itself an inductive one. Consequently, the attempt to justify induction by an appeal to experience involves assuming what one is trying to prove. It involves justifying induction by appealing to induction, and so is totally unsatisfactory."

This is not a new argument; we have previously addressed its foundation. It is not arbitrary induction that causes us to believe inductions, but rather the mind's analytical thought process that is based on the necessary relationship between two objects in the outside world. This is typically a cause-and-effect relationship, making it reliable for induction and inference. We do not need to investigate the dependability of induction since we do not doubt cause-and-effect, or more broadly, necessary relationships.
Induction is just a name for the process by which we conduct and seek new information based on necessary relationships in the outside world.

It is vital to understand that the necessary relationship between two things (which serves as the dependability basis for induction in Taymiyyan theory) involves more than just cause-and-effect. It usually is, but it can vary, as in the link between conditions and conditioned. It is commonly referred to as اللازم والملزوم in Arabic. This can be interpreted as Implicant and

Implicate, or Entailment and Entailed. I prefer the latter to the other words.

For instance, the relationship between yesterday and tomorrow is a conditional relationship, it is not that yesterday is the efficient cause of creating today. Also, the relationship between the body (الجسم) and the limit (الحد). It is not that the body is the cause of the limit, but the mind recognizes a required relationship between the two conceptions. Being a body implies having a limit in the outside world. In Taymiyyan philosophy, necessity and implication serve as the foundation for syllogism and induction.

5.3 Rationalism vs Empiricism

A conflict between the *'rationalists'* and the *'empiricists'* in the seventeenth and eighteenth centuries is frequently mentioned in discussions of the history of philosophy. Pure reasoning, according to rationalists like Descartes and G. W. Leibniz, can lead to knowledge independent of experience. One interesting example of this type of knowledge appeared to be mathematics. Empiricists such as Locke and Hume maintained that we can only learn about the world through experience.

Regarding this dispute, I would first argue that empiricists are correct. Ibn Taymiyya's position on the issue is also reflected in this. He implies that there wouldn't be any use for numbers if it weren't for actual objects in reality. However, we cannot claim that western empiricists were entirely correct in their epistemology. This is due to the fact that their interpretation of experience being the source of knowledge is not entirely accurate. According to them, knowledge can only be acquired via sensory experience. However, Ibn Taymiyya views it as the foundation of knowledge

rather than its sole source, which is significantly different from their perspective on epistemology.

However, throughout philosophy's history, the term *'rationalism'* has frequently been used to describe an opposing viewpoint to empiricism. However, the term is typically not used in that manner in the more recent discussions of science that we are interested in here. This can be a source of confusion; The views referred to as *rationalist* in the twentieth century were often also forms of empiricism; the term "*rationalism*" was often used in a broad way, to indicate confidence in the power of human reason.

5.4 Emanuel Kant's Transcendental Idealism

Immanuel Kant, a German philosopher, developed a sophisticated intermediate position between *rationalists* and *empiricists* in the late eighteenth century. Kant argued that all our thinking involves a subtle interaction between sensory experience and preexisting mental structures that we use to make sense of experience. It is impossible to derive concepts like space, time, and causation from experience because one needs to already possess these ideas in order to use experience to learn about the world. Kant also held that mathematics gives us genuine knowledge but does not require experience for its justification.

This point of view implies that we, without preexisting mental structures, we cannot have knowledge about reality. Indeed, it is a sophistic view because consequently that implies that if those mental structures change, then our view on the world will be totally different. Also, that view implies that there is no such thing as causation that already exists in reality, it is all in our minds. Kant goes further with those implications and argued that we cannot

justify the existence of God because we do not know the essence of reality because of the limitations of our mind structures. Kant is definitely a skeptic and a radical one in my opinion. He also argues that objects in reality in itself cannot be recognized by the five senses because all we experience is the flow of sensations. Thus, for him, we cannot make claims on anything about the objects in reality itself. But, as you might have noted, this claim is self-destructive and self-contradictory, because he already made a claim about those objects. If we accept his conclusion that we cannot know something about the objects themselves, then how did he know about them that we cannot know anything about them? That is another application of Ibn Taymiyya's claim that any sophistic theory should easily destroy itself.

5.5 Logical Positivism and Logical Empiricism

The Vienna Circle, which established Logical Positivism, was established by Moritz Schlick and Otto Neurath. There are other central figures in the development of the circle's ideas, most notably Rudolf Carnap.

The usual name for the view the Vienna Circle developed is "*logical positivism.*" (The term "*positivism*" derives from the nineteenth-century scientific philosophy of Auguste Comte.) The view is sometimes called "*logical empiricism*" instead, though other people use this pair of terms to mark a distinction within the movement, saying "*logical positivism*" for an earlier, more extreme form of the view and "*logical empiricism*" for a later, more moderate version. I will follow that usage.

