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Knowledge and Belief

Boundaries and Relationships*

If we think about how we usually employ the terms ›knowledge‹ and ›belief‹, we immediately notice a dichotomy. We tend to say that we ›believe‹ in X when we lack the kind of evidence that would allow us to affirm that we ›know‹ X. If I think that the existence of God cannot be demonstrated (or I don't care about its proofs), then I can only believe in God, whether this conviction rests on the authority of a book, an institution, or my own conscience. In contrast, if the existence of God can somehow be demonstrated by empirical facts and rational arguments, then I may be able to know that God exists. Knowledge requires belief; belief, in contrast, does not seem to necessitate knowledge. Belief seems to stand on the side of subjectivity, opinion and faith; knowledge, on the side of objectivity, proof and science. The former is private or shared within limited groups, the latter is public and universal.

This apparently clear-cut duality is so present in so many contemporary debates that it seems both obvious and natural. It has, however, a protracted history. Historians of science situate it in a long temporal perspective that carries it beyond the purely epistemological problem of justifying knowledge-claims. They wish to historicize epistemology, not only by studying normative or theoretical discourses, but also, and especially, by examining the practices that were used for segregating knowledge and belief, and for drawing boundaries that have come to be taken for granted.

Considered both as concepts, and as psychological and epistemological states, knowledge, belief, and the practices associated with them, have a history that is far from linear. Within cultural traditions that distinguish between knowledge and belief, the relationship between the two terms has been conceived in dramatically different ways. Plato, to begin with, posits two worlds: the intelli-

* see <http://www.mpiwg-berlin.mpg.de/KNOWLEDGE/>



gible, about which we can gain knowledge or *episteme*, and the sensible, about which we can only acquire opinion or *doxa*. *Doxa* can be in turn divided into illusion (such as conveyed by the arts), and belief, or practical and uncertain knowledge about things that change. Knowledge and belief are therefore qualitatively distinct states, standing in a rigidly hierarchical relationship to one another.

Within Christian theology of the High Middle Ages, knowledge and belief converge (nothing can be true in knowledge and false for belief, or vice versa), but the hierarchy is reversed: belief in the true God and doctrine are superior in certainty and clarity to any knowledge won through the exercise of human reason. That didn't mean that all the propositions we now tend to associate exclusively with belief were actually seen as such then. In the 13th century, Saint Thomas Aquinas distinguished between the ›mysteries‹ and the ›preambles‹ of the Christian faith. Mysteries (such as the Incarnation or the Trinity) are revealed truths that reason alone could not have come to know. Preambles, in contrast, are truths (including the existence of God and the immortality of the soul) that do not depend exclusively on faith, but that reason can know by its own means.

In the works of early modern European philosophers such as John Locke (1632–1704) and Gottfried Wilhelm Leibniz (1646–1716), knowledge and belief are represented as degrees along a continuum. Knowledge occupies an extreme point, referring to mental possessions that are true, certain, and warranted. Belief does not attain that point, but spans different states, ranging from opinion to conviction and supported by more or less evidence. The relationship between knowledge and belief thus parallels that between certainty and probability.

The locus classicus of this view is Immanuel Kant's 1781 *Critique of Pure Reason*. Kant distinguishes three degrees of what he wonderfully calls *Fürwahrhalten*, or ›holding-to-be-true‹: opinion (*Meinung*), faith or belief (*Glaube*), and knowledge (*Wissen*). When I hold an opinion, my judgement is consciously insufficient, both subjectively and objectively. When I believe, I take my judgment to be objectively insufficient, but subjectively sufficient. Belief can be pragmatic or doctrinal. A doctor's

diagnosis, contingent upon the perception of external symptoms and subject to correction, is a pragmatic belief; the existence of God or the immortality of the soul are doctrinal beliefs. Both entail subjective conviction, but cannot be theoretically guaranteed. Knowledge, by contrast, is both objectively and subjectively sufficient: the existence of its objects can be proved both factually and by means of pure reason. From the standpoint of cognitive experience (and in Kant's words), the subjective sufficiency of belief is a ›conviction (for myself)‹, while the objective sufficiency of knowledge is ›certainty (for everyone)‹. Even this small sample of positions drawn from a culturally circumscribed tradition suffices to indicate the plasticity of the relationships between knowledge and belief.

