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An Exegetical Account of Kuhn's Paradigm Incommensurability

Kuhn takes an approach to scientific discovery that diverges from typical models of science as the cumulative acquisition of knowledge. Kuhn instead proposes that science moves through what he calls *paradigm shifts*. Kuhn argues that in these shifts, multiple paradigms "compete" for acceptance within scientific communities. One necessary aspect of this process, is that "competing paradigms must fail to make complete contact with each other's viewpoints" [147]. To support this claim, Kuhn provides three points to further explain his idea of incommensurability: the first being that different paradigms address and emphasize different problems and questions, the second, that concepts and their respective words are repurposed/recycled, and lastly, that scientists within each paradigm operate in what Kuhn calls "different worlds." This paper will only focus on the first two points.

As Kuhn makes his argument, however, it is not entirely clear how he defines this incommensurability. What does Kuhn mean when he says competing paradigms must fail to make 'complete contact'? Two interpretations come to mind. One interpretation is that new paradigms cannot make complete contact because their proponents never understood or fully accepted the normative paradigm(s) to begin with. Another reading of the text suggests that Kuhn is simply re-explaining what distinguishes a competing paradigm from an anomaly. This paper will trace the first two points of Kuhn's argument in order to clarify what Kuhn precisely means when deploying the idea of incommensurability.

Before exploring Kuhn's arguments, we will investigate what he means when deploying the word *incommensurable*. To Kuhn, incommensurable paradigms have concepts and

measurements that cannot be precisely mapped onto each other, even if the paradigms share a common terminology. Put simply, neither paradigm can be "translated" into the language of another, because they differ fundamentally in their understanding and explanation of the world.

Kuhn first argues that proponents of competing paradigms disagree about which problems in the field need to be resolved [147]. Not only are different problems emphasized, but, "their standards or their definitions are not the same" [147]. This suggests that scientists who propose competing paradigms perceive the existing paradigms differently than those who operate in and support them. What would motivate this disagreement on what questions to ask and problems to solve except for differences in perception of a discipline itself? Furthermore, scientific questions in different paradigms may be added, banished, or even returned to upon paradigm shifts. Kuhn wants to emphasize how particular lines of investigation are rendered unimportant or non-useful to scientists depending on the paradigm they operate in. For example, why amounts of phlogiston differ in certain materials is no longer a relevant question to someone who rejects phlogistic. These questions may still theoretically exist, but they are alien to the paradigms and conceptual models in which scientists operate. It becomes clear that different understandings of the world will privilege different questions.

Now that Kuhn's first point established, we will move on. With his second point, Kuhn argues that competing paradigms often share terminology, but the meanings of terms are repurposed, making them incomparable. Observations and measurements within paradigms are only made intelligible by the conceptual/theoretical scaffolding built around them. To test a competing paradigm using the same conceptual framework as the original is to take a fish out of water. One does not judge a screwdriver on its hammering ability, or vice versa. However, one of

these tools may be better suited for assembling a table, such is the case of a paradigm on which further scientific activity rests. Kuhn wants to push back against the notion that scientific ideas across paradigms are ‘right’ or ‘wrong.’ One helpful example Kuhn brings up is that of the Copernican revolution. Despite the fact that scientists may have used the same words/symbols such as ‘earth,’ Kuhn asserts that these words have different concepts embedded in them [148]. To ask whether Copernicus’s earth meets Ptolemy’s criteria is analogous to asking whether or not a free throw was made in a baseball game.

To elaborate this second point, we will move to Kuhn’s insights on the shift to Einsteinian physics. According to Kuhn, a ‘conceptual web’ “had to be shifted and laid down again on nature whole” [148]. What Kuhn means by the word ‘shift’ at first seems ambiguous. This shift does more than simply modify an existing concept- the new concepts used in a competing paradigm have fundamentally different meanings than the former, despite using the same names to label them. These repurposed concepts do not exist in isolation, however. In the same way space, time, and matter have different meanings in competing paradigms, the relations between the concepts themselves are also different.

Now that Kuhn’s arguments have been sketched out, we will see how well the two proposed interpretations can be mapped onto them. In light of this investigation, it is clear that Kuhn argues for incommensurability not only to reiterate how and why competing paradigms may be distinct. A more specific interpretation would suggest that incommensurability does not merely lie in difference of ideas, but the scientists who propose them. It is likely that the proposition of a competing paradigm is indeed rooted in perspectival differences of scientists, but it is also true that these propositions are at least inspired by anomalies within the scientists’

respective fields. In this regard, both interpretations have explanatory power, but incommensurability seems to be better explained by scientists having divergent understandings of concepts within their discipline.

References:

Thomas Kuhn, *The Structure of Scientific Revolutions* (4th edition) (University of Chicago Press, 2012)