



PROVA DE PROFICIÊNCIA EM LÍNGUA INGLESA

Nome: _____ Data: 07/05/2019.

Science as knowledge derived from the facts of experience

A widely held common sense view of science

In the Introduction I ventured the suggestion that a popular conception of the distinctive feature of scientific knowledge is captured by the slogan "science is derived from the facts". In the first four chapters of this book this view is subjected to a critical scrutiny. We will find that much of what is typically taken to be implied by the slogan cannot be defended. Nevertheless, we will find that the slogan is not entirely misguided and I will attempt to formulate a defensible version of it.

When it is claimed that science is special because it is based on the facts, the facts are presumed to be claims about the world that can be directly established by a careful, unprejudiced use of the senses. Science is to be based on what we can see, hear and touch rather than on personal opinions or speculative imaginings. If observation of the world is carried out in a careful, unprejudiced way then the facts established in this way will constitute a secure, objective basis for science. If, further, the reasoning that takes us from this factual basis to the laws and theories that constitute scientific knowledge is sound, then the resulting knowledge can itself be taken to be securely established and objective.

The above remarks are the bare bones of a familiar story that is reflected in a wide range of literature about science. "Science is a structure built upon facts" writes J. J. Davies (1968, p. 8) in his book on the scientific method, a theme elaborated on by H. D. Anthony (1948, p. 145);

It was not so much the observations and experiments which Galileo made that caused the break with tradition as his *attitude* to them. For him, the facts based on them were taken as facts, and not related to some preconceived idea ... The facts of observation might, or might not, fit into an acknowledged scheme of the universe, but the important thing, in Galileo's opinion, was to accept the facts and build the theory to fit them.

Anthony here not only gives clear expression to the view that scientific knowledge is based on the facts established by observation and experiment, but also gives a historical twist to the idea, and he is by no means alone in this. An influential claim is that, as a matter of historical fact, modern science was born in the early seventeenth century when the strategy of taking the facts of observation seriously as the basis for science was first seriously adopted. It is held by those who embrace and exploit this story about the birth of science that prior to the seventeenth century the observable facts were not taken seriously as the foundation for knowledge. Rather, so the familiar story goes, knowledge was based largely on authority, especially the authority of the philosopher Aristotle and the authority of the Bible. It was only when this authority was challenged by an appeal to experience, by pioneers of the new science such as Galileo, that modern science became





possible. The following account of the oft-told story of Galileo and the Leaning Tower of Pisa, taken from Rowbotham (1918, pp. 27-9), nicely captures the idea.

[...]

Two schools of thought that involve attempts to formalize what I have called a common view of science, that scientific knowledge is derived from the fact, are the empiricists and the positivists. The British empiricists of the seventeenth and eighteenth centuries, notably John Locke, George Berkeley and David Hume, held that all knowledge should be derived from ideas implanted in the mind by way of sense perception. The positivists had a somewhat broader and less psychologically orientated view of what facts amount to, but shared the view of the empiricists that knowledge should be derived from the facts of experience. The logical positivists, a school of philosophy that originated in Vienna in the 1920s, took up the positivism that had been introduced by Auguste Comte in the nineteenth century and attempted to formalise it, paying close attention to the logical form of the relationship between scientific knowledge and the facts. Empiricism and positivism share the common view that scientific knowledge should in some way be derived from the facts arrived at by observation.

There are two rather distinct issues involved in the claim that science is derived from the facts. One concerns the nature of these "facts" and how scientists are meant to have access to them. The second concerns how the laws and theories that constitute our knowledge are derived from the facts once they have been obtained. We will investigate these two issues in turn, devoting this and the next two chapters to a discussion of the nature of the facts on which science is alleged to be based and chapter 4 to the question of how scientific knowledge might be thought to be derived from them. Three components of the stand on the facts assumed to be the basis of science in the common view can be distinguished. They are:

- (a) Facts are directly given to careful, unprejudiced observers via the senses.
- (b) Facts are prior to and independent of theory.
- (c) Facts constitute a firm and reliable foundation for scientific knowledge.

As we shall see, each of these claims is faced with difficulties and, at best, can only be accepted in a highly qualified form.

CHALMERS, A. F. **What is this thing called Science?** Third edition. Hackett Publishing Company, Inc. Indianapolis/Cambridge; 1999.



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1- A partir da leitura realizada, diga qual é a concepção de conhecimento científico adotado pelo autor.

2- Qual é a relação estabelecida pelo autor ao mobilizar voz de H. D. Anthony (1948, p. 145) para argumentar sobre método científico?

3- Qual foi a culminância promovida pelo desafio à autoridade exercida por Aristóteles e pela Bíblia nos estudos científicos?





4- O autor apresenta duas escolas que têm, em comum, a tentativa de formalizar a visão geral da ciência e do conhecimento científico. Quais são essas escolas? Conceitue-as.

5- Comente, com argumentos do texto, a seguinte afirmação: “science is derived from the facts”.
