

Possible forgery: Mach's rejection of Einstein's Relativity

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Mach apparently rejected Einstein's relativity; although there is mystery that the rejection might be a forgery.

Mach's rejection of Einstein's Relativity might have been a forgery, according to an article at Stanford Encyclopedia of Philosophy by Thomas A. Ryckman. [1]

Gerald Horton [2] explains how Mach apparently rejected Einstein's relativity as follows: "...five years after Mach's death, when Mach's THE PRINCIPLES OF PHYSICAL OPTICS was published at last. Mach's preface was dated July, 1913 – perhaps, a few days or, at most, a few weeks after Mach had received Einstein's last, enthusiastic letter and the article on general relativity theory. In a well-known passage in the preface (but one usually found in an inaccurate translation), Mach had written: 'I am compelled, in what may be most last opportunity, to cancel my views [Anschauungen] of the relativity theory. I gather from the publications which have reached me, and especially from my correspondence, that I am gradually being regarded as the forerunner of relativity. I am able even now to picture approximately what new expositions and interpretations many of the ideas expressed in my book on Mechanics will receive in the future from this point of view. It was to be expected that philosophers and physicists should carry on a crusade against me, for, as I have repeatedly observed, I was merely an unprejudiced rambler endowed with original ideas, in varied fields of knowledge. I must, however, as assuredly disclaim to be the forerunner of the relativists as I personally reject the atomistic doctrine of the present-day school, or church. The reason why, and the extent to which, I reject [ablehe] the present-day relativity theory, which I find to be growing more and more dogmatical, together with the particular reasons which have led me to such a view – considerations based on the physiology of the senses, epistemological doubts, and above all the insight resulting from my experiments – must remain to be treated in the sequel [a sequel which was never published].'"

Mach lived: 18 February 1838 – 19 February 1916, and apparently in 1913 had rejected Einstein's relativity; at that time would have been special relativity, with the finished version of general relativity not published until later.

Now from Thomas A. Ryckman [1] in an article revised March 7, 2018 there is this information:

"Finally there was, for Einstein, an understandable awkwardness in learning of Mach's surprising disavowal of any role as forerunner to relativity theory in the Preface, dated 1913, to Mach's posthumous book (1921) on physical optics. Though Einstein died without knowing differently, a recent investigation has built a strong case that this statement was forged after Mach's death by his son Ludwig, under the influence of a rival guardian of Mach's legacy and opponent of relativity theory, the philosopher Hugo Dingler (Wolters 1987)."

So, Mach's rejection of Einstein's relativity might be a forgery.

There are many such mysterious events around Einstein's relativity.

Horton [3] who takes the rejection by Mach at face value says: "Ernst Mach's harsh words in his 1913 preface leave a tantalizing mystery. Ludwig Mach's destruction of his father's papers have so far made it impossible to find out about the "experiments" (possibly on the constancy of the velocity of light) at which Ernst Mach hinted. Since 1921, many speculations have been offered to explain Mach's remarks."

So, if Mach's rejection of Einstein's relativity is not a forgery, then it becomes mysterious as to the reasons for the rejection.

However, Horton [3] does go on to give some plausible reasons why Mach would reject it: "Yet, I believe, it is not so difficult to reconstruct the main reasons why Mach ended up rejecting the relativity theory. To put it very simply, Mach had recognized more and more clearly, years before Einstein did so himself, that Einstein had indeed fallen away from the faith, had left behind him the confines of Machist empiricism."

Empiricism was the philosophy of science that Mach had, and if Mach thought Einstein was not conforming to it would then reasonably reject Einstein's relativity.

Horton [3] gives some examples for why Mach would think that, the most interesting example: "... from the 1905 relativity paper itself: what had made it really work was that it contained and combined elements based on two entirely different philosophies of science – not merely the empiricist-operationist component, but the courageous initial postulation, in the second paragraph of two thematic hypotheses (one on the constancy of light velocity and the other on the extension of the principle of relativity to all branches of physics), two postulates for which there was and can be no direct empirical confirmation."

Horton [4] then notes that Einstein did not draw attention feature and in 1921 lecture said: "...I am anxious to draw attention to the fact that this theory is not speculative in origin; it owes its invention entirely to the desire to make physical theory fit observed fact as well as possible. We have no revolutionary act, but the natural continuation of a line that can be traced through centuries. The abandonment of certain notions connected with space, time, and motion, hitherto treated as fundamentals, must not be regarded as arbitrary, but only as conditioned by observed facts."

But Horton [4] notes that in a 1933 lecture, Einstein was saying something different. Einstein started the lecture saying: "If you want to find out anything from the theoretical physicists about the methods they use, I advise you to stick closely to one principle: Don't listen to their words, fix your attention on their deeds." And Horton notes that Einstein then went on to divide the tasks of experience and reason in a very different way than the earlier lecture.

References

[1] Early Philosophical Interpretations of General Relativity, Thomas A. Ryckman, First published Wed Nov 28, 2001; substantive revision Wed Mar 7, 2018, at Stanford Encyclopedia of Philosophy

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[2] Mach, Einstein, and the search for Reality, by Gerald Horton in The Roots of Special Relativity: Science and Society, vol. 1 edited by Peter Galison, Michael Gordin, David Kaiser, p.35

[3] *ibid* p. 37

[4] *ibid* p.38

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