

# Did Einstein Give Praise to other Physicists?

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## Abstract

There are those who claim that Einstein was not inclined to give other physicists much praise, and he did so only reluctantly. I don't know how anyone is so arrogant as to claim to have an objective standard by which even to make such a claim. By that same 'standard', would Bohr, Pauli, Born, Dirac, Schrödinger, or Heisenberg be judged as lavish or scant givers of praise to other physicists? From the perspective of their individual contributions to physics are concerned, what difference does it even make? I claim that by any reasonable standard of rational analysis, the claim that Einstein was not inclined to give other physicists any praise can be easily disproven. My proofs come from various essays from Einstein's book *Ideas and Opinions*.

## 1 False Accusers

My primary interest in writing these articles that defend Einstein is not because I fancy myself as an Einstein apologist, per se. Rather, I do fancy myself as a defender of the truth, civility, and proper scholarship. People should not make unfounded accusations against others. People should be logical (i.e., avoid logical fallacies in their presentations), people should be fair and relevant in their accusations, and, lastly, people should reject any claim to "facts" presented by others that are not supported abundantly by reputable public sources. Anyone who fails to meet these standards should be immediately ignored.

<sup>1</sup>This know also, that in the last days perilous times shall come. <sup>2</sup> For men shall be lovers of their own selves, covetous, boasters, proud, blasphemers, disobedient to parents, unthankful, unholy, <sup>3</sup>Without natural affection, trucebreakers, **false accusers**, incontinent, fierce, despisers of those that are good, <sup>4</sup>Traitors, heady, highminded, lovers of pleasures more than lovers of God; <sup>5</sup>Having a form of godliness, but denying the power thereof: from such turn away.

— Apostle Paul, 2 Timothy 3 (KJV)

## 2 From *Ideas and Opinions*

I don't know what difference it makes to Einstein's credit for the great contributions he made to physics whether or not he gave praise to other physicists, but let's see what the facts are.

The following quotes are from the Einstein essay "The mechanics of Newton and their influence on the development of theoretical physics" (*Ideas and Opinions*, reprinted from 1927)

Newton is "brilliant" and a "genius" (pp. 253–254):

It is just two hundred years ago that Newton closed his eyes. We feel impelled at such a moment to remember this brilliant genius, who determined the course of western thought, research, and practice like no one else before or since. Not only was he brilliant as an inventor of certain key methods, but he also had a unique command of the empirical material available in his day, and he was marvelously inventive as regards detailed mathematical and physical methods of proof. For all these reasons he deserves our deepest reverence. The figure of Newton has, however, an even greater importance than his genius warrants because destiny placed him at a turning point in the history of the human intellect. To see this vividly, we have to realize that before Newton there existed no self-contained system of physical causality which was somehow capable of representing any of the deeper features of the empirical world.

Faraday and Maxwell make the first great advance after Newton:

. . . Even the revolution in electrodynamics and optics brought about by Faraday and Maxwell, which formed the first great fundamental advance in theoretical physics since Newton, took place entirely under the aegis of Newton's ideas. (p. 257)

Einstein's main philosophical interest was always about what constitutes the fundamental program that runs the engines of scientific discovery and invention of unification of physics by revealing what concepts are useful for categorizing "physical reality."

Next is Einstein's tribute to Newton, Faraday, Maxwell, Hertz, and Lorentz, as their work impacted the fundamentals of the evolution of physics :

Newton's theory of motion, considered as a program for the whole of theoretical physics, received its first blow from Maxwell's theory of electricity. It became clear that the electric and magnetic interactions between bodies were effected, not by forces acting instantaneously at a distance,<sup>1</sup> but by processes which are propagated

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<sup>1</sup>The concept of *action at a distance* was invented by Newton to 'explain' how gravitational force works between any two mass point particles: They act on each other always by instantaneous communication of force proportional to the inverse square of the distance between them.

through space at finite speed. In addition to the mass point and its motion, there arose according to Faraday's concept a new kind of physical reality, namely the "field." At first people tried, adhering to the point of view of mechanics, to interpret the field as a mechanical state (of motion or stress) of a hypothetical medium (the ether) permeating space. But when this interpretation refused to work in spite of the most obstinate efforts, people gradually got used to the idea of regarding the "electromagnetic field" as the final irreducible constituent of physical reality. We have H. Hertz to thank for definitely freeing the concept of the field from all encumbrances derived from the conceptual armory of mechanics, and H. A. Lorentz for freeing it from a material substratum; according to the latter the only thing left as substratum for the field was physical empty space (or ether), which even in the mechanics of Newton had not been destitute of all physical functions.

