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Numerical Methods in Engineering  
Communication Skills

# **Empiricism**

Extended abstract

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December 17, 2019

## Empiricism

### Motivation

How do we know what is real and what is not? Science gives a clear answer: test your hypotheses with experiments and check whether they hold. However, how do we know that is a valid method? How can we tell our senses are not misleading or straight up lying to us? How can we be certain that anything exists beyond our thoughts? These seem like strange questions but the answers to them are the very foundations of modern science. If reality cannot be known through perception, all our modern scientific knowledge falls down like a house of cards. Knowing how to know is at the very core of modern science, yet this debate has been raging for centuries. In this report, we explore the perspective of various relevant philosophers on the topic of empiricism: the idea that perception is the key to knowledge. This report is based on [1].

### Predecessors

**Plato (427 - 347 BC)** Perhaps the most famous of greek philosophers. In agreement with earlier pre-Socratic thinkers, thought that empirical knowledge was inferior to logical derivation because of its subjective and ever-changing nature. He preferred mathematics, due to their abstractness and immutability. His student, **Aristotle (384-322 BC)**, disagreed with him and argued that both observation and mathematics are necessary.

**Thomas Aquinas (1225 - 1274)** The scholar lived in a time after greek philosophy was rediscovered by Europe. He, like many of his contemporary monastery-educated *Scholastics*, thought that philosophy and science had reached completeness.

### Rationalism versus Empiricism

**René Descartes (1596-1642)** A staunch rationalist, argued that scientific knowledge had to derive from mathematics and logic. He believed people are born with innate knowledge granted to us at birth by God. He went so far to doubt all human perception, and argued that knowledge had to be assembled from the inside out.

**Francis Bacon (1561 - 1626)** Empiricists argue that math and logic are a self-enclosed set of knowledge that, on their own, cannot hope to explain the outside, real world. Bacon argued in favour of induction, or *drawing conclusions from the evidence*. **Hobbes (1588-1679)** agreed with him, and added that our own thoughts are representations of real world objects.

### Empiricism on science matters

Empiricism on science matters has also brought material of debate on whether the most essential logical and mathematical statements are something independent of human perception and therefore a guaranteed certainty or are rather a knowledge acquired from observation. The following authors expressed ideas regarding specially the uses of induction and perception on understanding the world outside our thinking mind.

**John Locke (1632-1704)** His most famous essay begins disagreeing with Descartes, and supporting that the mind starts as a clean slate at birth. Ideas come from sensation. He argued that we are predisposed to classify experiences as clusters, forming ideas. The idea of an orange is the combination of the sensations of its smell, shape, colour, taste, et cetera. These ideas, and the mind itself are however immaterial substances that cannot

be perceived. He postulated that words act as a surrogate to ideas. His philosophy was very influential to later authors.

**George Berkeley (1685 - 1753)** Berkeley reinforces the notion of equivalence between thinking about an existing physical object and seeing it, therefore stating that there is no possibility to imagining an object without actually thinking about it, the same way that we cannot talk about something that is not being perceived at the moment. Eventually, he concludes that 'existing' is related to 'perceiving'. Let us analyze this statement with some examples:

- **The Apple** If we put an apple on a room and exit the room afterwards, it would cease to exist, as it is not being noticed at the moment. However, it exists somewhere as an idea waiting to be perceived.
- **Live in other planets.** Interestingly, Berkeley recognizes that even if we cannot imagine something which we have not seen and perceived does not mean that it cannot logically exist, such as conceiving life in other planets. Nevertheless, it remains impossible to proof such a thing as there has not been a previous observation experience to rely on it.
- **Space and Time** The current philosopher dears disagreeing with Newton in the sense that Time and Space exist regardless of anything external, as Berkeley regards it as being relative and existing only in our temporal minds. In the same way, numbers nor maths cannot be empirical as they have been invented by humans and do not exist outside our mind, although being useful when determining links between different ideas.

