In Search of a Black Swan: The Kuhn, Popper Discussions Continue.

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Overview of Argument of Two Philosophers

Although Thomas Kuhn and Karl Popper were both respected philosophers of science, their style in which they sought to explore it, varied significantly. While Kuhn focused on “normal science” with paradigms, Popper engaged in his falsification method. The two have laid out approaches to research, which they believed to be the correct way. However, the debates continue whose methods work better.

Popper’s Use of Falsification

Unlike Thomas Kuhn, Karl Popper had a very different method of exploring science. Popper believed there were no permanent rules to science and that using empirical evidence, he could test contemporary theories. He had stated, “The theory of the deductive method of testing a hypothesis can only be empirically tested and only if it has been advanced” (Popper, 2005, p. 35). Popper deductive method of testing was his use of Falsification. By using Falsification, which included observations and experiments, he would be able to find validity and reliability in the current theories. If a theory had fault, it should be rejected and a new one presented. With Popper, he would give up theory if proven wrong and not wait for a crisis to occur, like Kuhn would.

Kuhn’s Concept of Paradigms

Thomas Kuhn believed that the majority of the scientific work that was being done could be classified as normal science. Normal science fit the mold of accepted paradigms that went unchallenged. These paradigms came from a history of scientific achievements, theories, and observations that had become accepted by the masses. These paradigms were rarely challenged, and if they were, it was due to some anomaly that continued to reappear and could not be stifled.
Kuhn’s normal science allowed scientist to work on their puzzle solving skills within each paradigm, finding the solutions from within.

Kuhn worked in his paradigms attempting to explain away any anomalies or observations, as they appeared. If any anomalies did appear, it was blamed on the researcher for making a mistake. Kuhn’s belief in paradigms kept scientists locked into a firm way of thinking and prevented an expansion of exploration, until a later time when it was necessary. If numerous anomalies kept appearing, a crisis would occur. Once the crisis appeared, it was up to the consensus to abandon the present paradigm and replace it with a new one. This consensus required the populous to agree to the new set of beliefs that was being presented.

Kuhn called that process paradigm shifts. These paradigm shifts would then set up a new paradigm in which scientists were to follow. Kuhn explained further “new paradigms are born from old ones, they ordinarily incorporate much of the vocabulary and apparatus, both conceptual and manipulative, that the traditional paradigm had previously employed” (Kuhn, 1970, p. 149). Again, the rigid, closed framework of the new paradigm was birthed, and scientists were encouraged to work from within.

**Change and Crisis**

Kuhn believed that historically science would change and develop after each crisis, but he would not seek to change it prior to a crisis. Conversely, Popper’s belief in Falsification was designed to seek out any fault in the scientific method. He believed it was the scientist’s responsibility to disprove a theory and find fault with its application. By using Falsification, which included observations and experimentations, he was able to find if a theory was valid and reliable. Falsifiability is the demarcation criterion for Kuhn. He proposed that every scientific statement needed to be tested for its accuracy. His infamous illustration of this is the belief that
“All swans are white,” until proven otherwise. Followers of Kuhn would set out to disprove this statement by looking for swans of another color. This method of research allowed for the exploration into a wide variety of areas, which never limited the researcher by the use of history or current paradigms.

**Popper’s Precise Steps**

Kuhn and Popper both have conflicting theories on how scientific methods should be designed. Popper believed in the logic of science and truth finding. He had very precise steps in which to take in research, which included observation, hypothesis, test hypothesis, analyze results for a conclusion and if the hypothesis is supported it then can become a theory. If the hypothesis is not supported, you must go back to the original hypothesis and design one that can be supported by experiment (Alker, 2013). This method differs dramatically to that of Kuhn. According to Bird (2013), Kuhn identified five characteristics that provide the basis for theory choice. They are accuracy, consistency, scope, simplicity, and fruitfulness. Bird disagrees with Kuhn that these five characteristics should be used. He explains that each step can be disputed and are imprecise. Also, there is room for discrepancy about the degree they hold and the relation they hold to one another, especially when they are in disagreement with another. (Bird, 2013) I tend to agree with Bird. There are too many areas where errors or opinion could influence the outcome.

**Summary**

Thus Kuhn and Popper both accomplished in their work presented their respective philosophies to theory and assisted many in scientific research, in a very different manner from one another. Their success emphasizes the importance of diversity that is needed to continue to explore the various sciences that we are presented with. Although Kuhn and Popper varied
significantly in their methods, there is a degree to which they do overlap and find some
similarities. That discussion I will save for another paper. As for now, I’d rather set out looking
for a black swan than fall into the bias paradigms of which Kuhn was fond.

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