

scientific understanding about how the Moon was formed.

Apollo to the Moon closes with a nod to the “new space”—the modern space race largely being driven by commercial entities. The inclusion of Amazon CEO and Blue Origin founder Jeff Bezos, who oversaw the remarkable recovery of the Apollo F-1 engines from the depths of the Atlantic Ocean and their subsequent restoration, is a fitting footnote.

My only criticism of this book is that

it leaves you wanting more—more objects, more backstory, more VIP tales. Every page made me think of other objects and stories that deserved their own spotlights. I hope that the author expands on this book—perhaps taking inspiration from the British Museum’s ground-breaking “History of the World in 100 Objects” audio series broadcast by the BBC in 2010.

To say this is simply a book about objects would be doing it a great disservice.

Apollo to the Moon reaches out to everyone—not just spaceflight historians or those interested in technical detail, but all those who want to know more about how, a half century ago, an impossible dream became reality. Although it has now been more than 50 years since humanity first reached our nearest celestial neighbor, we’re still marveling at its brilliance.

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A 2014 Serbian stamp honoring Mileva Marić.

Getting to know Mileva Marić

After Albert Einstein became an international celebrity, his Serbian ex-wife Mileva Marić considered drafting her memoirs. Yet Einstein rudely dissuaded her, saying that no one would be interested in someone so “completely insignificant.” But Einstein was wrong: Countless people are now interested in Marić. In 1929 her Serbian friend Milana Stefanović talked to a newspaper reporter and insinuated that Marić had contributed to Einstein’s famous works. Marić herself chose not to be interviewed, but decades later, some Serbians argued that she was secretly a great physicist.

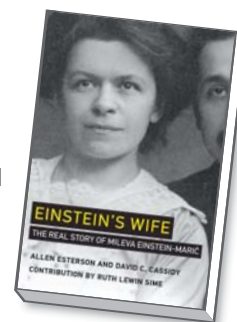
Einstein’s Wife: The Real Story of Mileva Einstein-Marić reconstructs Marić’s early life fairly and accurately. The compact volume will be an informative addition to library collections and a fascinating account for curious readers. Historian of science David Cassidy lucidly recounts her youth in school and her college years. Marić and Einstein were class-

mates at Zürich Polytechnic (now known as ETH), where they became romantically involved, leading to what Cassidy calls their “unsuccessful” marriage. Chemist and historian Ruth Lewin Sime contributes a brief essay about women in science in the 1900s.

Most notably, Allen Esterson, a retired lecturer at Southwark College in London, extensively debunks many common but unsupported stories about Marić’s mathematical abilities and her role in Einstein’s most famous papers. The now-popular claim that Marić was Einstein’s secret collaborator lacks solid footing. The book builds on previously published works to systematically confront the myth and the underlying evidence that allegedly supports it. Researchers such as Albrecht Fölsing, Abraham Pais, John Stachel, Gerald Holton, Jeremy Bernstein, and I have published scholarly articles about Marić and Einstein, but nothing in the existing literature is as

Einstein’s Wife The Real Story of Mileva Einstein- Marić

Allen Esterson and
David C. Cassidy,
with Ruth Lewin
Sime
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comprehensive as what Esterson has done here.

Esterson meticulously addresses the fictions about Mileva Marić that have been circulating in nonscholarly books, online, and on television. Many of her self-proclaimed supporters are engaged in a game of speculative charity, one that Marić herself never requested. For example, in 1969 a retired Serbian science teacher, Desanka Trbuhović-Gjurić, published a glowing biography of Marić that ascribed mathematical brilliance to her and blamed her relative obscurity on sexism. Yet Esterson carefully shows that the book is unfortunately riddled with hearsay, fictions, and mistakes. Another Serbian author, Dord Krstić, published a book about Marić in 2004; like Trbuhović-Gjurić’s account, Krstić’s has some merits but is biased and distorted by the desire to elevate his Serbian heroine.

To be sure, those Serbian writers were correct about the obstacles that Marić faced as a female student of science in the 1890s. In *Einstein’s Wife*, Cassidy rightly explains the difficult odds that Marić had to overcome as a female student in a nearly all-male high school in Zagreb given the oppressive, structural gender discrimination at the time. She surmounted obstacles with special permissions and personal drive.

Esterson and Cassidy provide the

best account anywhere of Marić's actual talents and shortcomings in mathematics and physics, based on primary sources about her education. Although the pair unearthed only a handful of new sources, the new sources include Marić's high school transcripts from Zagreb. Those transcripts show that in physics and math, her grades ranged from "satisfactory" to "very good." In those transcripts, her only grade of "excellent" was in Greek. Although high school grades are cer-

tainly no final measure of intelligence or potential, Esterson and Cassidy's work shows that the historical record offers little support for the claim that Marić was a mathematical luminary, nor did Marić make such a claim herself.

One popular story about Marić is that as a student at Zürich Polytechnic, she was better at mathematics than Einstein, and therefore he later needed her help to draft his theories. That myth was advocated by Truhović-Gjurić and more

recently echoed in the National Geographic television miniseries *Genius*. On the contrary, Einstein's college math grades were higher in three of the mathematics courses they took together and equal to hers in all others. Plus, he excelled in courses she didn't take, such as Differential Equations. Marić's average scores in mathematics were 4.5/6 (that is, 75%), and just 3.75/6 (63%) in descriptive geometry. Those were not high averages; many other students had higher averages, including Einstein. She twice took the final exams necessary to graduate from the Polytechnic, but, unfortunately, both times she failed her examination on the theory of functions.

Still, did Marić help Einstein in physics?

Yes! But the key question is, How much? One thing missing in this valuable book is a concise summation of Marić's importance in Einstein's scientific trajectory. So here it is.

They studied together in college and did independent readings in physics. In letters from 1899 to 1901, he credited her as sharing his aspirations in physics, and in a letter dated 27 March 1901, he referred to "our work on relative motion" of the invisible ether. The existing evidence suggests that Marić helped Einstein in some of his earliest efforts to draft physics papers in 1901. She supported him in the years when, he said, he was rejected by all physicists in Europe, which led him to become a mere government bureaucrat. With her and a few friends, Einstein discussed his amateur research that led to his first published papers. Apparently, she was the first person to read Einstein's original manuscript on special relativity. Reportedly, she, too, was the first person to actually believe it.

That is all important, even if she wasn't his secret coauthor.

However, after their daughter and son were born, Marić seems not to have worked on physics research at all. For example, her letters to her friend and confidante Helene Savić show no evidence that Marić continued working on physics after 1901. Instead, she repeatedly commented that Einstein was "tirelessly" writing many physics papers; by 1909 she was writing that "he really does deserve" the recognition he was finally getting.

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