

THE CHARM OF A MANUSCRIPT

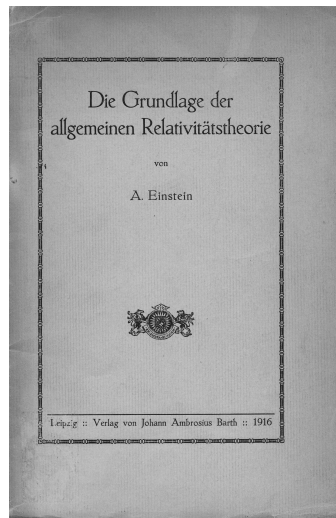
MANUSCRIPTS OF IMPORTANT DOCUMENTS IN THE HISTORY OF MANKIND AND OF LETTERS and writings of known individuals are all available in easily accessible printed form. Still, the handwritten originals maintain their charm and generate interest and aesthetic appeal. They are displayed at exhibitions and purchased by collectors at public auctions. Such originals give us a sense of kinship with the author and a glimpse into his or her working process. The difference between an original manuscript and its printed version is analogous to the difference between an original work of art and its reproduction, as described by Walter Benjamin in his book *The Work of Art in the Age of Mechanical Reproduction*. There he writes: “Even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be.”¹

In the early stages of his career, Einstein was not aware of this aspect of his written work and usually disposed of the original manuscripts as soon as the articles were published in print. Thus, none of the original manuscripts of his papers from 1905, his “miraculous year,” survive. However, there exists a handwritten version of Einstein’s 1905 paper on the Special Theory of Relativity, “On the Electrodynamics of Moving Bodies.”² In 1944, he reproduced it in his handwriting as a contribution to the war effort. It was put up for auction and raised \$6.5 million. It is now held at the Library of Congress.

The earliest extant scientific manuscript is a 70-page-long review article on Einstein’s Special Theory of Relativity. It was written at the request of the editor of the *Handbuch der Radiologie*, which published annual volumes of review articles on progress in different fields of science. Owing to delays in publication and the breakout of World War I, this article was never published. The manuscript remained in the custody of the publisher, and years later, in 1995, it was offered at auction by Sotheby’s, New York. Banker Edmond Safra bought the manuscript and donated it to the Israel Museum in Jerusalem as a gesture to its illustrious mayor, Mr. Theodor “Teddy” Kollek. The museum framed and hung each page, exhibiting the manuscript as a work of art, which attracted large audiences.³ Although most of the visitors did not understand the content, the language, and/or the handwriting of the manuscript pages, they nevertheless admired and were fascinated by the exhibition. This is the effect such manuscripts produce.

The manuscript reproduced in this book marks the conclusion of Einstein’s intellectual odyssey toward his General Theory of Relativity.⁴ About two months after his final presentation of the theory to the Royal Prussian Academy of Science, he wrote to Lorentz: “My series of gravitation papers are a chain of wrong tracks, which nevertheless

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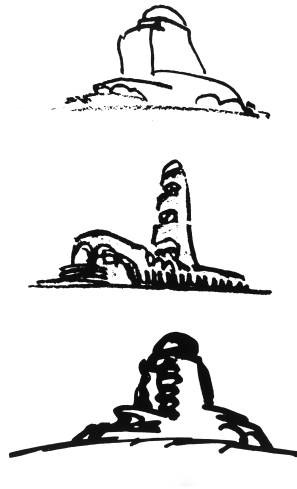
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did gradually lead closer to the objectives. That is why now finally the basic formulas are good, but the derivations abominable; this deficiency must still be eliminated.”⁵ Without eliminating what appeared to him as an avoidable complexity, