

Language Use and Nature: Foundation of the Philosophy of Science

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Abstract

In this essay, I will discuss how our language use is the key to our philosophy of science. I argue that, our study of language reflects our study of nature. The reason is, as language can be reduced to logical proposition, we can explore the ontological structure of nature with language, as logic and ontology mirror each other. I argue also, as nature is presented to us via sense perceptions rather passive – it does not tell us much, until we started to ask questions and find answers to the questions. For example, Newton saw an apple fell to the ground. Laymen may take such observation for granted, but Newton asked, why the apple fell and he reasoned through it to conclude that mass contains gravitational force. Therefore, due to the fluidity of language and our own creative will, we ask questions in order to understand nature. The reason such phenomena is possible is that, logic is fluid with language, which makes, the order of ontology we understand of nature is fluid too.

Key words: language, philosophy of science, logic, ontology, nature

1. Introduction

One of the prominent question in the study of philosophy is how our language may reflect the physical reality that we are in (nature). With our use of language, we able to express our knowledge of nature and in likewise, with the medium of language too we able to learn about nature. Objects around us constitute the characteristic of our knowledge of the world or nature and we are able to know them because we able to distinguish one object from another object. This distinction is very obvious that we able to give them names, hence subsequently meaning too. The range of such recognition is so wide as much as what our consciousness can arrive too even the unknowns¹ can be distinguished from the known.

In this paper, we may be telling what is evident to our common sense; the link between language and our knowledge on nature, which is science, already explained in brief already. What we ought to explore in this paper is then to analyse how such link is possible. To establish such foundation, we can deny any philosophical attempts to state that language unable to describe nature – as if science is relatively psychological. If language can fall under relativism, must not science that is developed from language will fall under relativism too? For such question, we ought to refute the challenge posed in the question. If science is a matter of

¹ One of the cornerstones of the philosophy of Noam Chomsky is that there must be a “distinction between *problems*, which fall within our cognitive capacities, and *mysteries* which do not.” The term ‘unknown’ and ‘mystery’ used in this paper is referred to the latter distinction. See Chomsky’s *What Kind of Creatures Are We?* p. 27

relativism, then knowledge in our understanding is not possible. In other words, we reject nihilism as a foundation in the philosophy of science.

When we speak of ‘philosophy of science’, we understand it so as the philosophical framework when we establish our conclusion after our analysing of the data we observed and recorded. Stating such statement, then it is clear that we are in the position that science is not separated from philosophy (or to be more precise, metaphysics). To make sense of this, rationalism must be accepted without denying the validation of empiricism. In other words, rationalism would be the centre of the philosophy while empiricism would be its outer layer. An empiricist who rejects rationalism might find this position invalid and not true. The reason is, for an empiricist, an *a priori* framework which derives from *a priori* knowledge, is not necessary in need to establish knowledge. Hence, an empiricist would reject the meaning of ‘philosophy of science’ used in this paper. It is however is important to highlight the way we understand philosophy of science. For the empiricists, philosophy of science would be that knowledge is justified if it is empirically evident. From the rationalist point of view however, empirical evident is not the guiding principle, but rather, intuition motivated by logic and ethics as the foundation of an *a priori* framework whilst the empirical evidence is the representations of knowledge. Since ethical values are many, then from the rationalist point of view, philosophy of science will be many too. For this reason, we say that science does not imposing meaning to our mind, but our mind imposes meaning to it. In this paper, we are discussing this general principle without referring to any particular framework of a philosophy of science, also known as ‘worldview’. Conflicting worldviews may be a problem in order to find what is the truth is, but for the rationalists, without a worldview, knowledge would not be possible. We have to acknowledge however amongst different worldviews, there are similarities in ‘logic’ and ‘basic ethics’, for these are the truth values that we can be certain of, like one plus one is two, and the opposite of good is evil.

2. An Overview on Language and Nature

Language as we know it, is the mean or tool for us to have knowledge. Through the mean of language, meaning is possible which makes communication is possible. But to limit language for the sake of communicating is a futile exercise. It is more worth to know that, because of language, transfer of knowledge is possible and the uniqueness of the use of language itself reflects how unique the human mind is. For the essentialists amongst the linguists, the study of language is the study of the human mind. Language is understood to be a biological part of human being and for this reason, the study of language itself is the key of understanding human nature. For the essentialists amongst the linguists, to study language externally is almost a futile practice, for they hold that it is more rewarding and fascinating to study the internal structure of the language which makes language possible (Scholz, 2020). The internal structure however, the deep structure where language could be possible, or the Universal Grammar, remains unknowable to us which reflects the nature of the world which is equally unknown to us².

The physical world as we may know it, is unknowable to us in some limitations. Despite of some degree of success of the mechanical philosophy in the West during 17th and 18th centuries,

² According to Chomsky, the Universal Grammar or UG is a biological endowment. See *What Kind of Creatures are We?* p. 8

occultism became acceptable again (scientifically) when Newton pointed out that mass attracts other masses without contact. The attraction force between the masses known as gravity. How gravity is possible remains mysterious, nevertheless it is a reality that is accepted as nature. Furthermore, what unique is about the nature is that, even with the ‘unknown’ in hand, further discoveries can be made. Since light behaves as matter, Einstein concluded that light must have mass, hence light will be pulled by gravity to other masses. So light, when it moves in a straight line will be bended if it passes a mass, according to Einstein. Thus, this is the nature of the physical world, where there is a limit to our knowledge of it, yet the limitation is not the end for us to understand more of it.

3. Understanding Philosophy of Science

Our ability to use language mirrors on how much we can understand the natural world. Under the neutral monism program, nature can be described by language. In other words, the occurrence of a natural phenomenon and the language used to explain it are the same but they are represented differently to us (Irvine, 2020). If we take this program and place it at the semantic level of our language use, then we may be able to ‘take a peek’ of the mysterious depth of nature if we consider what the depth of the syntax of our language use can offer. Like what we just mentioned in brief before, there is a sort of parallelism between the Universal Grammar and gravity, that they do exist and our knowledge of them is limited yet they are the forward step in science.

The ‘mirroring’ we mentioned above is the mirroring of logic to ontology.³ For example, it is logical when we express ‘ $1 + 1 = 2$ ’ in our language, and empirically in front of us, we can see when an object is added next to an identical object on the table, there will be two of that objects on the table. Likewise, if we have a syllogism as follow:

Premise 1: John is a chef

Premise 2: a chef works in a kitchen

Conclusion: John works in a kitchen

From that logic exercise, you can confirm it when you see John is working in the kitchen. The discovery on the nature of light made by Einstein applied in the same manner too. With logic, Einstein concluded that since light has mass, then light must be gravitated to other mass (Harrow, 1920: 49). His theory was confirmed by a team of British expedition to Brazil to observe the bending of light under the solar eclipse. If there is no correlation between logic and ontology, then to reason the physical world like what Einstein did would be a futile exercise, and if there would be any correctness then it is to be taken as mere coincidental. In other words, logic that does not mirror ontology and vice versa, would be self-contradicting.

If we agree how logic mirrors ontology and vice versa, then we can agree that logic would be the key for us to understand nature. In understanding nature, there are some areas which are beyond our limited comprehension. However, that limitation is not a hindrance for us for we can use them as aid to reach to another findings. As far as we can concern, our interaction with the physical world is real. As there are limitations within our own intelligent capacity, there

³ Wittgenstein’s *Tractatus-Philosophicus* point 6.13 states that “Logic is not a body of doctrine, but a mirror-image of the world”.

are limitations about nature which is naturally beyond our comprehension. Nonetheless, we are equally confident that, just because something is unknown to us, does not mean that it is not there. We are able to know the character of this mystery so by the clues given in the information or knowledge that we able to comprehend. Given as such, we able to give validity of truth value to the things known to us and things that are unknown to us. With the validity of their truthfulness, we can use them as atoms in logical propositions to explore more of the nature of our physical world. This position implies that knowledge is possible because if it is not, then knowledge available to us cannot be used as atoms in logical propositions. Nihilism then, in this respect, is destructive to the philosophy of science.

