

A contrarian look at a well-studied life

Einstein's Mistakes

The Human Failings of Genius

Hans C. Ohanian
W. W. Norton, New York, 2008.
\$24.95 (394 pp.).
ISBN 978-0-393-06293-9

Reviewed by Michel Janssen

The days of Einstein hagiography are over. The biographies published in the past decade and a half have replaced the old plaster-saint image with warts-and-all portraits of the man behind the science. By and large, however, Albert Einstein's modern biographers, while exposing his personal foibles, have accepted the standard verdict about his science: a string of almost flawless masterpieces during the first half of his career, mostly forgettable work during the second. In *Einstein's Mistakes: The Human Failings of Genius*, Hans Ohanian now wants to tell the story of Einstein's scientific work, all of it, without papering over mistakes in his subject's reasoning. He endorses the second part of the standard verdict but rejects the first. Although the genre is not quite as new as he suggests, Ohanian is to be commended for trying to provide a general audience with an unflinching, comprehensive look at Einstein's science. His explanations of the physics are a cut above those in most popular books on Einstein. That said, I'm afraid the book fails. Let me identify some of its major problems.

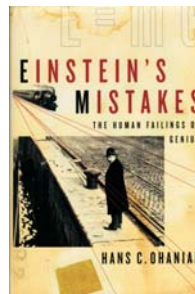
First of all, the tone is off-putting. The nature of the project may call for a certain irreverence, but it gets exasperating when, despite the occasional word of praise, the author puts just about everything Einstein does in the worst possible light. It is not just his science: Despite a promise to do so "only tangentially" (page xi), the author devotes much space to airing the well-

known dirty laundry of Einstein's private life. He shows no more compassion for Einstein's public persona. This, for instance, is how the author describes an oft-noted tension: "With one hand Einstein worked on weapons of mass destruction, and with the other he beat the pacifist drum" (page 294). The WMD

are gyrocompasses. The way Ohanian sees it, Einstein largely had himself to blame for the grief he got from antirelativists in the early 1920s (pages 273–276). He even manages to find fault with Einstein's dealings with the Berlin Academy in 1933 (page 313).

One gets the impression, however, that in those and other passages Ohanian just wants to be contrarian, and elsewhere in the book (page 84 and pages 217–219) he distances himself from authors, then and now, whose attempts to discredit Einstein had or may have had more nefarious motives. It is also true that many others are given the same acerbic and curmudgeonly treatment as Einstein—from Galileo (page 47) and Isaac Newton (page 61) to members of the Nobel committee (pages 146, 149, and 269). Two notable exceptions to this general rule are Hendrik Lorentz and Max Planck. Unsurprisingly, in Ohanian's view, the two of them deserve a big chunk of the credit that went to Einstein for special relativity and early quantum physics.

Another major problem with the book is its neglect of the secondary literature. Ohanian announces in his preface that he is relying on primary sources for his account of Einstein's physics. That may sound laudable, but he could have saved himself from perpetuating some of the standard misreadings of his source material by consulting the extensive body of historical scholarship. A simple example must suffice here. Ohanian berates Einstein for ignoring the Michelson–Morley experiment as evidence for the light postulate (page 105). For Ohanian, the light postulate is the claim that the velocity of light is the same in all inertial frames (page 25). For Einstein himself it was that the velocity of light is independent of the velocity of its source.



The Michelson–Morley experiment thus provides evidence for Ohanian's light postulate but not for Einstein's. Einstein routinely listed the experiment as evidence for the relativity postulate.

A central chapter in the book is devoted to $E = mc^2$. The author disputes the cogency of Einstein's various

derivations of that result and, in consequence, his claim to his signature formula. Ohanian, to his credit, points to various problems that Einstein scholars have passed over in silence. As Ohanian eventually seems to concede (page 332), however, one has to distinguish between the basic insight, for which Einstein richly deserves the credit he has received, and a fully satisfactory mathematical formulation, which Ohanian argues was achieved only by Max Laue and Felix Klein.

Ultimately, the author does not dispute that Einstein made many important contributions to physics. How can that be squared with the pervasive sloppiness that Ohanian sees in his work? That issue, I think, is more interesting than the author's explicit aim of humanizing genius or implicit goal of redistributing credit. Unfortunately, Ohanian's one-size-fits-all approach to Einstein's mistakes, which covers everything from algebraic slips and unwarranted assumptions to Einstein's pursuit of unified field theory and his opposition to quantum mechanics, constrains his ability to answer the question. In the end, he borrows the image Arthur Koestler used for Johannes Kepler to turn Einstein into a sleepwalker who essentially just stumbled upon his results (see, for example, pages xix and 331) and trots out the tired old caricature of Einstein's *modus operandi*: disregard for experimental evidence, stubbornness, and belief in the ultimate simplicity of nature's laws. Ohanian shows no interest in probing any deeper. Quoting John Synge's metaphor of the equivalence principle as the "midwife at the birth of general relativity," for instance, Ohanian chooses simply to run it into the ground. Einstein, he tells us, "doted on his midwives—he was more faithful to them than to his wives" (page 334).

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