

6: Are we too quick to assume that the most recent evidence is inevitably the strongest?

Discuss with reference to the natural sciences and one other area of knowledge.

Living in an exciting era witnessing constant changes and expansions in our knowledge structures, we often overlook the strength of newer knowledge as it delves deeper into the unknown. The aim of this essay is to evaluate whether we are too quick to assume the most recent evidence is inevitably the strongest using real-life situations from the natural sciences and the human sciences. “We” are the general public and experts of the knowledge community. “Strongest” can be taken as more compelling than the previously presented evidence; however, more convincing does not equate to true. Examples from the natural sciences explore whether the scientific method either encourages or discourages our assumptions that novel evidence is always best; the human sciences will illustrate how power operates through new public knowledge and seek to influence the degree of acceptance. **By comparing the differences in the natural and human sciences, the knowledge community is not too quick to assume the strength of newer evidence because of better technology; however, in the human sciences, the community is often too quick to assume the evidence presented because of the role of power in the distribution of knowledge.**

Natural sciences are typically controlled by experts in their respective fields of study; much of the recent evidence remains inaccessible to the public because of its heavy scientific jargon. From the perspective of the scientific community experts, the newer technological improvements often bring more accurate empirical evidence because false knowledge is updated with technological advancement. Thus, it is often safe to assume that the newer discoveries are more valid and conclusive compared to other ones because of their increased accuracy in measurement. In this case, we are not too quick to assume that this new knowledge is stronger

because the knowers in the field have been careful in the production of the knowledge via the proper application of the scientific method. Inspired by previous trends in unexpected alterations in vision for astronauts, NASA's research in 2019 on microgravity and its effect on humans shows the extensiveness better technology can provide to scientific investigations (Garrett-Bakelman et al.). The novel research significantly impacted telomere length, gut microbiota, retina thickness, etc. However, the study's most impressive innovation was in its use of genetically identical subjects as it paves the way for new approaches to biological research – twin experimentation. Before the innovation of space crafts and the International Space Station, no astronauts could have stayed in space for an extended period. It is through better technology that we can obtain an accurate physical environment for experimentation, thus obtaining more accurate empirical data. Thus, the evidence and knowledge harvested from this research shall currently be assumed the strongest given its direct evidence collected, furthering previous postulations. However, one criticism of this scientific study is its small sample size. Since this study only had one pair of astronauts, it is uncertain whether that trend will be presented for the majority of the population. There is also no theoretical evidence to explain the mechanisms behind each change. However, the low sample sizes are purely due to the expensive cost of each experiment trial. If we can lower the cost of each space flight using better technology, we can then obtain newer and stronger evidence on the topic, which can only be done if the knowledge produced in the first experiment is quickly accepted into our knowledge framework.

When we are too quick to assume the newest knowledge is true, there are significant consequences of the false evidence, sometimes resulting in undermining the results of decades of research. The Plum pudding model of the atom proposed by J.J. Thomson in 1909 was widely used and believed as an explanation for the inner makings of the atom, resembling plums in a

pudding (Hentschel). This model was challenged and invalidated by Ernest Rutherford's gold foil experiment (The Editors of Encyclopaedia Britannica). Rutherford's findings indicated a dense, positively charged nucleus at the atom's centre. This contradicted the evenly spread positive charge proposed by the plum pudding model. This shift in understanding of the atomic structure was pivotal, leading to the development of the nuclear model and modern atomic theory, highlighting the caution needed when accepting scientific models without thorough experimentation and evidence. The quick acceptance of Thomson's model delayed progress in understanding atomic structure, causing confusion and impeding scientific advancement. Rutherford's model provided drastic changes to our past perception of the atom and the world around us; thus, given the magnitude of this change, it caused a delay between the general knowledge community and the producers of knowledge. That said, we were not quick enough to accept the newer experiment, causing significant delays in our future investigation into the physics knowledge framework. Through formal studies like NASA's microgravity experiment and direct empirical evidence presented in Rutherford's Model, we should accept newer evidence quickly given the increased accuracy in technology.

