

## Parallels between Logical empiricism and the structure of scientific revolutions

When Thomas Kuhn wrote “The structure of scientific revolutions” the scientific community was on its way to what he describes as a paradigm shift. The most common scientific philosophy, logical empiricism, was replaced by Kuhn’s and his constituent’s work. And it has been said that Kuhn killed logical empiricism. However upon close speculation of Kuhn’s work and that of Rudolph Carnap, a prominent logical empiricist, surprising similarities can be found in their characterization of scientific revolutions, lexicon structures and their scientific theories. Yet logical empiricism was replaced. It seems to fall shortest at its attempt to create universal science, one language that could be used to describe all phenomena. It did not reach this goal and the goal was repudiated by the history of science, which took over much of logical empiricisms functions. It would appear that with out this major downfall it might have survived as the prominent scientific philosophy for years further.

There is a common misconception that Carnap and other logical empiricists believe that scientific knowledge simply builds upon itself. However this is not the case and Carnap’s interpretation of the scientific revolution is akin to Kuhn’s. Carnap outlines a scientific field with the use of two concepts, a linguistic framework and theoretical postulates. It would seem that the postulates

together comprise the logistical framework. Theoretical postulates function the same as symbolic generalization for Kuhn, which helps make up his paradigm.

Carnap states that a scientific revolution can occur in two ways, either by a change in the linguistic framework of a theory or a change in the postulates of a theory. A change in the linguistic framework implies a much more grand shift, involving a complete upheaval and re-appropriation of scientific terminology. Changes in the postulates of a theory more commonly include the introduction of a new postulate which may require no shift, or a small shift to account for the new postulate.

Kuhn describes a scientific revolution as a shift in paradigms. And a paradigm is the framework by which a scientific field is understood. The paradigm as a whole is akin to Carnap's linguistic framework and again the symbolic generalization resembles theoretical postulates. When Kuhn describes a paradigm shift it is almost the same as saying that one set of theoretical postulates are replaced by another.

The similarities don't stop here. Kuhn's lexicon is "a network of kind terms" and is the step before noting scientific problems and their solutions. He also notes that the connection of a scientific community is that shared lexicon which is necessary for communication within a paradigm. Carnap notes this as well and the correlation of Kuhn's lexicon seems analogous to Carnap's linguistic frameworks.

Despite these similarities Kuhn replaced logical empiricism. A major contention Kuhn had was that the a scientists interpretation of a phenomenon was influenced by their paradigm. And subsequently a single cross-disciplinary language could not be created. Kuhn used the psychological argument that two persons can view the same image yet see two different things as evidence that visualization is interpretive based on experience. He stresses that two scientists operating in different paradigms could view the same phenomenon or outcome yet interpret it differently. And if he could prove that all understanding was determined by interpretation and experience then he would immediately remove logical empiricism. However there have been studies done that stress the limits of interpretation, specifically the Muller-Lyer illusions) and two individuals consistently arrive at the same outcome. So it would appear that sometimes experience has a profound effect on interpretation and other times it does not. Though even if it were true that all perception is interpretive logical empiricists like Carnap made provisions for this. They thought there would be some contention and necessary distinction between theory and observation. Because of this it could be said that this distinction does not discredit logical empiricism. And an argument has been made that while Carnap was reading Kuhn's work he was impressed and did not see it as threat to his views. In fact Carnap elaborated on his ideas and incorporated Kuhn's theories into his.

The fact that there are so many similarities between Kuhn's ideas and logical empiricism implies that a synthesis between the two can be found. It should be addressed however why logical empiricism was phased out.

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