— Found in: "The Mechanics of Newton..." *Ideas and Opinions*, p. 259.

More praise for Maxwell and Lorentz (p. 260):

The theory of Maxwell and Lorentz led inevitably to the special theory of relativity, which, since it abandoned the notion of absolute simultaneity, excluded the existence of forces acting at a distance.

Praise to Newton and Poisson as two who contributed to the foundation to the general theory of relativity (p. 260–261):

. . . Inertia, gravitation, and the metrical behavior of bodies and clocks were reduced to a single field quantity; this field was again postulated as dependent on bodies (generalization of Newton's law of gravity or rather the field law corresponding to it, as formulated by Poisson).

In a more formal sense also Newton's mechanics prepared the way for the field-theory. The application of Newton's mechanics to continuously distributed masses led invariably to the discovery and application of partial differential equations, which in their turn first provided the language for the laws of the field-theory. In this formal respect Newton's conception of the differential law constitutes the first decisive step in the development which followed.

The whole **evolution** of our ideas about the processes of nature, with which we have been concerned so far, might be regarded as an organic development of Newton's ideas. [emphasis mine]

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The following quotes Einstein made about his friend and mentor H. A. Lorentz, which are found in Einstein's book *Ideas and Opinions*:

From "Address at the grave of H. A. Lorentz" (p. 73) (Lorentz died in 1928):

It is as the representative of the German-speaking academic world and in particular the Prussian Academy of Sciences, but above all as a pupil and affectionate admirer that I stand at the grave of the greatest and noblest man of our times. His genius led the way from Maxwell's work to the achievements of contemporary physics, to which he contributed important building stones and methods.

He shaped his life like an exquisite work of art down to the smallest detail. His never-failing kindness and generosity and sense of justice, coupled with a sure and intuitive understanding of people and human affairs, made him a leader in any sphere he entered. Everyone followed him gladly, for they felt that he never set out to dominate but only to serve. His work and his example will live on as an inspiration and a blessing to many generations.

I find this very ironic indeed. Einstein is claiming that one reason that Lorentz doesn't get his due recognition these days is because history has lost sight of him. But this is no fault of Einstein, because he made this effort to keep alive the tribute due to Lorentz. I suppose Einstein realized that his own theory of relativity had the effect of eclipsing the work of others (all because he decided that time cannot be absolutely defined?), and he sought to rectify this problem. Einstein himself claimed that special relativity was the inevitable result of the foundation laid down by Maxwell and Lorentz, thus diminishing the relative importance of his own theory compared to the previous work of these physicists that he admired so much. For some reason Einstein became the physicist equivalent of a rock star. No one in those days, including Einstein, could have predicted this would happen.

"On the theory of relativity" (p. 246) gives us an example of how far Einstein would go to elevate the accomplishments of those before him that he admired so much:

It is a particular pleasure to me to have the privilege of speaking in the capital of the country from which the most important fundamental notions of theoretical physics have issued. I am thinking of the theory of mass motion and gravitation which Newton gave us and the concept of the electromagnetic field, by means of which Faraday and Maxwell put physics on a new basis. The theory of relativity may indeed be said to have put a sort of finishing touch to the mighty intellectual edifice of Maxwell and Lorentz, inasmuch as it seeks to extend field physics to all phenomena, gravitation included.

On p. 247 we read Einstein giving due credit to Minkowski:

According to the special theory of relativity the four-dimensional continuum formed by the union of space and time (Minkowski) retains the absolute character which, according to the earlier theory, belonged to space and time separately.

On p. 248 we read Einstein giving due credit to Mach:

There is yet another factor underlying the **evolution** of the general theory of relativity. As Ernst Mach insistently pointed out, the Newtonian theory is unsatisfactory in the following respect: if one considers motion from the purely descriptive, not the causal, point of view, it only exists as relative motion of things with respect to one another. [emphasis mine]

On page 264 of *Ideas and Opinions*, in his essay called “Johannes Kepler,” Einstein called Kepler a genius.

On page 275 of *Ideas and Opinions*, in his essay called “On the method of theoretical physics,” Einstein gave credit to de Broglie, Schrödinger, Dirac, and Born for their collective modern quantum theory, which he characterized as having important successes to its credit.

### 3 Conclusion

Well, sounds to me like abundant praise-giving by Einstein to other physicists.