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Citation

Holton, Gerald. 2015. Revisiting Einstein's Mein Weltbild. Working paper, Department of Physics, Harvard University.

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Revisiting Einstein's *Mein Weltbild*

Gerald Holton

Among Einstein's many publications meant for the general public, the small book titled *Mein Weltbild*¹ is one of the most widely admired (especially in translation, first as *The World as I See it*). But in my opinion it is his most puzzling and intriguing volume.

First, it belongs in the category of what might be called "fugitive books." It was published in 1934 by the Querido Verlag, a firm set up in the Netherlands in the previous year specifically to issue books by distinguished authors who no longer could publish in their home countries (shades of Galileo). Even a first glance at Einstein's book shows it to be a potpourri of his various earlier publications and letters, ranging from politics to basic science. There are also signs that it was put together in a hurry (probably by Einstein's son-in-law, Rudolf Kayser, and Carl Seelig). Thus the one-page Vorwort makes incorrect references to some of the articles.

But to Einstein himself, the worst offense was the very title of the book, which he had not supplied. He wrote a curt note to the publishing company (on 31 May 1943), vigorously objecting to the "geschmacklosen and verlogenen Titel."² Indeed, when he sent a copy of the book as a birthday present to his old friend Max Talmey, he inscribed it with one of his humorous short poems, but crossed out the disgraceful title, writing below it: "Quatsch" (nonsensical twaddle).³ To anyone who put even one toe into the vast ocean of German Weltbilderei in the 19th and early 20th centuries, it is obvious why Einstein regarded the title as distasteful and mendacious.

"Weltbild" is one of those wonderfully metaphoric-poetic words which Seamus Heaney once called "bearers of history and mystery"⁴ (although this one suffers from poor translation ability, with the OED providing the lame definition of "view of life" for both "Weltbild" and "Weltanschauung"). From the time when Kant launched the concept in his mandatory *Kritik der reinen Vernunft*, German scientist-philosophers dealt with it all too often as nearly sacred, as a profound part of one's own self-identification, but also as a shield and sword, especially in quarreling with opponents.⁵

And they used it with abandon; my College's library lists 854 books in all fields containing that word in their title or as a significant keyword (not counting also the books using related words such as "Weltanschauung," or the huge number of published articles similarly afflicted). Erwin Schroedinger felt compelled to title his last book *Meine Weltansicht*, published in his last year of life (1961), as if part of last rites.

The most theatrical and widely noted confrontation regarding the proper (versus sham) conception of the Weltbild was that initiated by an attack by Max Planck on Ernst Mach, in the early years of the 20th century. It was at that time as high an encounter as it could get in German science.

A quick reminder: In his early years Planck was a follower of Mach's positivistic and sensationist ideas, but turned against them as he came to accept atomism and to be more and more attracted to metaphysical conceptions. He was also concerned that Mach's views remained fashionable among mature scientists, that they had "grosse Beliebtheit." Planck's opening salvo was a lecture on 9 December 1908 (and the printed version of 1909), titled "Die Einheit des physikalischen Weltbildes." ⁶ He explained at length his own, favored conception of a developing Weltbild of science that would be freed of every individual's mere "menschliche Beobachtungen," such as those Mach had put forward as a key notion. Only by putting aside Mach's view, Planck wrote, could one reach for those constant and universal conceptions that are at the heart of science (rather like Planck's constant h , which he said even extraterritorial observers would have to deduce).

Mach countered with a lengthy response ("Die Leitgedanken meiner naturwissenschaftlichen Erkenntnislehre...", 1910 ⁷) which clearly expressed his displeasure, not least by reducing the name of Planck to a mere "P." Now it was Planck's turn. Within a few months, he attacked again, this time against Mach's science generally ("Zur Machschen Theorie der physikalischen Erkenntnis," 1910 ⁸), and he returned to it in an updated lecture in the Netherlands in 1929 ("Zwanzig Jahre Arbeit am physikalischen Weltbild" ⁹), then repeated it in a lecture tour to Vienna and Prague--and kept it up to 1940 ("Naturwissenschaft und reale

Aussenwelt"¹⁰).

Planck's attack on Mach of 1909 put Einstein in a difficult position. The confrontation was discussed everywhere. More importantly, Einstein, too, had of course attended to the then pervasive worldview discussion. Even as a teenager, Einstein had read Kant's KRV. As a young student at the ETH he had taken, as one of his eleven non-compulsory courses, "Goethe: Werke und Weltanschauung." And in his early scientific publication he was judging the then current mechanical versus electromagnetic world-pictures, referring directly to "Weltbild" (e.g. in 1907¹¹). He was also deeply involved in the polemic in other ways, historically and epistemologically. As to Mach, Einstein had openly declared himself an admiring follower in his early years; Mach's hope for fashioning an Einheitswissenschaft was then (and for life) a main part of Einstein's own program. So Einstein did the least he could do: he wrote polite letters to Mach (9 August 1909, 17 August 1909, 25 June 1913, and in December 1913¹²), indicating his sympathy with Mach.