At the same time, a group of philosophers in Berlin formed "*The Berlin Group*" which was led by Hans Reichenbach. That group subscribed to the same ideas of logical positivists in Vienna.

Logical positivists' view was a radical one, which is, if a sentence cannot be verified by experience, then not only it is not science, but it is meaningless. That perspective holds that metaphysics has no meaning, which demonstrates how radical it is.

Ludwig Wittgenstein's early theories influenced logical positivist perspectives on language. Wittgenstein was a mysterious and peculiar logician and language philosopher who was not at all an empiricist.

Regarding Logical Positivists, G. W. F. Hegel, a major figure in nineteenth-century thought, was a major antagonist. His research on the connection between philosophy and history made Hegel famous. He believed that the entire history of humanity was a process whereby a "world spirit" progressively came to be aware of itself. Hegel's philosophy was considered "idealist" because it maintained that reality is somehow mental or spiritual. But this is not a view in which each person's reality is made up in some way by that person's ideas. Instead, it is claimed that a single reality has a spiritual or rational nature when taken as a whole. This view is sometimes called "*absolute idealism*" which is a good example of what logical positivism was against. Not only did logical positivists oppose idealism, but they also opposed the idea that history influences philosophy. I agree with logical positivists that idealism is a ridiculous philosophical theme in its entirety. Furthermore, I think that Ibn Taymiyya's position was to oppose the various forms of idealism that he uncovered in the doctrines of Ashaari and Peripatetic thought.

Another philosopher who came to seem an especially important rival to logical positivism was Martin Heidegger.

Logical positivist ideas were imported into England by *A. J. Ayer* in Language, Truth, and Logic (1936). Under the influence of logical positivism and the philosophy of G. E. Moore and Bertrand Russell, English philosophy abandoned absolute idealism and returned to a more empiricist emphasis.

Martin Heidegger joined the Nazi party in 1933 and remained a member throughout the war whilst many logical positivists fled Europe, especially to the United States. In the years following World War II, American philosophy flourished due to the logical positivists who managed to reach the country. Among them are Herbert Feigl, Carl Hempel, Hans Reichenbach, and Rudolf Carnap.

As we noted, Earlier empiricist views, like John Locke and David Hume, were based on views about the mind and perception. Logical positivism, in contrast, was based in large part on theories about language—especially about what language can and can't express. Perhaps their central idea was the *verifiability theory of meaning*. This can be expressed as follows: *the meaning of a sentence consists in its method of verification.*

We could form it in another way as follows: knowing the meaning of a sentence is knowing how to verify it. And here is a key application of the principle: if a sentence has no possible method of verification, it has no meaning.

By "*verification*," the positivists meant verification by means of observation. But "verifiability" is not the best word for what they meant. A better word would be "testability." This view is often called "*Verificationism*," or "*verifiability theory*". Verificationism is a strong empiricist principle; experience is the source of meaning when we speak and write, as well as the only source of knowledge.

The verifiability theory of meaning was concerned with *Synthetic* sentences. That is a terminology introduced by Kant. According to this view, there is a distinction between *Analytic* and *Synthetic* sentences.

Analytic sentences are true or false in virtue of the meaning of the words within them, regardless of how the world happens to be. For instance, saying "All bachelors are married" is in itself true, regardless of how the world is. On the other hand, a synthetic sentence is something like saying "All bachelors are bald", the latter is not simply true based on its own words, simply because the meaning of the word "Bald" is not present in the word "Bachelors", so, it is a synthetic sentence that needs to be verifiable.

Based on that view, logical positivists claimed that mathematics and logic are analytic. Thus, they claimed that what is known a priori (i.e. known independently of experience) is analytic.

In my opinion, there is nothing a priori at all, and this is very clear in Ibn Taymiyya's writings. Infants are not born with any knowledge of any kind, but through sensory experience the mind can surely extract knowledge that is called a priori, and based on which, it can infer other kinds of knowledge. That is why Ibn Taymiyya sees Innateness "*Fitrah*" as the human creation as it is. If nothing opposes its natural method of thinking, it leads to what is called innate knowledge (i.e. a priori) and to Islam.

In terms of their claim that a statement that is not empirically verifiable has no meaning, I believe it is absurd and sophistic. Who can claim that the statement 'Angels exist' is beyond his comprehension? It is quite radical to make such a claim. Their claim is false due to a couple of reasons:

First, Such a claim is clearly self-destructive, because if one understands nothing from a statement, he cannot determine

whether it is verifiable or not. Before determining whether a statement is verifiable through sensory experience, you must first understand its meaning before seeing if there is a correspondence in the outside world.

Second, the statement: ‘Statements that are not verifiable by sensory experience are meaningless’ is not a verifiable statement by sensory experience, so it is also meaningless. Claiming that their claim has any meaning is paradoxical.

