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Thomas Kuhn's *The Structure of Scientific Revolution* Versus Stephen Toulmin's *The Uses of Argument*

In this paper, I will compare and contrast Stephen Toulmin's *The Uses of Argument* with Thomas Kuhn's *The Structure of Scientific Revolution* and explain why both are necessary in scientific propositions mainly because Kuhn's method is used to replace theories but Toulmin's method is used to explain the theories. I will do this by first explaining Stephen Toulmin's *The Uses of Argument* and his method of arguing through Claims, Data, Warrants, Qualifiers, Rebuttals, and Backing. Secondly, I will explain Thomas Kuhn's *The Structure of Scientific Revolution* including his theory of paradigms and how one scientific theory replaces another through a revolutionary process instead of an evolutionary process. Lastly, I will show why both are necessary for scientific revolutions because Toulmin's method shows how to get to a specific point, but Kuhn's method shows how to replace an existing theory with another theory.

In Stephen Toulmin's *The Uses of Argument*, Toulmin outlines a new method of argument that provides a standard structure of arguing. This method was made to replace the standard Aristotelian method of arguing with the simple manner of a 'minor premise; major premise; *so* conclusion.' Toulmin believes in a more evolutionary structure. This structure includes a Claim, Data, Warrant, Qualifier, Rebuttal, and Backing. The Claim is the basis of the argument. This is what you are trying to prove. The Data are "the facts we

appeal to as a foundation for the claim." This is the ground for the assertion that we produce as support. The Warrant is the bridge that connects the Data and the Claim. The Qualifier supports the conclusion. This states how relevant the warrant is with adverbs such as 'necessarily', 'probably', and 'presumably'. The Rebuttal 'indicates circumstances in which the general authority of the warrant would have to be set aside.' The Backing supports the Warrant itself. It provides the backbone for the warrant that allows us to put authority in the warrant. A full example of Toulmin's method is as follows: Harry was born in Bermuda (Data). Since a man born in Bermuda will generally be a British subject (Warrant), on account of the fact that Bermuda is a British colony (Backing). So, presumably (Qualifier), unless both his parents were aliens / he has become a naturalized American / etc. (Rebuttal), Harry is a British subject (Claim).

In Thomas Kuhn's *The Structure of Scientific Revolution*, Kuhn outlines a different structure of argument. He believes that science can be established through paradigms. A paradigm, in Kuhn's own words, is an achievement that is "sufficiently unprecedented to attract an enduring group of adherents away from competing modes of scientific activity. Simultaneously, it [is] sufficiently open-ended to leave all sorts of problems for the redefined group of practitioners to resolve." This simply means, that a paradigm is a standard theory, that is accepted today as truth, but has a few unsolved questions within it that are not answered by this theory. Kuhn believed that new scientific theories were discovered through these gaps in the paradigms. Somebody would explain the unsolved questions with a new paradigm. For example, in the early 16th century, the standard astronomical belief was Ptolemiac's Theory of Geocentrism. This stated that the Earth was the center of the Universe, and that the Sun revolved around the Earth. But this theory did

not explain the retrograde motion of the planets. However in 1543, Copernicus published his Theory of Heliocentrism that fixed the problem of the retrograde motion of the planets by explaining that the Sun is the center of the Solar System and that the Earth revolves around the Sun.

In my judgment, I believe that both are necessary in their own way. Toulmin's method of argument is great for everyday life and for arguing with friends about different topics. However Kuhn's concept of paradigms is more realistic for scientific propositions. That's not to say that these propositions weren't reached through Toulmin's method though. Toulmin's method is more of a back end work for the thought process of the theories. Whereas Kuhn's concept explains how given theories are overcome. This can be seen through many revolutions within the scientific communities. For example, the theory of heliocentrism replacing the theory of geocentrism, as explained above. Also, Newton's theory of light replacing all existing theories of light, as explained in Kuhn's *The Structure of Scientific Revolution*. These universal theories would not get nearly as much attention if they were structured through Toulmin's method. This is because Toulmin's method excludes the concept of showing how the previous theory is wrong. This is necessary in order to replace a current theory with a better one.

In conclusion, I explained Stephen Toulmin's method of arguing that he outlines in *The Uses of Argument*. I then explained Thomas Kuhn's method of arguing through paradigms as outlined in his *The Structures of Scientific Revolution*. I then showed how both are necessary in scientific propositions because Kuhn's method is more used to replace an existing scientific theory whereas Toulmin's method is more used to explain the theories.