Nothing is more exciting than fresh ideas, so why are areas of knowledge often so slow to adopt them?

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In light of the rapid development and acquisition of knowledge around the world, the question has been raised by many; why are we so slow in accepting fresh ideas? Slow is an interesting term, as while progress might appear slow to knowers who are used to the fast-paced culture of the 21st century information superhighway; to someone from centuries or even decades ago, areas of knowledge are adopting new ideas at a breakneck speed. In this essay, we will explore slow as a relative term, accepting that areas of knowledge are generally not as quick as they physically can be to adopt fresh ideas. Fresh ideas are marked by the questioning of the existing paradigm, and the creation of significant new ideas. This does not include every single fresh idea ever made, as many of these are mundane with virtually no impact on the world; and are thus adopted somewhat quickly. This essay will only consider important fresh ideas, the ones that catalyze paradigm shifts or force knowers to reconsider predisposed beliefs. Areas of knowledge as a noun can be viewed as the group of knowers making progress at the forefront of knowledge, making breakthroughs and discoveries. This definition does not necessarily include everyone in the world, because in that case some fresh ideas are *never* adopted by some people, even though they are virtually accepted as a fact by the area of knowledge. This essay will explore the human and natural sciences, as both disciplines have fresh ideas that are often found at the forefront of society's knowledge. In the human sciences, paradigm shifts occur frequently, but they often face significant resistance before their eventual adoption. In the natural sciences, the discovery and confirmation of new ideas usually requires a lot of resources, which slows their adoptions. Experiments can require significant time, funding and collaboration, which slows down their acceptance as they would need all of these ingredients together before the idea becomes accepted. Whether in the human or the natural sciences, the resistance that accompanies these changes highlights the challenges involved in adopting fresh ideas, and thus their slow acceptance speeds.

In the human sciences, the evolution of psychological theories serves as a poignant illustration of the challenges inherent in paradigmatic changes. A prime example is the transition from behaviorism, which was the paradigm prevalent in psychology in the early 20th century, to the cognitive revolution that unfolded in the mid 20th century. The cognitive revolution marked a decisive shift in the perspective of human scientists, redirecting attention towards the study of memory, perception, and problem-solving. Visionaries such as Ulric Neisser and George Miller played pivotal roles in challenging the established norms of behaviorism, contributing significantly to the emergence of cognitive psychology. The transition between the two paradigms was not straightforward however, especially given the magnitude of the change. There was significant inertia of the entrenched practices, a reluctance to embrace novel concepts, and the inherent comfort derived from adhering to what was already known.

This psychological resistance, deeply rooted in the human inclination to cling to established frameworks, exemplifies the intricate dynamics involved in paradigmatic transitions. The resistance to the cognitive revolution in psychology sheds light on the psychological aspects that underpin the reluctance to embrace paradigm shifts. The comfort derived from familiarity with established practices often acts as a potent force against change. This creates the implication that knowers tend to develop habitual patterns of thinking, which would have been ingrained in them from a young age, and the introduction of new, unfamiliar concepts challenges these ingrained mental frameworks. This transition becomes all the more difficult if these original paradigms are accepted as fact, which they often are. The psychological resistance to embracing novel ideas is not a mere intellectual hurdle; it is a reflection of the deep-seated tendency of knowers to gravitate towards what is known and resist the unknown nature of the unknown. It is easier and safer to make human science discoveries in a known paradigm rather than an unknown paradigm, as the results are more likely to be accepted, as they would have to be accepted by everyone in the area of knowledge who are still operating under the known paradigm. As well, when there is a paradigm shift, a lot of knowledge that was created in the previous paradigm must be revisited or removed, thus making researchers reluctant to accept the new paradigm that would then “discredit” their previous findings.

In terms of the natural sciences, the acceptance of fresh ideas almost always encounters a significant hurdle - the requirement for substantial physical resources, thereby creating an impediment to their rapid acceptance. Experimental validations in the natural sciences frequently require considerable investments of time, funding, and collaborative efforts. An example is the discovery of the Higgs boson, a highly resource intensive endeavor that took many years to dream up and many more to complete. The theorization of the Higgs boson in 1963 was merely an intellectual curiosity and could not be demonstrated with the equipment available at that time. It did make the standard model of particle physics more complete, however given its undetectability it was not adopted as fact, or something that existed, because knowers could not confirm it existed. They could only confirm this once the technology caught up a whole *fifty* years later! The insistence on rigorous empirical testing further extends the timeline for the acceptance of new ideas in the natural sciences. There is inherent fallibility of scientific findings, and it is important to maintain a skeptical attitude towards established knowledge. The need for replication arises from an acknowledgment that no single scientific study, regardless of its methodological rigor, is immune to error or bias. Studies can be unintentionally biased by nationalistic pride, sources of funding, and many other reasons. A law of nature states that nothing can be precisely measured without any uncertainty. As well, no scientific study can prove anything, but can only be disproved, which aligns with the broader philosophical stance that encourages a continual questioning of accepted truths. Before being adopted as scientific “fact”, or knowledge that can be safely built upon, it is mandatory that a fresh idea go through peer review and many trials of replication.

While the actual peer review process may be relatively quick (measured in weeks or months), this is only to allow the results to be published in order for them to be viewed by the scientific community at large for critique. The infamous “neutrinos are faster than the speed of light" experiment is a good example of why this process exists. A research group showed that neutrinos could travel faster than light, which upended Einstein's 100 year old theory that light was the speed limit of the universe, which as a corollary, annulled virtually all of the physics discoveries from the past century. This naturally made international headlines, and was accepted as probable fact by many outside the area of knowledge. Many non-experts were wondering why the area of knowledge was so unenthusiastic about adopting this result and hence throwing away years of work. They reasoned that the quicker that this result was acknowledged as fact, the quicker we could move on to even more knowledge, such was the exciting nature of the discovery. It was recognized within the area of knowledge, however, that no one could replicate the results from this experiment. It turns out that there was a loose cable connection, which affected the results given, which saved the natural sciences from having to remake all of physics. Had this been accepted "quickly", as was the perspective of many, then all future theories and results gained from this finding would have been moot, since its foundation was wrong. Going slowly ensures that any knowledge that we build upon is as correct as we can possibly make it, which makes acquiring further knowledge smoother, as it removes the need to double back if we discover that previous knowledge was incorrect. The importance placed on replication by the natural sciences strongly emphasizes the significance of empirical adequacy, as the inability to consistently replicate results raises concerns about their reliability in predicting and explaining observable phenomena. This thus implies the importance of accepting knowledge slowly, or at least not rushing it, in order to ensure its quality. The natural sciences are willing to sacrifice speed in exchange for rigorous empirical testing, even willing to wait years and even decades to ensure the quality and accuracy of the work. Knowledge is not solely an individual endeavor but a shared responsibility, and replication serves as a means to uphold the reliability of scientific findings collectively. This scientific process reflects a commitment to principles of skepticism, empirical adequacy, and communal validation.

In the natural sciences, validation of new ideas often requires significant resources, hindering their adoption. Resource-intensive experiments, such as the discovery of the Higgs boson, require significant time, funding and collaboration, contributing to the slow acceptance of new ideas. The evolution of ideas through paradigm shifts is integral to intellectual progress and shapes the landscape of human knowledge. Whether in the human or the natural sciences, the resistance that accompanies these changes highlights the challenges involved in adopting new ideas. From psychological inertia in accepting new concepts to resource-intensive validation in the natural sciences, the innovation journey is fraught with obstacles, hence making our progress in adopting fresh ideas appear slow.

Works cited

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