The distinction they made between analytic and synthetic statements is not without issues. That is one of the reasons Willard Van Orman Quine's works became widely known. We will go over Quine's philosophy later in this paper.

Another language distinction the logical empiricists made was the *Observational* and *Theoretical* language. Schlick said that only terms referring to sensations are observational; everything else is theoretical. For instance, “Red” is observational, whilst “Electron” is theoretical.

As you can see, from the first glance, it is unclear how this distinction works, that is why it was a controversial concept amongst philosophers. One could say that “Electron” is observational since we were able to observe it by sensory experience somehow. For that reason, Carnap was leaning toward a more tolerant approach marking out the distinction.

If one’s conception of experience extends to what can be measured via scientific instruments and thus one conceives of scientific instruments as allowing for an extension of our experience then it is perfectly coherent to say that (a) electrons exist, (b) that my belief in electrons is justified by experience, and that (c) my beliefs are limited to what we can experience.

For the logical empiricists, the philosophy of science is concerned above all with the logic of science. In general, they saw logic as the main tool for philosophy.

But by the middle of the 1970s, this view had well and truly broken down as most philosophers came to agree that philosophy of science had to go beyond logical analysis. During the early twentieth century, there was a similar version of logical positivism introduced by physicist Percy Bridgman, that version was called *Operationalism*. The difference between operationalism and logical positivism is that operationalism is more narrowly focused on describing how concepts are defined through observation, whereas logical positivism encompasses a wider epistemological and metaphysical stance.

Logical positivists can be seen as epistemological phenomenalists but differ from earlier ones like Hume. While Hume limited knowledge to appearances without access to an external world, logical positivists believed appearances correspond to reality only if verified by empirical science. They introduced operationalism, defining concepts by observable procedures. They rejected the metaphysical split between phenomena and noumena as meaningless, focusing only on empirically testable statements. This led them to distinguish observable from unobservable entities, reducing the latter to observational terms or dismissing them as metaphysical and meaningless.

Logical positivism shares scientific phenomenalism's core empiricist stance—that meaningful claims must be empirically verifiable and that metaphysics is meaningless—but diverges by allowing theoretical terms (e.g., electrons, fields) as useful constructs tied to observations rather than reducing reality strictly to sensory phenomena. While phenomenalism dissolves scientific

entities into pure sense-data (e.g., "atoms are just observation bundles"), logical positivists adopt a more flexible instrumentalism, treating unobservables as operational tools that predict measurable outcomes (e.g., "electron" signifies detector patterns, not just perceptions). This pragmatic shift, later formalized as physicalism (privileging public measurements over private sensations), lets positivism accommodate modern science's abstract formalism without fully endorsing either realism or radical phenomenalism.

Another common theme among logical positivists is a disregard for history and psychology in philosophy of science; they regard history as irrelevant to their work. That, in my opinion, is a terrible delusion. This is, as I mentioned earlier, one of the reasons why Hegel was an antagonist. That did not change in the late era of logical positivists, who were better known as logical empiricists at the time, and their perspectives on some issues changed and evolved.

6. Falsificationism of Karl Popper

Karl Popper is likely to be one of the best-known philosophers in the scientific community, owing to his enormous influence. His views are most often used by professionals in practical situations, but they are also used in debates on occasion. He started his career in Vienna, although he was not a part of Vienna Circle, he was in contact with some of them.

6.1 Demarcation Problem

Unlike Logical Positivism, Karl Popper did not consider statements that cannot be verified through sensory experience to be meaningless. As a result, he did not consider metaphysics to be

meaningless. Even pseudo-science is not, according to him, meaningless.

I believe that is the natural and original position of any philosopher; no one can successfully argue against the fact that metaphysical statements have meaning that people can understand, regardless of whether those statements and claims have correspondences in the outside world.

Then, What is Science? And how to distinguish Science from other kinds of knowledge? That problem is often called the "*Problem of Demarcation.*" His solution to the problem is *Falsificationism*, which could be manifested by saying: A scientific hypothesis is scientific if and only if it can be refuted by a possible observation. As a result, if a hypothesis does not take any risks and is compatible with all observations, it is not scientific because it cannot be refuted.

For Popper, based on Falsificationism, an example of psudo-science is Freudian psychology and Marxist views on society and history, whilst a good example of science is Einstein's work.

In my opinion, claiming that observation is the only criterion that distinguishes science is a reductionist move and I do not think it is something that Popper claimed. A scientific hypothesis can, of course, be refutable by observation, but that isn't the only thing that distinguishes science. Other methods of refuting a hypothesis may exist, such as if it contradicts one of the fundamental principles of human thought, such as causality. If a hypothesis leads to a contradiction with the causality principle, it is falsified, but it was refuted through reasoning rather than observation.