4. Logic, Ontology and Philosophy of Science

Language must be based on logic. If it is not then language would be impossible, for there would be no difference between a meaningful utterance of words and noises made from human mouth. Therefore for language to be used effectively, grammar is necessary. Apart from that, an effective language can be reduced to logical proposition (Lee, 2017: Location 791), and logic, as we already mentioned, mirroring ontology that describes our physical world. Therefore, if we study a sentence and we look into how a word carry a meaning in the sentence, in a similar pattern we can place ontological status, or the proper value of a physical object in relation to us or other objects. For example, let's say, "John was having English Breakfast at Sam's Place". One may ask "at what time John was having his breakfast?" The answer to that question is not obvious from the first sentence given. However, with some linguistic investigation and logical deduction, we able to figure out the answer to the question. For example, we may ask "what kind of meal is English Breakfast?" The answer to that is "a breakfast meal taken in the morning." The next question is then "at what time Sam's Place offer breakfast meals?" Let's say Sam's Place offers breakfast in the morning, as in general, restaurants offer breakfast from 9.00 am to 11.00 am. Then, it is safe to assume that John was having English Breakfast in the morning, perhaps within 9.00 am to 11.00 am. Of course this linguistic investigation is limited, for we don't have the empirical evident that Sam's Place doesn't offer English Breakfast in dinner hours. Nonetheless with linguistic investigation via logic, we can arrive to some answer despite limited information were available to us initially. Likewise, when light is known to behave as matter, Einstein might have asked a question that does light has mass, and if it does, then it is subjected to gravity. From that question, he reflects and found the right answer that light do have mass and subjected to gravity. Therefore, through language, by asking questions and reason, we will be able to understand the natural world better despite the limitation of our initial knowledge of it.

'Logic' may be evident to our mind but 'ontology' is not necessary that obvious to our sense perceptions. Therefore, if logic mirrors ontology and vice versa, the obscurity of nature can be made clear to us through the mean of logic. For example, when light is also found to behave as wave, a question to be asked is what is the medium for that wave? If air is the medium for sound wave, then ether is the medium for light. So what is this 'ether'? So far as we can know, it is unknowable to our sense perceptions. Ether was described as neither anything that can be detected with our sense perceptions (Harrow, 1920: 30). But 'ether' although a mystery as it self (in the same way as we mentioned of gravity, unknowable yet scientifically valid) become more knowable to us through our knowledge of Einstein's relativity theory. Physicists would

conclude that, since time and space are relative, there must be a universal referent point to their relativity. The universal referent point is the 'ether', so argued physicists (Harrow, 1920: 58-59). Where sense perceptions failed to arrive at, does not mean that it does not exist or invalid. Reason able to construct the unknown element for our comprehension of it from known elements in nature simply based on logic. Although sensibly we cannot perceive the unknown element of nature, with logic in our mind we are able to comprehend nature's ontology which includes its mysteries.

Therefore, our philosophy of science is based on the notion that 'logic mirrors ontology' and vice versa. Within the limitation of information available to us from nature, with logic we able to explore nature further whilst maintaining its mysteriousness. Using logic on nature is only possible through the use of language, which its semantic can be reduced to syntax in logical proposition forms. Nature as it is, ontologically is independent from our mind, for there are elements of it is beyond our comprehension. Nonetheless, with the mean of language, like the Socratic method, we ask ourselves critical questions (Rutherford, 2018: 11) regarding nature in order to know nature, although not at everything about nature. The unknown elements of nature (due to our limitation in our intellect capability) are not in themselves useless, for as an entity on their own, they are qualified to be a valid truth, which new knowledge can be developed. Knowledge then is possible and not merely a psychological product. Nature is independent from our mind, yet with our mind, we are able to understand nature with limitations whilst the limitations themselves are not meaningless to our understanding of nature.