On the other hand Planck had been a promoter of Einstein's career from the start, being involved in the acceptance for publication of Einstein's early papers, defending relativity theory in its early years, later persuading him to come to Berlin, and being there a close colleague, but foremost of course by leading Einstein into quantum physics through his (Planck's) publications. In fact, when Einstein said of Planck in his important 1918 article, "Motive des Forschens,"¹³ that "we love him," it was a believable indication of Einstein's feelings--even though by then he had come to know of Planck's publicly expressed dislike of Einstein's new theory. At any rate, no letter from Einstein to Planck in the relevant period has been found; but the two met at a conference in December 1909, a year after Planck's first polemic, and something may have been said there.

At this point we have to look again at a much-analyzed publication of Einstein (badly translated in his *Ideas and Opinions*¹⁴), originally a lecture titled "Motive des Forschens," given at a celebration of Planck's 60th birthday (1918). It contains Einstein's most eloquent expression of his own Bild der Welt, which he claims every human being in some measure tries to form in order to overcome the world of mere experience. He urged there that in that task, physicists have their

own, highest duty ("Hoechste Aufgabe") to form a personal Weltbild (a proud, noble term, a "stoltze[r] Name"), which is achievable not through logic but by "Einfuehlung in die Erfahrung sich stuetzende Intuition." There follows a casual reference to the Planck-Mach polemic. Elsewhere, Einstein makes other references to his world-view (e. g. in the essay "Wie ich die Welt sehe," of 1931¹⁵). But in his 1934 essay "Gibt es eine Juedische Weltanschauung?",¹⁶ Einstein vehemently denied its existence in that case. Instead, he acknowledged only the role of a "Lebenseinstellung," one that contains all the usually celebrated ideals--the holiness and favoring of life of all creatures, the duty to make life more uplifting and beautiful, et cetera.

So now we know what, in Einstein's opinion, a Weltbild is *not*. But do we really understand, when all is said and done, what it *is*? My own answer is *Yes*-- but we can hope for more than a glimpse only if the person seeking such knowledge has been quite thoroughly immersed in studies of Einstein's papers and correspondence. For it is in this case, and more generally, only through such wide-ranging encounters that there can emerge for the scholar a conviction of what may be the core-belief of the person being examined. Or better, borrowing from Einstein's essay of 1913: such an observer would be able to understand the individual's privately achieved "uebersichtliche Bild der Welt," and how the final step was taken--the placement of that picture into one's center of gravity, "den Schwerpunkt seines Gefuehlslebens." I would stress that this process of observation is itself idiosyncratic, relying heavily on intuition and imagination (two of Einstein's own chief tools), and its result is difficult to convey fully to others. To know Einstein's Weltbild, one has to know one's own Einstein.

Further, this ultimately personal view has consequences. One is that among most working scientists, by and large, there is a great suspicion of this imaginative process, one far from operational meaning. As Lorraine Daston noted in her splendid essay, "Fear and Loathing of the Imagination in Science," "the power of the imagination has long awakened fear among scientists", and she recalled the remark of the great physiologist Claude Bernard, "L'art c'est moi, la science c'est nous."¹⁷

This estrangement has long concerned me. Scientists as educators, as instructors facing a

group of newcomers, will now very rarely publicly evoke to the student any glimpse of what may in fact be secretly their own motivating possession, some awareness of the humanistic element in science. Instead, the typical instructor, especially in the important early courses, puts out, one by one, the various main topics, with little apparent connection among them--a collection a bit like the unrelated set of chapters in his 1934 book, which Einstein dismissed as Quatsch. No wonder that many students later ask what this course was all about. For under the usual regime, such a student will have been deprived of what is at the heart of all sound education: some measure of the intellectual and emotional experience of having been introduced to a wide-ranging conception motivating scientific understanding, or as Einstein put it, to one's own "uebersichtliche Bild der Welt."

¹ Querido Verlag, 1934.

² Einstein's letter of May 31, 1924. I thank Professor Diana K. Buchwald, General Editor and Director of the Einstein Papers Project, for supplying a copy of the letter.

³ In the description of the offer of a first-edition copy of *Mein Weltbild*, Lot 37126 of Signature Rare Books Co, auction #6038.

⁴ Repeatedly quoted in his obituaries, e.g. *New York Times*, 30 August 2013.

⁵ For good introductions to the various meanings and roles of the concepts of Weltbild and Weltanschauung, etc., see John Heilbron, *The Dilemmas of an Upright Man* (1986) and Gerhard Sonnert, *Einstein and Culture* (2005).

⁶ *Physikalische Zeitschrift*, v. 10, 1909.

⁷ *Physikalische Zeitschrift*, v. 11, 1910.

⁸ Ibid.

⁹ In Max Planck, *Physikalische Abhandlungen und Vortraege*, v. 3, 1958.

¹⁰ *Die Naturwissenschaften*, v. 28, 1940.

¹¹ *The Collected Papers of Albert Einstein*, v. 2, 1989, Document 47.

¹² Documents 174, 175, 448 and 195, in Einstein's *Collected Papers*, v. 5, 1993.

¹³ Albert Einstein, *Mein Weltbild*, 1934, pp. 165-170, but given the wrong title for that chapter.

¹⁴ Crown Publishers, 1954, and other publishers.

¹⁵ Albert Einstein, *Mein Weltbild*, 1934, pp. 11-17.

¹⁶ Ibid., pp. 133-136.

¹⁷ Peter Galison, Stephen R. Graubard, and Everett Mendelsohn, *Science and Culture*, 2001, pp. 82 and 87.