6.2 His radical version of Fallibilism

So far, that is what is commonly known about Karl Popper's Philosophy. But there is a wider range of ideas of his that is not as common, and might be stranger than you think. Popper believed that observations cannot confirm a theory, the only thing an observation can do is to refute the theory. That is, in my opinion, a very radical move. So, according to Popper, if a hypothesis suggests that A always causes B, any observation of A actually causing B is not confirming the hypothesis at all. So, the theory cannot be confirmed at all by observations or predictions, even if the theory predicts a huge number of observations and all happen to be true, that, according to him, does not confirm the theory by any means. Many philosophers of science use the term "*confirmation*" to answer a simple question: how does a hypothesis become more likely to be true? For Popper, Nothing can confirm a hypothesis. Therefore, Confirmation is a myth, so is induction.

As you might expect, Popper was following Hume's sceptical ideas about induction and confirmation, which is something we have discussed briefly earlier in this paper. I would claim that many Western philosophers actually follow Hume's sceptical views, but it is not very common to the public. Most people though think that induction is an essential pillar for science, they would think Popper would agree, but he absolutely thinks it is a myth, but he still claims that science does not need induction at all. Therefore, Popper believes that we can never be completely sure whether a scientific hypothesis is true or false. Most scientists are not aware of that sophistic aspect of Popper's philosophy. Popper's view on this matter is a radical version of the philosophical view named *'Fallibilism'*.

According to Rescher, N. (1998):

> “Fallibilism is a philosophical doctrine regarding natural science, most closely associated with Charles Sanders Peirce, which maintains that our scientific knowledge claims are invariably vulnerable and may turn out to be false. Scientific theories cannot be asserted as true categorically, but only as having some probability of being true. Fallibilists insist on our inability to attain the final and definitive truth regarding the theoretical concerns of natural science – in particular at the level of theoretical physics. At any rate, at this level of generality and precision each of our accepted beliefs may turn out to be false, and many of them will. Fallibilism does not insist on the falsity of our scientific claims but rather on their tentativity as inevitable estimates: it does not hold that knowledge is unavailable here, but rather that it is always provisional.”

As you may have noticed, Fallibilism holds that a hypothesis can be thought to be more likely to be true, which is, in my understanding of the issue, a form of confirmation. In contrast, Popper believes that, as previously stated, confirmation is a myth. That is why A) I described Popper's position as sophistic. B) I described Popper's viewpoint as a more radical version of Fallibilism.

Most scientists and philosophers accept Fallibilism, but is there a way to increase our belief that a particular hypothesis is more likely to be true? For most philosophers and scientists the answer is Yes. For Popper, No. And that aspect, as I mentioned, is not widely known about his philosophy, so it might be a shock to some.

Here is a quote from Popper’s book, *The logic of Scientific Discovery*:

> “I think that we shall have to get accustomed to the idea that we must not look upon science as a “body of knowledge,” but rather as a system of hypotheses; that is to say, as a system of guesses or anticipations which in principle cannot be justified, but with which we work as long as they stand up to tests, and of which we are never justified in saying that we know they are “true” or “more or less certain” or even “probable.” (2002, 318).

That, I believe, is a very clear explanation of his position. In his book, he expresses his position in various ways, such as saying: “that absolutely certain truth was not attainable” (p. 317).

Another quote from his book is the following:

> “Scientific theories can never be ‘justified’, or verified. But in spite of this, a hypothesis A can under certain circumstances achieve more than a hypothesis B—perhaps because B is contradicted by certain results of observations, and therefore ‘falsified’ by them, whereas A is not falsified; or perhaps because a greater number of predictions can be derived with the help of A than with the help of B. The best we can say of a hypothesis is that up to now it has been able to show its worth, and that it has been more successful than other hypotheses although, in principle, it can never be justified, verified, or even shown to be probable.” (2002, 317).

That is a clear demonstration of how radical Popper was as he holds an almost identical viewpoint of agnosticism. Not only we cannot be completely sure that a theory is true, but we cannot even justify, verify, or show it to be probable. We just need to accept theories that were not falsified and build on top of them.

That raises a question; if we cannot increase the likelihood of a hypothesis after a particular observation report, can we falsify a

hypothesis after a particular observation? Indeed, Popper's theory is entirely based on the ability of falsifying hypotheses, thus we could predict that he says that we can be completely certain about an observation that reports a falsification of a hypothesis. Nonetheless, Popper claims we cannot be completely certain about an observation report. We just need to either accept or refuse it by our own free will.

In my opinion, this is yet another clear example of Popper's radical agnosticism. According to his philosophy, we can never increase our level of belief in a theory, even slightly, and we can never be certain whether it is falsified. According to him, it is a matter of communal acceptance; a matter of decisions at the end.