However, when empirical evidence is not provided, consumers need to be more careful in adopting new knowledge into the framework. In the realm of social and political psychology, there's a tendency within the knowledge community to hastily embrace the latest evidence without due consideration. The study of human behaviour spans cognitive, emotional, and social aspects within human science, employing quantitative methods like experiments and surveys alongside qualitative approaches such as interviews and observations. Since the government filters information through the news and speeches, consumers can be too quick to assume the knowledge without thinking about the implications in this fast-paced world. The public might be

too quick to believe in certain political perspectives because the government deliberately publicises information that presents its perspective. The government holds power; power is exerted to convince citizens when processing and spreading new information. The bandwagon effect refers to the tendency for individuals to align their political views with perceived or anticipated societal majorities or dominant positions (Schmitt-Beck). Election polling, known for bias and influencing public perception through the bandwagon effect, was evident in the 2016 presidential race, especially among followers of Donald Trump and Hillary Clinton on social media (Lammers et al.). Trump's messages discrediting polls and criticising Clinton shaped a narrative his supporters adopted, leading them to perceive him as the superior candidate and distrust mainstream media reports favouring Clinton (Macafee et al.).¹ When a candidate gains traction in polls or receives extensive media coverage, people tend to lean toward the perceived popular choice, often without deeper analysis or scrutiny. This acceptance of manipulated information by the public perpetuates a negative cycle of bias in polling data, controlled by powerful entities and often overlooked by the knowledge community. Scepticism toward recent evidence can help recognize and address biases inherent in media-presented information. This manipulation distorts reality, limits diverse perspectives, and hampers the democratic process by narrowing public choices and discourse. On the whole, we are too quick to assume that the most recent evidence provided by power-controlled news sources with biased statistics is the strongest, as demonstrated by the bandwagon effect in election polling.

There are some areas of human science where we should be more quick to adopt newer knowledge as stronger, and that is when it moves us to a more just world and when this knowledge helps us subvert traditional power dynamics that are not helpful for all people of diverse identities. In the field of gender studies, a dramatic change has taken place in gender

relations in the United States since the 1950s (Schiebinger). Through the repudiation of gender stereotypes, women's labour force participation rose from 32% in 1950 to 57% in 2018, and men's participation fell from 82% to 69% (Eagly et al.). Unfortunately, societal norms and entrenched beliefs often hinder the swift acceptance of this updated knowledge. It requires dismantling preconceived notions and challenging ingrained ideologies—a process that can be slow due to the reluctance of some to lose power. Many fields encounter similar challenges, often due to the inertia of established beliefs or the discomfort associated with adopting new perspectives. Yet, as research continues to broaden our understanding, whether it be social or biological, the hope remains that these insights will eventually find broader acceptance, contributing to a more inclusive and informed societal framework. Hence, we are not too quick, if not too slow, in assuming the greater strength in this knowledge when older knowledge is no longer applicable to our society; it is only through such progress that we can be more accepting and have more freedom in our world today. Ultimately, we are too quick to integrate newer knowledge in human sciences due to manipulation and power and lack of empirical evidence, but exceptions are present in areas where we challenge the established power dynamics.

By examining real-life situations from different areas of knowledge, we are not too quick to assume new knowledge depending on the differences between the previous and present evidence or its applicability in today's society. In the natural sciences, newer evidence is often obtained with more accurate and precise measurements. This makes the evidence obtained more recently closer to the truth. Thus we need to be more quick to accept this form of knowledge. In the human sciences, we are often too quick to assume what we are provided is true, as shown by NASA's innovative methodology and technology, while ignoring the power of manipulation behind the evidence we are provided with, specifically in psychology, media studies, and

political science as demonstrated by the 2016 presidential election in the United States. By assessing our reaction to newly produced knowledge, we can critically evaluate our nature as knowers of different types of knowledge from different disciplines. Aware of the gravitation towards certain subjects, one needs to find the fine balance between the pursuit of new knowledge and the critical evaluation of it to make well-informed decisions.

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