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TITLE

TO WHAT EXTENT IS INTERPRETATION A RELIABLE
TOOL IN THE PRODUCTION OF KNOWLEDGE

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Topic: To what extent is interpretation a reliable tool in the production of knowledge?

Answer with reference to history and natural science

Introduction:

When the same evidence is considered by two people, and they come to different conclusions, something uncomfortable is brought to mind: *To what extent is interpretation a reliable tool in the production of knowledge?* This contradiction is at the center of the production of knowledge. Interpretation means the process of attributing meaning to information, data, or events based on conceptual frameworks, assumptions, and contextual insight. It does not take a passive part but plays an active role in determining the meaning we assign to what we are observing. A good tool, in this regard, implies a methodology that will always result in justified, credible, shared knowledge.

This problem is especially evident in the comparison of history, which restores the past on the basis of incomplete and, in most cases, biased sources, with natural sciences, the purpose of which is to construct objective explanations on empirical data. Both are based on interpretation, but they use it in different ways: historians interpret the signs of human behavior, and scientists interpret the laws of nature.

This essay holds that interpretation is necessary, but is relatively less reliable: it allows the creation of knowledge in both history and the natural sciences, but the extent of its reliability is determined by the methods, criteria of evidence, and ways of combating personal or cultural bias in each field.

Natural science:

There is a claim that in natural sciences, interpretation is safe when methodological controls minimize the effects of personal bias. Interpretation is used at every step by scientists. They decide what to measure, the manner of modeling data, and the explanation of results. The interpretations are reliable when they are based on empirical evidence, replicable, and peer-reviewed. These common standards of method are what, in a way, serve as checks and balances to the individual scientist. They reduce the subjectivity bias and stabilize the interpretation by the various observers.

An example to come in handy is the 1982 finding of the structure of quasicrystals by Dan Shechtman¹. Shechtman noted that when he saw a diffraction pattern of five-fold symmetry, it was inconsistent with any existing theory on how atoms should be organized in solids. The information appeared wrong in regard to the accepted models. His results were at first dismissed by a large number of scientists since they were analyzed through the prism of well-established crystallography. But Shechtman adhered to an understandable methodological approach. He replicated the experiment, and his results were later reproduced by several independent labs. The meaning changed to be not this must be an error, but this is a new kind of solid.

This example demonstrates that scientific interpretation is stronger with the common standards prevailing over individual beliefs. Neither is the rationalization by some singular power, but by a collective confirmation. Interpretation is thus sound, not because scientists never make judgments based on subjectivity. It happens because scientific method filters the subjective judgment of scientists by having it pass through the collective scrutiny. Science is used to make an individual interpretation shared.

A counterclaim also says that interpretation can be unreliable in natural science when theories bias what scientists anticipate. There is no such thing as a neutral interpretation in natural science. The scientists operate under paradigms (concept of Kuhn). A paradigm establishes the amount of a valid question, a valid method, and a valid explanation. This framework has the ability to restrict interpretation.

The misconception of *Helicobacter pylori* in the early 20th century is a good example². Prior to the 1980s, stress, lifestyle, and excess acid were the general assumptions of the causes of stomach ulcers. Clinical interpretation was influenced by this theory. Spiral bacteria were not regarded as important by the pathologists who came across them in the stomach tissue samples as contaminants or irrelevant. The existing paradigm did not permit the concept that bacteria would be able to survive in stomach acid. Consequently, this evidence was observed numerous times over, but this time, it was misinterpreted.

¹ Gratias, Denis, and Marianne Quiquandon. "Discovery of Quasicrystals: The Early Days / Découverte des Quasicristaux : Les Premiers Pas." *Comptes Rendus Physique*, vol. 20, nos. 7–8, Nov.–Dec. 2019, pp. 803–816. ScienceDirect, <https://doi.org/10.1016/j.crhy.2019.06.001>

² Bornschein, Jan, and D Mark Pritchard. "Myths and misconceptions in the management of *Helicobacter pylori* infection." *Frontline gastroenterology* vol. 13,3 245-253. 2 Jul. 2021, doi:10.1136/flgastro-2021-101826

The paradigm shift only came after Barry Marshall and Robin Warren cultured the bacteria and proved the causation. So far, this interpretation has been untrustworthy since scientists were rather directed by the existing theory rather than by the data that they have in their hands. Their sense-making was not quite consistent with empirical reality. This demonstrates the scope of interpretation in science: under the influence of too high expectations, the expectations become distorted, acting as a bias to justified belief, and postponing the acquisition of new knowledge. All these examples combined reveal that interpretation in natural science is not entirely either good or bad. Its reliability is determined by the extent to which the methods used in the discipline overcome personal or theoretical prejudice. Interpretation is a powerful instrument of knowledge production when the scientific community is strict in its testing, replication, and open critique. However, when a paradigm narrows the possibilities of scientists, interpretation may be skewed and obstruct development.