There is a paradox here; if Popper claims we can be certain of falsifying a hypothesis based on an observation report, why would he deny increasing the level of belief in a hypothesis following an observation report? That would indicate a clear inconsistency in his epistemological foundations. However, if he claims that we cannot be certain about whether the hypothesis is true or false, we cannot be certain about anything, including his claims. That is another application of a simple principle; sophistic claims are always self-destructive and self-contradictory.

Another issue with Popper's views is that if it is all about a decision to accept an observation as a potential falsifier, then there is no concrete way of distinguishing science from pseudoscience because the community of practitioners might just decide to not accept potential falsifying observations, so, in principle, they are still practicing science because they have hypothesis that they are trying to falsify, but it has not yet happened for them to decide to accept a falsifier.

Although Popper refused to say that observations can increase our belief that a particular theory is true, he struggled with a problem that made him come up with a term that he claimed is different from *Confirmation*. Suppose we want to build a bridge, and we have two physical theories; 1) A theory that has been tested and used before in building many other bridges and has not been falsified. 2) A theory that has just been conjectured but never been tested, but it was not falsified as well. According to Popper, they are both equivalent candidates for the bridge project, but are they? This contradicts our basic intuition, which no one would disagree with; the first theory is more reliable because it is more likely to be true, as we have tested and used it numerous times, whereas the second theory is simply conjecture, with no reason to believe it is correct. To address this issue, Popper coined a new term: corroboration. We can think of it as an academic transcript of the theory; its only purpose is to list the theory's past successes, so it is reasonable to use the first theory to build the bridge based on its corroboration; however, just as the transcript does not tell us for certain whether the student will be a successful candidate, corroboration does not tell us anything about the future or the probability of the theory being true. Basically Popper is trying to say that testing a theory makes a difference in decision making but still that has nothing to do with our belief that the theory is true. That, in my opinion, is a misleading move; why would you consider using the first theory over the second based on corroboration? That is undoubtedly because the previous successful tests of the theory increase our belief that it is true and provide insights on the future observations. Why else would we use the first theory if its corroboration means nothing in regards to future predictions and our belief that it is true and reliable? It is obvious that Popper

coined a term and then stripped away all of its meaning. That wraps up most of the important ideas of Popper which we needed to highlight.

As a matter of describing how science worked in the past; Popper claimed that the general pattern of scientific change throughout history has been an endless cycle of *conjecture* and *attempted refutation*. Scientists make a bold, risky claim about the world, then attempt to refute it repeatedly until they succeed, at which point another bold conjecture is made. This is the bottom line of the descriptive aspect of Karl Popper's writings. Popper appears to have been heavily influenced by Einstein's revolutionary work in physics. Indeed, Einstein's work influenced many philosophers' descriptive and normative theories.

6.3 Is Darwinism falsifiable?

If falsification distinguishes science from other fields of knowledge, can Darwinism be considered scientific? Is it possible to scientifically falsify Darwinism based on how it works and the underlying principles and propositions?! The answer is clear: no. It is not falsifiable on their own propositions, so it is obviously not scientific on this basis. And that is what Karl Popper himself said. However, he retracted that claim later. This is another manifestation of the dogmas that science communities take for granted as if it is an unquestionable matter. Darwinism is science, that is the bottom line for them; whatever theory you come up with regarding the essence of science, you must tweak it until we can squeeze in Darwinism.

However, it is worth mentioning that Popper, although considered Darwinism not scientific, he considered a lot of its aspects to be logical truism. And that is why his epistemological

theory is called evolutionary epistemology. Hence, he sees modern Darwinism as the most successful explanation of the relevant facts. However, an essential portion of it is not, according to him, empirical or scientific. Especially the theory of natural selection.

Here is a quote from his book *Unended Quest: An Intellectual Autobiography*:

> "I have come to the conclusion that Darwinism is not a testable scientific theory, but a metaphysical research programme—a possible framework for testable scientific theories." (1976, 195).

Later, he said he was wrong and changed his mind in his paper *Natural Selection and the Emergence of Mind*.

Here is a quote from his paper regarding his retraction:

> "The fact that the theory of natural selection is difficult to test has led some people, anti-Darwinists and even some great Darwinists, to claim that it is a tautology. A tautology like "All tables are tables" is not, of course, testable; nor has it any explanatory power. It is therefore most surprising to hear that some of the greatest contemporary Darwinists themselves formulate the theory in such a way that it amounts to the tautology that those organisms that leave most offspring leave most offspring. And C. H. Waddington even says somewhere (and he defends this view in other places) that "Natural selection . . . turns out . . . to be a tautology". However, he attributes at the same place to the theory an "enormous power . . . of explanation". Since the explanatory power of a tautology is obviously zero, something must be wrong here. Yet similar passages can be found in the works of such great Darwinists as Ronald Fisher, J. B. S. Haldane, and George Gaylord Simpson; and others. I mention

> this problem because I too belong among the culprits. Influenced by what these authorities say, I have in the past described the theory as “almost tautological”, and I have tried to explain how the theory of natural selection could be untestable (as is a tautology) and yet of great scientific interest. My solution was that the doctrine of natural selection is a most successful metaphysical research programme … I have changed my mind about the testability and the logical status of the theory of natural selection; and I am glad to have an opportunity to make a recantation.”

