

Kuhn Celebration of Learning

1. What is a paradigm? Define and describe its attributes using an actual paradigm.

A paradigm can be defined as an achievement in a scientific field that establishes a foundation for further scientific research. An example of a paradigm is Newton's Three Laws of Motion – before Newton published *Principia*, most physicists(?) based their research on Aristotelian physics.

2. Justify or disprove the following statement from Kuhn's perspective: "Normal science, when successful, finds nothing unexpected."

Kuhn agrees with this statement, to an extent. He realizes that normal science between two different paradigms is almost completely based on the paradigm, characterizing normal science between two paradigms as "an attempt to force nature into the preformed and relatively inflexible box that the paradigm supplies." (24) In other words, to reshape the entire world in support of this paradigm.

3. Is "mopping up" a good or bad thing according to Kuhn? What roles does it play in its progress?

According to Kuhn, "mopping up" is what most scientists do during their careers – it is what constitutes what Kuhn calls "normal science". As said before, mopping up is "an attempt to force nature into the preformed and relatively inflexible box that the paradigm supplies." (24). Mopping-up is just another name for what I discussed in the previous question. However, it is very essential to science, because mopping-up virtually forces scientists to investigate a sub-topic that they would not have investigated with so much attention to detail. This investigation reveals some faults of nature that the paradigm does not support, slowly building up to another paradigm. The process continues.

4. Compare and contrast normal science in a current paradigm to normal science in the previous paradigm. How are they similar and different?

Normal science in this paradigm and a previous one is similar to a greater extent, but different in some aspects. In both paradigms, the process in which scientists contribute to this "normal science" is the same; they both try to add as much detail as possible to the theory without actually questioning the assumptions making that theory. For example, In Chapter IV, Kuhn cites the fact that studies that do not find an "expected" outcome are usually not published, and the cherry picking of studies that support the paradigm allow the paradigm to gain even more popularity – a vicious cycle. Unfortunately, I am not sure that this cycle has either proliferated or fallen into disuse in modern times, since I don't read scientific journals on a regular basis (the last time I read *Nature* was 2 years ago). I would assume, however, that the makers of this journal would not want to have anything upsetting the status quo and admitting that they published something that later turned out to be wrong, so this cycle would proliferate even more. However, today's "normal" science is different in that the

periods of “normal” science are slowly becoming shorter and shorter, probably due to the result of computing power doubling every ten years and the study of science becoming more accessible to humanity.

5. How are scientific revolutions parallel to political revolutions?

- Scientific Revolutions can be likened to political revolutions; it’s the same process.
 - Some guy comes up with a paradigm/a new form of government because the current ideas don’t work well anymore for the scientists/politicians + people
 - Scientists/politicians are egoistic and only consider the paradigm in their own perception of science; in the case of the politicians, they look at the new political revolution from their own interests
 - Eventually, the community splits into two groups; one group supports the paradigm, one doesn’t, and eventually civilized discourse between the two groups becomes impossible; basically the same with political revolutions e.g. the Revolutionary War, French Revolution, British-German relations before WWI
 - Basically, the paradigm wins by whoever is more persuasive, not who has a more logical explanation

6. Do Scientific Revolutions constitute progress?

Kuhn thought that not only did scientific revolutions constitute progress, but that they made the most progress in science. Kuhn didn’t think that progress in science was linear – it stagnated for some time but then increased by leaps and bounds. However, Kuhn didn’t like how progress was so essential to science; he asks, “Why is progress a prerequisite reserved almost exclusively for the activities we call science?” (60)