In many of the present-day debates that embody the knowledge/belief duality, the dividing line between the conflicting parties is allegedly defined by science. Yet what those debates do, is problematize the status of science as the only modern form of knowledge that is capable of bringing about ›certainty for everyone‹. Should we, for example, eat food that contain genetically modified organisms (GMOs)? It depends on whom you listen to. The quarrel between the United States and the European Union over product labeling (i.e. over telling consumers which products have GMOs) highlights the weight of economic interests. But parallel to the economic dispute, a battle of experts is being waged over the exact impact of GMOs on the environment and on human health. In positions that correspond exactly to the degree of financial investment, the USA claims that GMOs are not just harmless, but the best way to ensure that everybody on earth will have enough food. Europeans, in contrast, claim that the innocuousness of GMOs is not proven, and restrict their entry into their markets and agricultural industry.

The issues are extremely technical. For example, many GMOs include an antibiotic-resistance marker gene, and since it is uncertain whether such resistance can be incorporated in humans or in animals that feed on GMOs, governments require case-by-case reviews of organisms that contain those genes. In the privacy of the labora-

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tories and official agencies, specialized research and evaluating methods (experimentation, fieldwork, extensive statistical treatment), are developed in order to produce the reliable knowledge that will serve as partial basis for public policy. Nevertheless, as waged in the public sphere, the war often seems to be taking place between those who know – on the basis of scientific data – that GMOs are safe, and those who believe – on the basis of political positions or moral values – that they are (potentially) harmful. Ad hominem claims also work the other way around: GMO partisans are accused of peddling a belief in their harmlessness that is based on insufficient or uncertain information, and their opponents (especially those for whom these products are ›Frankenfood‹ manufactured by greedy multinationals willing to ruin humanity's health and kill biodiversity) claim to know about the risks involved with scientific certainty.

Such claims about certainty, however, tend to be reached, accepted and rejected under highly problematic conditions. A recent US episode can serve as a good example. On 19 June 2003, Andrew C. Revkin and Katharine Q. Seelye explained in *The New York Times* how the White House edited the most recent Environmental Protection Agency (EPA) report on the state of the environment. An introductory sentence reading, »Climate change has global consequences for human health and the environment« was replaced with a paragraph that starts: »The complexity of the Earth system and the interconnections among its components make it a scientific challenge to document change, diagnose its causes, and develop useful projections of how natural variability and human actions may affect the global environment in the future«. References to studies concluding that warming was partly due to human action and could threaten health and ecosystems were replaced by a study, financially supported by the American Petroleum Institute, which questions that conclusion. White House officials emphasized that the edited section did not represent »scientific consensus« about climate change; President George W. Bush wants to wait for »sound science« on the subject; and the coal, oil and automobile industries argue that since carbon dioxide occurs naturally, it should not be labeled a pollutant. An expert at the National Wildlife Federation compared the White House editing to directing the secretary of labor to alter unemployment figures to paint »a rosy economic picture«. But a senior fellow at the conservative National Center for Public Policy Research was

frankly elated: EPA's »so-called science« has long been propaganda for dubious causes; what we know about the climate system is »limited to a few facts«, the rest is »a combination of hypothesis and speculation« (see <http://www.nationalcenter.org/NPA471.html>). Knowledge here is allegedly universal certainty about limited evidence and uncertain scientific results; belief, subjective and biased convictions masquerading as science.

Although in such controversies, belief tends to function as a term of abuse, the debates themselves suggest that what has become problematic is the status of science as ultimate cognitive authority. The values of science – objectivity, disinterested quest for empirical evidence, rational and well-grounded theorizing – are not always judged to be sufficient to sustain knowledge, command belief, or unambiguously discriminate these two states. Can the history of science shed some light on this situation? Yes – though not by means of normative argument, but by historicizing the very categories in question.

Consider something that looks like the prototype of a belief-thing: miracles. Just the kind of thing one would imagine disappeared, at least as a legitimate object of knowledge, with the triumph of science and the rise of rationality. For Saint Augustine in the 4th century C.E., miracles were »not contrary to nature, but only contrary to what we know about nature«. For Aquinas nine centuries later, they were »beyond the order commonly observed in nature«. By the mid-18th century, a miracle had become, in the words of the Scottish empiricist David Hume, a »transgression« or a »violation« of the laws of nature. For Hume, since these laws admit of no exceptions, there could be no justified belief in miracles; moreover, he argued, no amount of testimony concerning a past event is enough to confirm it, if it contradicts direct present-day experience.

Things of course looked very different for the Catholic church. Miracles are deemed to attest revelation, and, in the case of candidates for beatification and canonization, they confirm the holiness of their lives and character. While the church does not declare individuals ›blessed‹ or saints on the sole basis of miracles attributed to them or their intercession, it does require miracles – and evidence for them. The legitimacy of the entire process depends largely on the rigor with which putative miracles are verified through the cross-examination of witnesses, and this entails painstaking attempts to establish proper forms of



evidence (e.g. convergent testimonies, or firsthand as opposed to secondhand accounts). Thus, strictly speaking, there are no miracles at the beginning of a canonisation inquest – only events susceptible of becoming (or not) miracles.

