

THE REQUIREMENT AND RESISTANCE OF DETERMINATIVE THEORETICAL STRUCTURES IN SCIENCE

The history of scientific knowledge does not conform to positivist inductive and Popperian falsificationist approaches. These approaches concentrate on the relationship between theories and singular propositions (observational propositions) and, accordingly, can only provide partial explanations about science.

For a holistic explanation of scientificity, the following qualifications need to be revised to match historical data.

a. Not getting away from the phenomenon / fact (assurance of objectivity and universality)

b. Theoreticalization (Increasing power of explanation and foresight)

c. Progress

a. Not to Get away from the Fact: “Not to get away from the fact” refers to the necessity that the proposition, which is seen as the basic form of knowledge, has a content and should refer directly or indirectly to reality (or part of it). As previously discussed, a particular observation proposition refers to a specific empirical determination in certain time and space coordinates, and complex or theoretical propositions are valid knowledge proposals as long as they have logical links to such propositions. On the other hand, it can be seen that it is not possible to switch from a particular observation proposition only through induction to a universal proposition containing a theoretical term. So where does the contextual meaning of theoretical terms come from in such propositions?

I. If the concepts gain their meaning through 'definition', this will require a 'structure' in which the definition will be made. Because a definition requires to know the meanings of other concepts and terms in advance. These terms and concepts referred to also require the meaning of other concepts and terms in advance. So, unless a person knows the meaning of many words in advance, the dictionary is useless. Newton could not describe 'gravity', 'mass' and 'force' in pre-Newtonian terms. So a new set of concepts is necessary for a new concept.

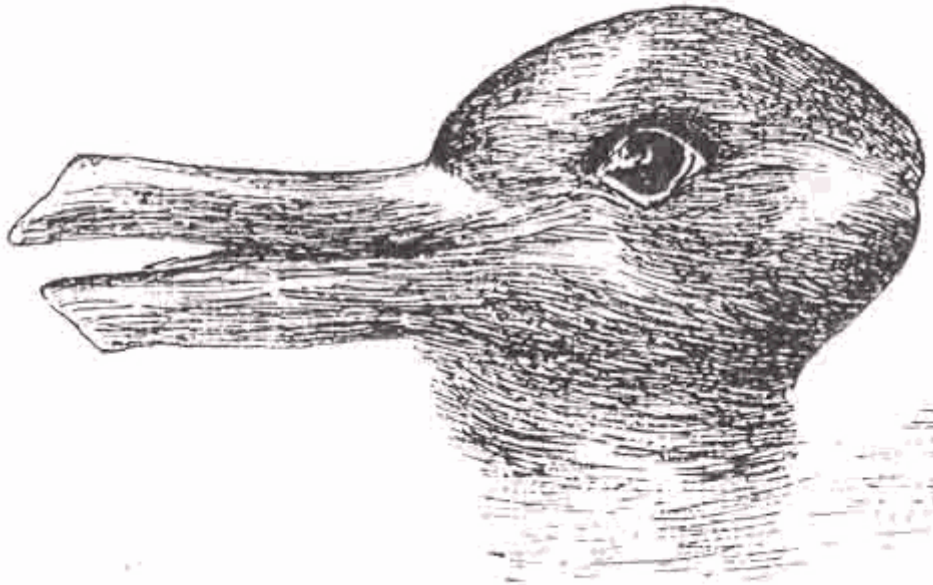
II. Concepts such as "mass", "molecule", "invisible hand", "subconscious" cannot be reached through observation if the meanings of the concepts are to be fixed by means of identification. However, these concepts can be associated with empirical data after hypothetically proposed. In this case, once again, the concept set prioritizes the concepts.

History of Scientific Thought

Topic 9

The priority of theory and consequently the theory-ladenness of empirical data approaches refers to a contextual or historical a priori. There is no mention of a contented a priori structure or knowledge prioritizing the whole experience, as rationalism suggests. It is a priori assumptions that structure a particular kind of experience or a particular historical experience.

These preliminary assumptions and structure are mandatory for information. Depending on this imperative and the theory-ladenness of empirical data, the transition from one structure to another is similar to the transition between two different worlds, and the structure to be abandoned resists this change. If the Rabbit / Duck example is remembered, it is possible to visually switch between two patterns, but it is not possible to see both a rabbit and a duck at the same time. Suppose a scientist who has received all his professional training to see rabbits for knowledge production. It is difficult to persuade that scientist to see a duck in the same place.



If the theory that makes the 'Rabbit' empirical data visible is 'A', and the theory that makes the 'duck' empirical data visible is 'B', a person adhering to the A theory will resist the transition to the B theory. Empirical data evidence is insufficient for this transition. So this transition is as sociological as it is epistemological.

History of Scientific Thought

Topic 9

Scientific theories are complex structures in this context. Thomas Kuhn has broadly called these structures 'paradigms'. Kuhn's post-positivist approach is based on confronting the philosophy of science with the historical data of science. Kuhn's aim is to overcome the narrow approach of positivism and to develop a theory of science model that will be compatible with history of science.

Thomas Kuhn

Thomas Samuel Kuhn (July 18, 1922 – June 17, 1996) was an American philosopher of science whose 1962 book *The Structure of Scientific Revolutions* was influential in both academic and popular circles, introducing the term paradigm shift, which has since become an English-language idiom.

Kuhn made several claims concerning the progress of scientific knowledge: that scientific fields undergo periodic "paradigm shifts" rather than solely progressing in a linear and continuous way, and that these paradigm shifts open up new approaches to understanding what scientists would never have considered valid before; and that the notion of scientific truth, at any given moment, cannot be established solely by objective criteria but is defined by a consensus of a scientific community. Competing paradigms are frequently incommensurable; that is, they are competing and irreconcilable accounts of reality. Thus, our comprehension of science can never rely wholly upon "objectivity" alone. Science must account for subjective perspectives as well, since all objective conclusions are ultimately founded upon the subjective conditioning/worldview of its researchers and participants.