It is worth noting that he described himself as a culprit and that he was influenced by those authorities! As if he is asking the Darwinian priests for forgiveness, as if it were a religious repentance rather than a philosophical debate. These are the key concepts in Popper's philosophy that we are interested in.

7. Thomas Kuhn

Kuhn is probably one of the most known science philosophers in the twentieth century alongside Popper. He’s known for his book *The Structure of Scientific Revolutions*. His book was published as a part of a series named “International Encyclopedia of Unified Science” edited by the logical empiricists. It was a project inside which Kuhn’s book was a trojan horse.

To start understanding Kuhn’s philosophy we must look into the meanings of the terms he coined very carefully. A paradigm in Kuhn’s theory is a package of claims about the world, methods of gathering and analyzing data, and practical habits in the scientific community of a particular field. He saw that *normal science* is the regular processes held by scientists within a particular paradigm. So, there are two kinds of science; normal and revolutionary. The

latter has no clear and agreed-upon standards for justifications of arguments. Each scientific field, according to him, starts within a pre-paradigm era in which scientific work can go on but will not be very effective. As a result, Kuhn does not state that science must work under a specific paradigm at any given time, but that is typically what happens. In the normal science phase, usually there is one paradigm at any given time governing the work being held, but in some occasions, in a particular field, there might be two paradigms at the same time, but that is not the common pattern; The common pattern is one paradigm per field per time.

Kuhn believed that in the normal science phase debates about the fundamentals of the paradigm are closed off, and he claims that is how science should work. Popper, on the other hand, believed that science should always be open to discussing all aspects of the field, including the most basic and fundamental issues. During that phase, according to Kuhn, some theories get refuted by observational reports. The paradigm gives the standards and principles by which these operations are conducted and supervised. And whenever a set of anomalies accumulates and a rival paradigm emerges, the current paradigm is rejected. So, when anomalies accumulate and scientists lose faith in their paradigm, a crisis occurs. The crisis is a time where no candidate paradigm has emerged yet. As a result, scientists come up with a new paradigm which explains those anomalies, and by which a new phase of normal science is taking place under the new foundational principles and tools provided by the new paradigm.

For the most part, I think Kuhn's theory is mainly descriptive. And he is heavily influenced by the change in physics that occurred in the beginning of the twentieth century, which, in my opinion, does not represent a common historical pattern in the scientific

community, for instance, was there a crisis in astronomy before Copernicus? It seems that the descriptive aspect of Kuhn's theory is not as common as people might think. Nonetheless, it is not of my interest to discuss this matter. There are some other aspects that intersect with metaphysics that we need to highlight and discuss. Now, I will start highlighting some of Kuhn's problematic views.

First, he thinks that observations are not a neutral source of information because the current paradigm changes how people see the observation. To some extent, I believe Kuhn's point is valid if he is describing the explanations of the observations, not the observations themselves. If a scientist is biased, that would influence his interpretation of observation data, but the observation data itself is the same, whether the scientist is biased or not. This sounds prima facie and self-evident, but, as you will notice, it is not to Kuhn, as most of his ideas can be described as radical idealism. This is represented clearly in the following quote from his book (Kuhn, 1992):

> "I have argued so far only that paradigms are constitutive of science. Now I wish to display a sense in which they are constitutive of nature as well."

Another quote is the following:

> "That is the last of the senses in which we may want to say that after a revolution scientists work in.a different world."

Here, and in other spots, Kuhn claims the world and reality itself depends on the paradigm. As a result, if a paradigm changes, the world itself changes. If the current accepted paradigm states that space is filled with an incorruptible materia called 'aether', then the space itself is composed of aether. Assume that paradigm had too many anomalies to a critical point, so scientists developed another paradigm that suggests space is made of a different type of

materia called ‘black matter’; as a result, according to Kuhn, space itself changes from being made of aether to being made of black matter. As absurd as it might sound to you, this is the most accurate interpretation of Kuhn’s words in his book. Any other interpretation is not valid because other interpretations deal with Kuhn’s words metaphorically.

The bottom line is that Kuhn made a metaphysical claim that I would describe as sophistic, which is that there is no objective reality and that reality is essentially the product of a group of scientists' minds. It is so sophistic that I am not sure if it is even plausible to write anything to criticise it. It is sufficient to state that making such a claim is clearly self-destructive. If scientists believe that space is made of black matter and I believe it is made of cerelac powder, does my reality differ from theirs? If Kuhn agrees, then everyone lives in their own world, and his claims about how science works should only be applied to his world, not ours. If he says no, it's made of black matter because scientists say so, not you. Nonetheless, we can ask what distinguishes scientists' minds from those of ordinary people in their ability to shape the world. And such a debate could go on for a long time. Sophistic claims and arguments could go on indefinitely.