The main point of his deductions is then that we cannot know (by experiencing) something which we have not experienced yet, such as the fact of being in love. Then, on addressing the way in which humans generate ideas when talking to or listening to another person, he suggests, in accordance with Locke, that minds store ideas which in turn are the source of words, although practice makes possible for these ideas not to be continually present in the mind when communicating.

**David Hume (1711 - 1776)** David Hume introduces the idea of induced thought, and suggests that in science humans come to general conclusions by observing and experiencing. That is how he explains physical phenomena and recursive situations, just by making general a process of induction through looking at the same case for several occasions. However, we can never be certain of it, as he states that the truths of mathematics and logic are the only reliable source of information humans have, independent of human perception. Then, on how is knowledge stored and available in our minds, he again supports Lock's vision and introduces the concept of impressions (which are indivisible, coherent and constant) that connect together to form and comprehend more complex ideas and problems. However, he goes a step further and suggests two kinds of possible knowledge: relations of ideas (depending only on conceptual analysis) and matters of fact (only verified by observation). Summing it up with some examples:

- **The Sun.** The sun comes up every day, therefore by induction we may say that it will rise tomorrow again. However, we cannot be completely sure about it as we arrived to this conclusion by observation, and some day the earth may get away from its orbit.
- **A mermaid.** If there are no ideas without impressions, what would the idea of a mermaid be, for instance? His answer is that the *mermaid* idea is made of two impressions: a woman and a fish.

Interestingly, Hume also wondered which would be the impression associated to the concept of our thinking mind, when it is the organ that produces impressions. We have not any impression of it!

Hence, Hume used the tools of empiricism to challenging all that we appear to know, concluding that we only know a few things for sure, which are mathematics and logic. For the rest, it cannot be made deductive,

however reliable it appears to us, as it is extracted by observing a world which in which we may rely upon but may surprise us some day. On the other hand, logic cannot either be extrapolated to achieve conclusions on other fields as facts cannot be translated into moral conclusions.

**John Stuart Mill (1806 - 1873)** Mill introduces the concept of Possible Sensations when referring to human knowledge on physical objects, and states that humans (or even other species) recognize physical objects by the sensations which they produce or we imagine they may produce to us. In this way, humans store all experienced sensations so that we may come to expect similar or equal sensations in the future.

Moreover, Hume does not longer explains the existence of physical objects by visually perceiving them, such as Berkeley did, nor it is necessary the presence of a God to keep these ideas. He simply understands matter (being it perceived or not in practice) as a bundle of possible sensations that cause object-like experiences, such as seeing food may cause us to be hungry. Objects are therefore recognized as being objectively real and not a product of our perceptions of them.

On the other hand, he is a true empiricist when saying that all our knowledge has its origin in experience. The latter means that even the most essential deductive knowledge accepted by other authors (mathematics and logic) is now at the stake and turned inductive as well. Mill arguments his position by saying that mathematics and numbers in general are a generalization from the things we have observed, so that if two chairs and two chairs make a total of four chairs it is because we have not experienced other possible sums of chairs before, not because two and two chairs making three chairs would be logically impossible. This keeps seeming utterly implausible to other philosophers though.

So, what does Mill think on gravity's law for instance? He says that the fundamental laws of logic that rule the world are also derived from our observations, therefore we can never be completely sure about all apples falling from the three because it is an inductive generalization which is only probable.

However, again, Mill recognizes the usefulness of induction as being fundamental to the scientific activity, which is the bridge towards making mere empirical observations into something substantial. He was a classic liberal and believed that all individuals should be free, specially from governments unless their own life or freedom was threatened. At first he believed in capitalist economics because he thought it would produced the most happiness for the most crowd but later on became more sympathetic to socialist ideals.