5. Challenges from Relativism and Responses

One objection may arise is that, since relativism in language is inevitable, how can the philosophy of science be consistent if we insist how important is the use of language in philosophy and science? To answer this question is that we have to revise our knowledge of language itself as we conclude that relativism of language is insignificant to the study of the nature of language to reflect the philosophy of science. For the essentialists amongst the linguists, to study language on the external aspect is a futile exercise. The semantics of a language (or languages) can be in many form for different factors and reasons, but the meaning and intention used by the language users, despite the differences in the semantics are technically the same. For example, the word *kilit* (pronounced as *ki-lit*) in Turkish is meant 'to be locked', a verb to be performed by a subject, whereas in Persian, the word with same sound as '*kilit*' is meant as 'key', an object and noun. Assuming if that, I already speak Turkish and I ought to learn Persian, and my imaginative faculty or intellect cannot associate the sound '*kilit*' to other meaning, then technically speaking, I will fail to learn Persian. But the case for human nature is not like that. Humans able to learn different languages whilst able to differentiate the similar appearances of each different languages to its proper use and meaning which could be different from one and another. Therefore, relativism of language only on the external aspect cannot affect our philosophy of science which language plays an important role. We will return back to this matter later.

As we already discussed in this essay, there are limitations in our sense perceptions to acquire knowledge on nature. However these limitations is not a hindrance. Our knowledge of certain facts about nature can lead us to know about some of its aspects that is beyond our

comprehension – sensibly and intelligibly. The structure of nature, which is ontology, is in harmony or corresponds to logic which we are able to do with our mind. Stating this so, we are not saying that nature is dependent on our mind, like idealists may say so. Rather we are saying that, nature is independent from our mind, only that its ontological structure and the logic in our mind are mirroring each other. This idea can be traced back at least to Aristotle, for he categorized beings into respective genera. Therefore, sense perception is the connection that links nature and our mind.

One of the proponent arguments for relativism of language is that, people with different languages perceive things differently (TED, 2018). For example, a Russian speaker may be able to differentiate different shades of blue, because in Russian there are different words for each shade. Unlike, say, a simple English speaker, only able to distinguish two shades of blue because the vocabularies in his language use regarding the colour blue is only ‘light blue’ and ‘dark blue’. From the example given, we can see that nature does not vary, but what varied was the language, hence perception too. We cannot say, just because we learnt Russian, different shades of blue appear magically in front of us. Rather, the new language facilitates our understanding of nature. However, can a simple English speaker know the different shades of blue without learning Russian? The answer is ‘yes’. All he has to do is the Socratic method, which is asking questions. For example, the simple English speaker may ask, “is it possible for another shade between light blue and dark blue?” With his imagination and experience he would reflect and think, or even experiment. As he came up with an answer he will keep on asking similar questions between different shades, and hence with the aid of language, he named the answers he found accordingly with the likes of ‘navy blue’, ‘sky blue’ or ‘sapphire’ and ‘azure’. Therefore, our sense perceptions may be limited to our language use, but our language use is not limited. It is only limited to our creativity. Hence, by asking questions via language, we are able to expand our horizon (the Socratic method).

Therefore, it is premature if we suppose that the limitation of our world is the limitation of our language⁴. The reason is our language may be limited, but it is not truthfully reflecting “our world”. Sense perception is then like a static canvas, but with linguistic form of questions we are able to analyse the static canvas and discover its intelligible significance. The limits of analyses we can make is only limited to our creativity and willingness. Our use of language, is necessarily means that our use of thought and reasoning. Therefore, sense perception, like the static canvas, “can paint a thousand words” if we use our language correctly to analyse it. Language, with logic ‘beneath it’ through its grammar, can help us to put the sensible data or images we perceived in logical manner, and further to analyse it by systemizing meanings connoted in the language itself. Language also can be reduced to logical proposition so logical analyzation can be done more efficiently.

6. Additional Remarks

Language that we are concerned with, it is not so much on the external aspect, but the internal aspect of it, albeit we use language at its external, as we are doing now. Apart from different languages, motivations by different cultures, regions of the country and time-era, may give a strong thesis for the relativism of language. The relativism of language however could not

⁴ See point 5.6 of Wittgenstein’s *Tractatus-Philosophicus*.

affect our take on the philosophy of science. If nature (via sense perception) is like a 'static canvas' and our language bring forwards knowledge from it, a varied ways of language expression will not change our knowledge of nature. This is because, the aspect of language that we are concern with when we use it in studying nature is at the syntax level, not semantic, and the syntax of the language can be reduced to logical proposition. 'Logical proposition' in this context is then is universal and not challenged with relativism. Nonetheless, students must not take their language for granted. If students are concerned more with the syntax more than the semantic, then they have to use grammar in their language properly, for grammar is the logical framework of the language. Error of grammar can lead to an error of logic in a language.