I believe Kuhn is a clear example of sophism. Unfortunately, the public is unfamiliar with his claims.

8. Naturalism

Naturalism is a term that has no specific agreed-upon meaning in modern philosophy. However, it is still used for a spectrum of ideas that have common fundamental ones. One of the most important ideas that naturalists have in common is that seen nature is the reality, therefore, there is nothing beyond this physical nature at

all. As a result, philosophy should work more closely to science, simply because science studies nature, so do philosophy because nature is all there is.

According to that notion, if we wish to investigate the human spirit or soul, science should do so since spirits and souls are not supernatural—for there is no such thing as the supernatural. It's all physical and natural.

There are two types of naturalism: *methodological* and *ontological* which sometimes is called *Metaphysical Naturalism*.

8.1 Ontological Naturalism

Ontological naturalism holds that any entity is physical. As a result, any mind-related issues should be addressed using scientific fields rather than metaphysical philosophical theories. Therefore, the idea that all spatiotemporal entities must be the same as or metaphysically composed of physical entities is fundamental to ontological naturalism. The need to explain how special entities can have physical effects is the primary motivating factor behind this type of ontological naturalism. Because they believe that if we don't take a physicalist approach to the mental realm, we won't be able to explain how mental events can causally affect our bodies and other physical objects. This is definitely a super wrong assumption. How did they know for sure that only identical entities can cause effects on eachother?! This assumption implies that a physical entity can only cause effects on another identical physical entity. Do we have a good reason to come to this conclusion?! I don’t think so. Therefore, there is no concrete basis for holding that ontological naturalistic view. That is my main argument against ontological naturalism.

In fact, this view is not the one that Newtonians used to hold, in contrast, Newtonians allowed, in principle, that any entity could have an effect on physical ones. Before that, the mechanical philosophers, even though they believed in dualism, they did hold the view that only material entities can have such ability. There is an issue here, what do they mean by material entities? Is it equal to physical? I hold the view that there is no such thing that is not material, but that does not mean that they are physical, which is something I will discuss in the next few paragraphs.

So, the majority of people who identify as ‘naturalists’ believe that there are no supernatural beings. As a result, there are no spirits, and if there are, they are physical and should be studied solely -or primarily - within the context of science. However, most philosophers interpret naturalism differently. Naturalism is often associated with materialism and/or physicalism. There is a minor conceptual difference between Materialism and Physicalism, but it is often difficult to distinguish between a materialist's and a physicalist's views on reality and nature. I discussed this conceptual distinction in my book, Ibn Taymiyyah's Theory of Time and Space. In summary, materialism, particularly the dialectical version of it, considers anything in reality to be material if it is perceived through human senses, regardless of composition or physicality. Materialism in general holds that anything that humans can perceive is material.

Physicalism, on the other hand, holds that everything in reality is physical and cannot be of a different nature. In other words, physicalism adds one more condition for something to be real.

Another thing to consider while refuting this view is that no one can doubt the fact that minds and their ideas have somehow an

effect on a person's actions. We have a clear stance that humans have souls which are somehow associated with how the brains work, therefore there is definitely some association between the non-physical soul and physical entities. But is the soul non-physical though? We cannot be sure. But we still can be sure that souls are material in the dialectical sense, meaning it can be seen and exists independently in reality as it was said in an authentic hadith by the Prophet PBUH.

My final conclusion here is that ontological naturalism is wrong, simply because the absence of knowledge is not the knowledge of absence, i.e. the absence of knowledge that non-physical entities exist and might have effects on physical ones does not mean that non-physical entities do not exist nor they have effects on physical entities.

8.2 Methodological Naturalism

Methodological naturalism suggests that philosophy should collaborate more closely with science. In other words, methodological naturalists suggest that philosophy and science are engaged in the same enterprise. Philosophy and science have some differences, but they are superficial. This implies that philosophers should not provide a foundation for scientific knowledge. This is what Quine claimed in his paper “Epistemology Naturalized.” Another claim he made was that questions in epistemology, such as evidence and justifications, are more closely related to scientific psychology, so there should not be a separate field called “epistemology.” Instead, epistemology should be absorbed by science, this is called eliminative naturalism.

Naturalism appears to be the forerunner of what we call “scientism.” Scientism appears to be a more radical extension of

naturalism, but it is not very different from naturalism as I see it. The issue here is that if psychology absorbed epistemology (i.e. eliminated it), we would understand how ideas and beliefs are formed. But does that say anything about whether this mechanism is good or bad? Science appears to be able to tell us how things work, but not why, nor whether they are good or bad. It is clear that science cannot address normative issues in philosophy. That is why Quine changed his views at the end of his career, making them closer to the term "Normative Naturalism," which is the view that normative aspects of epistemology (like justification) should be retained and not to be absorbed by scientific psychology.