**Bertrand Russell (1872 - 1970)** Russell was convinced that mathematics is somehow reducible to logic and spent many years to prove this but he was unsuccessful. he was probably the last of the philosophers that believed epistemology and perception should be the central problems of philosophy. Russell accepted most of the doctrines of the British Empiricism. He believed that all our sensory experiences are caused by physical objects but because the sensory system is individual this knowledge is relative. He said that what we experience is "sense data"- all the colours, textures, smells and sounds. They are data because they are really informative and given and they are not controlled by us. He believed that although we can not prove the existence of the physical objects but the sense data are indubitable. He believes that we are not directly in contact with the physical objects but with the sense data and we have some inner knowledge of some internal mental phenomena like beliefs and doubts and general ideas like brotherhood. He believes that the smallest particles of our knowledge are this sense data and all other knowledge is made of this. He states that because sense data are both objective and subjective than they should be neutral and the atomic facts about the world seem to have no logical connectivities. Russell is mainly famous because of his work in Principia Mathematica in which he shows how can logic be mathematised.

**A.J. Ayer (1910 - 1989)** He is the last great British empiricist. Most of his attention has been on language and logic. He believes that because our language is made of some substances and we use them does not mean that the real world should also correspond to the same qualities. He was another phenomenalist like Mill and Russell and believed that the existence of the physical objects is unprovable. Phenomenalism doubts wether material objects exist without an observer independently or not. Ayer believed that the propositions of

mathematics had meaning but mathematical truths were empty tautologies. Ayer believed that philosophers are not here to construct systems from a few self evident truths and they don't have access to any hidden truths, but they exist to engage in logical analysis and that is all. In case of religion Ayer agreed with Hume, "A benevolent God will save our souls" is impossible to verify or test.

For ethics Ayer insisted on his theory of Emotivist Theory, which states that all ethical statements are expressions of individual feelings. Like the statement war is wrong is the individual feeling of the author meaning "I dislike war". Ayers verificationism came under attack and he himself confessed that it is false because the theory itself cannot be verified and is not testable. In terms of language he agreed with Russell that the language can be atomised to small logical particles but a lot of our communications cannot be broken down into logical particles, so verification is not useful for determining the general theory of meaning. Wittgenstein stated that it is nonsense to look for that one big thing that gives language meaning. He says that language is only a useful tool for human beings to communicate and it can be misleading for philosophers to try to find the meaning of some useful words like art, goodness and meaning.

## Conclusion

Empiricism has always given the word "know" a rather special meaning. We can only ever truly know things that are beyond all possible doubt, for Plato this was mathematics and Archetypal forms; but later Descartes stated that "all we can know is that we are thinking". But most of the 20th century philosophers state that this depend on how we really define words like know, doubt and meaning. Empiricist philosophy declares that the most obvious and important source of knowledge is perception and this is why it is hostile to sources of knowledge like reason and intuition. But it is also very modest. It rarely makes claims of knowledge of hidden truths so it is unambitious because it recognises that we either have a very limited or no contact with the external world. This makes its foundations immune from sceptical doubts. So the foundational certainties of empiricism is that our senses deceive us. Empiricism tries to depend on the sense data that we receive from the outside world and not on our personal beliefs, so it is somehow basic.

In general every empiricist argues that sense data are foundational because they are exactly how they appear. We can never be wrong about them or make mistakes. This is a fact that a lot of philosophers have used to deny that sense data cannot be knowledge because they're not questioned or doubted. The most convincing reason that we have that sense data exists is based on what science tells us about how we see the world. This process of seeing is done so rapidly that we naturally think what we see is the outside world so basically its like a little version of me inside my brain is watching the screen of the outside world like a TV but this assumption doesn't actually explain much and makes the mystery of perception even more superfluous.

There is a fact that the very existence of sense data is dependant on observer relativity so many people have had experiences that are wrong for example seeing the mirage in the desert, so sense data are an internal mental phenomena. But some philosophers argue that by exaggerating on some rare cases of unreliability of the sensory system and inferring from this that all our experiences are indirect is not correct. After all we know that some experiences are unreliable and after experiencing again we gain the knowledge that the old experiences were wrong but after all we don't have any proof that one of this observations is true, beyond possible doubt.

## References

- [1] Bill Mayblin Dave Robinson. *Introducing Empiricism: A Graphic Guide*. Fourth Edition. Icon Books, 2013. ISBN: 1848315082,9781848315082. URL: <http://gen.lib.rus.ec/book/index.php?md5=1486F1D1B08E5FCFD66680FF5F4740B9>.