History:

There is a claim that interpretation is valid in history when historians employ disciplined analysis of sources, as well as corroboration, to restrain bias. History is reliant on the records of the past. Such traces, letters, laws, speeches, and artifacts do not speak in themselves. They have to be interpreted by historians. Reliance on interpretation is achieved when source criticism, contextual analysis, and corroboration are used by historians. These TOK tools enable them to transform partial evidence into warranted historical knowledge. History as such does not give us reliability, but rather through open techniques.

The re-interpretation of the Bengal Famine in 1943 is a good example³. Numerous official British reports of the past decades made the famine sound as the consequence of natural calamity and inevitable food deficit. This reading was in favor of the political ambitions in warfare. Subsequently, the shipping records, cabinet notes, and colonial administrator correspondence were re-examined by later historians, although in a more rigid approach. They juxtaposed sources, were internal consistency auditors, and motive evaluators. They discovered that food production had not been destroyed. A significant role was played by transport decisions and wartime policies. Reinterpretation was not based on new findings but rather on a more rigorous approach to the interpretation of the old sources.

³ Ó Gráda, Cormac. “‘Sufficiency and Sufficiency and Sufficiency’: Revisiting the Bengal Famine of 1943–44.” UCD Centre for Economic Research Working Paper Series, no. WP 10/21, University College Dublin, June 2010. https://warwick.ac.uk/fac/soc/economics/seminars/seminars/conferences/econchange/programme/grada_-_venice.pdf

This demonstrates how interpretation in history can be credible in case it is informed by systematic inquiry. Historians are not asking: Who is the producer of this source? For what purpose? What does it have to support or disapprove of? This methodological consciousness can minimize personal or political bias. It makes historical assertions more credible. Using interpretation turns into a means of making a coherent and well-grounded account of the past.

However, history is a subject that should not be relied on when it comes to interpretation since historians will bring their own values, cultural assumptions, and choices on how to interpret events.

Historical science, as opposed to the natural sciences, is concerned with the intentions of men, ethical decisions, and disputable identities. The evidence is fragmented and vague. This makes it possible to have multiple interpretations. Interpretation may thus be inadequate as a source of knowledge where it is informed by confirmation bias, national legends, or ideological ambitions. In this situation, the point of view of a historian might have a greater influence on the past as opposed to the past determining the point of view of the historian.

The best example is the early nationalistic histories of the Mexican Revolution in the middle of the 20th century⁴. This was how the revolution was characterized by many historians at the time as a one-unit, heroic revolution that was driven by the will of the people. They had their interpretations influenced by the construction of national identities that followed the revolution. They heavily placed emphasis on the political leaders, such as Madero and Carranza, and made events take place as a narrative of progress. They reduced internal struggles, regional disparities, and the influence of indigenous people. New archival material and social history techniques also demonstrated that the revolution was divided and frequently bloody between competing groups by historians who wrote long afterwards. The previous explanation was inaccurate as it constituted the political agenda of the new Mexican nation rather than a dispassionate analysis of the facts.

At every level, history is based on interpretation. Interpretation is a disciplined and reliable tool when historians have recourse to systematic source criticism and corroboration. However, interpretation may twist the past when the process is guided by cultural narratives or ideological allegiance. So, interpretation in history is necessary but conditional only. Its power is determined by how well historians are in charge of their own biases and to what degree they are open in explaining their assertions.

⁴ Knight, Alan. "A History of the Mexican Revolution." *History Today*, vol. 30, no. 5, May 1980.

Conclusion:

The key point of knowledge production is interpretation, which should be reliable based on the approach and protection of the discipline. Natural sciences make interpretation more credible as it is based on empirical testing and a communal checkpoint. It is more reliable in history as it is based on source criticism and corroboration, although it is susceptible to cultural and ideological bias. In both fields of knowledge, interpretation is neither objective nor subjective. It is an indispensable device that can either explain or misinterpret meaning. Finally, interpretation can only be as reliable as each field of study plays an active role in preventing bias and supporting assertions with clear and commonly accepted standards.

References:

- Gratias, Denis, and Marianne Quiquandon. "Discovery of Quasicrystals: The Early Days / Découverte des Quasicristaux : Les Premiers Pas." *Comptes Rendus Physique*, vol. 20, nos. 7–8, Nov.–Dec. 2019, pp. 803–816. ScienceDirect, <https://doi.org/10.1016/j.crhy.2019.06.001>
- Bornschein, Jan, and D Mark Pritchard. "Myths and misconceptions in the management of *Helicobacter pylori* infection." *Frontline gastroenterology* vol. 13,3 245-253. 2 Jul. 2021, doi:10.1136/flgastro-2021-101826
- Ó Gráda, Cormac. "'Sufficiency and Sufficiency and Sufficiency': Revisiting the Bengal Famine of 1943–44." UCD Centre for Economic Research Working Paper Series, no. WP 10/21, University College Dublin, June 2010. https://warwick.ac.uk/fac/soc/economics/seminars/seminars/conferences/econchange/programme/grada_-_venice.pdf
- Knight, Alan. "A History of the Mexican Revolution." *History Today*, vol. 30, no. 5, May 1980.

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