Although there is still a lot to say about naturalism, I will keep this paper simple and stop there.

9. Realism

Just like Naturalism, Realism is sought to represent a wide spectrum of ideas. Scientific realism is a branch term that takes a positive position on current scientific methodology in regards to observables and unobservables aspects. It is important to distinguish between realism and scientific realism. The general term roughly refers to the concept that objects exist in outer reality regardless of one's mind. Therefore, the moon and its properties exist regardless of what any person has to say or think about it. Me thinking that the moon is blue has no effect on the actual moon being not blue. So things in outer reality are independent of anyone's beliefs, linguistic practices, conceptual schemes, and so on.

According to material dialectics, realism is nearly equivalent to materialism, as defined by Marx, Lenin, and Tung. In this regard,

we do not disagree with realism. What really matters to us is the scientific realism doctrine.

There is a common core of ideas explaining what scientific realism really is, despite the fact that almost most philosophers define it in a different approach. At its core, it holds an epistemically positive attitude towards the outcomes of scientific inquiry concerning both observable and unobservable aspects of the world. Realists believe that our best scientific theories are true or approximately true and that their terms successfully refer to things in the world (including unobservables), or that we should believe in the existence of the entities described by these theories. The common idea is that these theories give us knowledge of the world, including unobservable aspects.

To be more exact, scientific realism entails three primary commitments:

Metaphysical claim: Science investigates a universe that exists independently of our minds.

Semantic claim: Scientific claims about the world, even those regarding unobservable entities, should be taken literally as having truth values (whether true or incorrect). This entails accepting theoretical statements "face value".

Epistemological claim: theories that are very well confirmed are approximately true and we are justified in believing that.

Scientific realism is defined as the belief that our best scientific theories provide true or nearly true representations of both observable and unobservable components of a mind-independent universe. Realists often concentrate on "our best scientific theories" and frequently admit that theories may be "approximately true" rather than rigorously true. Hence this claim is called epistemological claim since we believe that we can know

the outside world as it is. They are frequently fallibilists, which means they recognize that even our greatest ideas may be incorrect, yet they still believe there are grounds for realism. Some realists also argue for being selective about which parts of theories or entities to be a realist about, resulting in variations such as emphasizing what explains empirical success (explanationism), manipulable entities (entity realism), or the structure of reality (structural realism). Most of these refined models of realism are a consequence of anti-realists criticisms.

There are several notable variations on scientific realism. These variations are attempts to more accurately identify which components of scientific theories are most deserving of epistemic commitment, which refers to belief or knowing. They use a selective technique, implying that realism is an attitude toward selected components of research that deserve believing rather than science in general.

These variants are often divided into three families or groups.

Explanationist Realism: This view suggests that you should be a realist about the parts of our best theories (like unobservable entities and laws) that are essential or important for explaining their empirical success. This includes components that are crucial for deriving successful, novel predictions. For example, if a part of a theory is indispensable to explaining why the theory works well or makes accurate predictions, an explanationist realist would commit to believing in that part. Some explanationists distinguish between "working posits" (worthy of belief) and "idle parts" (not worthy) of theories.

Entity Realism: This position focuses on justifying belief in unobservable entities (such as electrons or DNA sequences) by demonstrating a high degree of causal manipulation. The premise

is that if you can use your apparent knowledge of something to intervene in other events and get precise results, you have a compelling reason to believe that entity exists. Entity realists frequently combine belief in manipulable entities with skepticism about scientific theories in general. Such commitment would contradict one of the most well-known ideas in natural science, the existence of black holes.

This variation of realism is problematic because it is not always guaranteed that what you think exists always exists because of your intervention as there might be too many probabilities involved that you cannot necessarily confine. Supposing that if you do X and Y happens there should be something called an electron that exists has no guarantee that it really exists as there might be two distinct objects in reality that cause Y when you do X. Or, arguably, there might be none at all but the effect you seem to observe is because of another entity that exists other than the supposed electron. Or, arguably, the effect Y might be because of a property of the already existing objects (excluding supposed electrons) that you do not know about yet.

As you can see, there might be too many probabilities other than what you suppose exists. Therefore, This variation of realism is very problematic.

Structural Realism: This variation recommends being a realist about the structure of the unobservable realm, as represented by certain relations described by our best theories, rather than the inherent "natures" of unobservable entities themselves.

There is an epistemic version, which holds that while we may not correctly describe the natures of unobservable entities, our theories do successfully describe certain relations between them.

There is still a lot to say about scientific realism as there are so many doctrines that need sophisticated criticism but to keep this paper simple and concise I would pass on that.

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