In accordance with scholastic distinctions concerning the natural and the supernatural, late medieval canonization trials included instructions for interrogating witnesses that indicate a desire to rule out possible natural explanations for the events they reported. This applied in particular to cures, which make up most of the putative miracles. Medieval authors insisted on the need to look for natural explanations before asserting miraculous ones. Since at least the 13th century, the church has called upon medical judgment to examine proposed miracles, and increasingly tended to approve only the ones that it was most difficult to question on medical grounds, as in cases of chronic illnesses, failed (or totally absent) medical treatments, or conditions physicians thought incurable. After the Counter-Reformation of the mid-16th century, the canonization procedure was tightened and became increasingly legalistic. The presence and function of physicians was therefore reinforced and formalized.

In 1734–38, a decade before Hume's critique of miracles, the cardinal of Bologna, Prospero Lambertini, published a voluminous manual entitled *On the beatification of the servants of God, and on the canonization of the blessed* (*De servorum Dei beatificatione et beatorum canonizatione*). Later, as Pope Benedict XIV, Lambertini increased not only the minimum number of miracles that have to be assessed in a canonization trial (from two to four), but also the minimum number of required testimonies (from two to six, with at least four of them ocular). A sizeable portion of *De servorum* discusses miraculous cures and such singular phenomena as stigmata, tears of blood, or the incorruptibility or resurrection of dead persons. The topics were not new, but Lambertini systematized earlier practice, and codified the search for naturalistic explanations. Nevertheless, while late medieval trials seem to have emphasized ruling out natural causes, practices and rules emanating from the Counter-Reformation – with their theorized culmination in *De servorum* – might have given more explicit weight to the positive quest for such causes as explanations for the proposed miracles. This implied that miracles could be revised. In the late 16th-century, for example, the physicians involved in the autopsy and post-mortem examination of a future saint, Filippo Neri,

had concluded that the underlying cause of his cardiac symptoms was supernatural. Less than a century and a half later, Lambertini rejected their conclusion – and he did so without the slightest hint of Humean skepticism.

Miracles, in sum, were not simply to be believed; but rather, backed by empirical evidence, they had to be known with a high degree of probability. The gentlemen philosophers and naturalists who established the Royal Society of London in the mid-17th century faced a similar problem: how to trust the observer of a unique experiment and lend credibility to the resulting facts. Their solution was one of the crucial social techniques involved in what historian of science Steven Shapin calls »epistemological decorum«: the witnessing of experiments by a group of selected individuals. Testimony came to be understood as necessary for the constitution of knowledge. Lambertini may have aligned miracle-testing with the methods we commonly associate with the Scientific Revolution of the 17th century; but he did so by assimilating those methods into investigative and evidentiary practices that had been current in saint-making before the triumph of the »experimental philosophy« and John Locke's discussion of probability and testimony in his epoch-making *Essay concerning human understanding* of 1690.

The treatment of potential miracles by the Roman Catholic church throws light on the permeability of the boundaries between knowledge and belief. It highlights the complex interactions among juridical, theological, and scientific practices, methods, and contexts. Miracles functioned as limiting cases for what could be empirically ascertained; in the secular arena as well, inquiries into miracles set standards for empirical procedures of proof and evidence. In short, within the practices and discourse of the official church (if not in popular religiosity), miracles were not facts because one believed in them, but some facts were miraculous because they had been construed as such through methods designed to produce and generate legitimate knowledge.

At stake here are not the categories of knowledge and belief as abstract concepts, but a complex of interrelated practices (the interrogation of witnesses, the examination of bodies, the collection and interpretation of documents, the methodical formulation of arguments against »data« favorable to the cause of the proposed saint, the writing of reports) that turn miracles into an »epistemic thing« whose investigation instantiates the problem of knowl-



edge and belief in the framework of the history of evidence. Patronage and diplomacy were certainly important. Epistemically, however, the beatification and canonization procedure was a culture by itself – empirical, if not experimental, and one that largely anticipated and shared in the sensibility and the ›moral economy‹ of modern science.

In *Ways of Worldmaking* (1978), philosopher Nelson Goodman wrote, »If I ask you about the world, you can offer to tell me how it is under one or another frame of reference; but if I insist that you tell me how it is apart from all frames, what can you say?« Nothing indeed. As categories as well as cognitive and emotional experiences, knowledge and belief are part and parcel not just of the contemporary debates we sketched at the beginning, but of our minds tout court. By showing how they functioned in past frames, the history of science might relativize their supposed incongruity, and help us keep in mind that the modern trust in science implies contingent beliefs about what science is and how it works.

Reading suggestions

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