The father of Western rational science, Descartes, is known for his method of doubt in his philosophy. He doubted his sense perceptions and this lead to the establishment of the idea of mind which is separate from the body (Cartesian dualism). Nonetheless, we often overlooked I think, Descartes in the end accepted the validity of sense perception because God, as pointed out by Descartes, is not a deceiver.⁵ Therefore in this sense, empirical experience and evident is valid for our knowledge of science, but it is only secondary so, after reason. Descartes is not the first traditional rationalist in this sense because Plato already made a strong case that innate knowledge is possible. Plato made a point that, often when a difficult subject that we easily not able to express it in language (because we lack in experience of it, but somehow we know about it), we often draw an explanative diagram of it. Descartes gave 'geometry' as another example of innate knowledge. Without pleasing any empiricists, we may argue that, sense perception is valid for our knowledge of science, but it is only secondary to reason.

Therefore, the relativism of language will not affect our philosophy of science. If language and our sense perception of nature are the same but presented differently to us as suggested in neutral monism, then relativism of language will be a problem to the philosophy of science. But we do not belong to this school of thought. We argued that, nature via sense perception is like a 'static canvas', but the dynamism of our language able to push our horizons to understand nature better and increase our knowledge of nature. This 'language' as we already argued too, although it is used on a semantic level, its meaning is used at the level of its syntax which is reducible to logical propositions. Therefore, we do emphasize reason over sense perception (without denying the importance of sense perception) as the basic model of our philosophy of science.

Like Newton and Einstein, we agree that empirical evidence is important in science (Howard, 2019). However, we do recognize that there are elements which are beyond our sense perceptions, yet scientifically valid in our philosophy of science. Examples such as gravity, ether, universal grammar and the consciousness of human mind are examples that make the science of physics and human nature fascinating. Unknown factors in physical theories (which corresponds to empirical experience) are necessary in the equations. Their absence may suggest a collapse in logic and reduce 'knowledge' to impossibility. Sense perceptions is important in science, however, it is not everything. Human reason able to acknowledge the 'unknowns' in nature of the physical world and understands it as an important component in their scientific worldview.

⁵ See point XXIX and onwards (where relevant) of *The Selections from the Principles of Philosophy* by Descartes.

7. Conclusion

The importance of understanding the structure of language as a reflecting the philosophy of science is the centre theme of this essay. Language, as we understand, ultimately reducible to logic, and logic mirrors the ontology of nature, hence with worldview in mind, this becomes the philosophy of science. Nature, we perceive them via sense perceptions, but the perceptions that we perceive is rather passive. It is with language that we able to explore nature by asking questions and provide answers to them too. Because language can be reducible to logic, we can say that, it is with logical tools that are innate in us that we are able to explore the ontological structure of nature. With language, we able to understand and explore nature – the purpose of science.

According to Plato, the highest form of knowledge is the knowledge of the self. In other words also, it is the knowledge of human nature. According to Chomsky, the study of language is the window to the study of the human mind, hence the study of human nature. Relating this idea to Plato's, we can see that, when the knowledge of human nature is known, our interpretation or understanding of nature will reflect the psychology of human nature. In other words, our understanding of the psychology of human nature will not be in contradiction with our understanding of nature. The point made in this paper regarding this aspect is that, both in human nature, and nature, there are some aspects of unknowns which are epistemologically valid.

The purpose of science is to understand nature and this knowledge includes our understanding of human nature too. To understand nature is to understand its limits, functions and relations with each other. With human creativity, the knowledge can be put in use for goodness like medicine, engineering and technology. Furthermore, it is the exploration of nature with the human mind that satisfying our limited time on earth. Stephen Hawking's physical movement may be was restricted, but it was with his mind exploring the universe is what he was grateful for.

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