

For some people science is the supreme form of all knowledge. Is this view reasonable or does it involve the misunderstanding of science or knowledge?

In today's society, science is regarded as being the most trusted form of knowledge, leading to many claiming it to be the supreme form of knowledge. To investigate whether or not this is justified we must compare science to other forms/areas of knowledge and consider what they each contribute.

The strongest argument science has to claim this title, is the objectivity and empirical nature of its method and in particular its verifying processes; mainly based on inductive and deductive reasoning. Modern science is closely related to inductive reasoning and is presented as a distinctive feature of scientific activity today. Induction works by verification: correspondence process, which involves making predictions about the future based on past experience. However, problems with this technique limit the validity of the conclusions drawn from it. Primarily the problem is the degree of accuracy attached to any conclusion made, which is tied to the number of observations that confirm with it. Likewise, the appearance of a single observation that does not conform to the general law invalidates the conclusion. In comparison, Deductive reasoning is a more accurate verification technique, as it does not allow for 'degrees of accuracy'. It works through verification: coherence process, which involves formulating a general law which becomes standard and by which any further examples are judged against.

Eventually scientists have come to realise the methodological problems with these two techniques of verification. In an attempt to eliminate these fundamental errors, scientists have attempted to incorporate the fundamental aspects of inductive and deductive reasoning, whilst also attempting to eliminate their major flaws. The most prolific of these adapted verification processes are the Hypothetico deductive model, a modern formulation associated with famous scientists such as Popper and Hemple. It works by using a combination of both verification techniques, claiming that what distinguishes scientific hypothesis from a non-scientific hypothesis is not its origin, but the formers capacity to stand up to testing. The name comes from the claim that the starting point is the hypothesis, from which we can predict that particular events will occur under particular circumstances. This prediction is a deduction from the initial hypothesis, and if events occur as predicted then the hypothesis is confirmed. Confirmation of the hypothesis is inductive, simply because if the hypothesis holds true x number of times, we claim that it always will hold true. This confirmation of the hypothesis process is the part of the model that encompasses inductive reasoning, as when using this method one only has access to a limited number of events.

Although the Hypothetico model was developed to incorporate advantages of both types of verifications, by using inductive reasoning as confirmation processes, it is still affected by the fundamental flaws of inductivism and basic criticism of the original scientific model. Questions such as, Why is it legitimate to assume that things will continue to behave as they always have done?, continue to be ignored and affect the validity of any conclusions drawn using this technique.

In response Karl Popper suggested a further model that could possibly eliminate these. Popper believed that the solution was to deny that inductive reasoning is the basis of science, developing the principle of 'falsification'. He argued that true scientific method should consist of scientists trying to disprove their theories and only when all attempts had failed could they conclude that the theory was likely to be correct. Scientists should assume that their theories were temporary, until any contrasting evidence emerges forcing the theory to be disproved or re-assessed.

A second favourable aspect of Science possibly justifying its claim is the clear links between science and its application to technology. Over time the public have witnessed technology developing due to scientific advances and today's continued technological progress are a constant reminder of sciences effectiveness and success.

The last of sciences advantages is that it can boast a gradual accumulation and refinement of knowledge drawn from history, allowing one to learn from past mistakes and avoid repeating them, which is called historic introspection. The use of historic introspection is best exemplified by Thomas Kuhn in his book "The structure of scientific revolutions"*⁽¹⁾, in which he proposed one of the most radical theories of the model of science. Kuhn argued that all scientific activity operates within a framework of basic assumptions about the world, which he termed 'Paradigm', within which all scientific activity that took place did not question these fundamental assumptions.

According to Kuhn, these periods of normal science give way to crisis breakdown in which certain anomalous events arise that theories within the existing paradigm fail to adequately explain. In response, conflicting theories of this paradigm develop resulting in a paradigm shift; a consensus within the scientific community for a new or different paradigm.

In characterizing this period, Kuhn states

"Confronted with anomaly or with crisis, scientists take a different attitude toward existing paradigms, and the nature of their research changes accordingly"

This claim originally aroused strong reactions as it suggests that science 'reality' is, at least partly, construed by the paradigm from which it is viewed which implies that science is not based upon objectivity/rationality. However, despite these criticisms, there are many examples of well-respected scientific theories that have developed from this method. The most renown of paradigm shifts in history is the emergence and eventual acceptance of Copernicus & Galileo's radical theory of astrophysics.

It is clear that science has a number of distinctive aspects, resulting in the claim that it is the supreme form of knowledge. However, in order to accurately assess this we must also explore conflicting views.

* (1) *Structure of Scientific Revolution*, a book in which Thomas S. Kuhn explains the process of scientific discovery. It remains one of the most influential academic books in this century despite many of Kuhn's theories being powerfully challenged, generating a good deal of controversy.

The first major conflicting argument is that despite boasting its objective and empirical nature, scientific methods are essentially based on “observation and experiment” which are inevitably personal subjective perceptions of sensory input. Both our sensory organs and instruments are limited and fallible and therefore every piece of knowledge, data, information or evidence garnered by experiment, observation or experience is also subject to the limits of our instruments, our senses, uncertainty, relativity and to individual human perception. Therefore anything investigated upon by science, any knowledge or information that is tagged ‘empirical’ cannot be regarded as true or absolute.

“There are only human perceptions of limited data of unknown accuracy that is statistical in nature that we use to build our models of an ever changing non absolute universe which is in indefinable part of our reality”

This argument implies that science can never be regarded as the supreme form of knowledge as there are mistakes in the way in which we perceive and process information, and any conclusion derived from information that was processed in the wrong way are invalid.

This is supported by the theories proposed by the famous philosopher David Hume (1711 – 1776), a sceptic concerned with the limits of knowledge and laws of causation. In his “Essay of understanding” he outlined a number of problems with the verification process of inductive reasoning, which science currently uses as its most basic technique for testing hypotheses. Firstly one cannot be certain that the future will conform to the past, and secondly it is never possible to test all particular phenomena to the general law, leaving the possibility that there is one that does not conform. Therefore according to Hume, science cannot provide us with accurate knowledge and should not be given such a high status.

Another criticism of the scientific method is that as science is based on “falsification” there is a possibility that what is now regarded as the most fundamental of scientific facts could easily be proved wrong in the future resulting in further paradigm shifts.

The second most viable argument against this claim is that science does not provide everything required of knowledge. Humans are both rational and emotional and science can never be supreme form of knowledge, as it does not provide both of these aspects. This view suggests that other forms of knowledge are needed to satisfy other human needs.

Existential attitude focuses on other areas of knowledge i.e. art, mortality and ethics to provide the other kinds of knowledge. This attitude acknowledges the importance of feelings and emotions, which cannot be explained or understood by science.

Edmund Husserl demonstrated this point by emphasising the separation between the scientific and the existential attitude in his book ‘Cartesian Meditation’*(2),

*(2) The "Cartesian Meditation" engages with crucial issues of what we might call the place of phenomenology in the human (social, existential, etc.) world, and the place of various aspects of the human world (e.g., science, phenomenology itself...) in phenomenology

“...Science negates what it is to be human...”.

The importance of other forms of knowledge can be illustrated by art such as Picasso's famous and highly emotive painting of the 'weeping women'. Within one painting Picasso has succeeded in evoking more meaning about human life than science could ever try to explain or understand. It completely subverts the classical concept of beauty and conveys in one picture the sheer dreadfulness of war, John McCrae's famous war poem 'in Flanders Fields' has a similar effect.

As discussed, it is clear that science has many valid claims as supreme form of knowledge. However in investigating this further, I have found two essential reasons why this claim is not reasonable. Firstly, there are the fundamental problems within its own method, the very foundation of its claim to supremacy and secondly science does not provide all of the different types of knowledge that a human requires.

In conclusion I believe that this statement is essentially a misconception. I have discovered that Knowledge can be anything, fact and fiction. Likewise I acknowledge that science is an essential source of knowledge as it provides one way of finding logical truth about the universe and a means to promote one's ability to understand his surrounding. However, ultimately, science provides only a small fraction of knowledge that we require, and is not the supreme form some claim it to be.

Sources

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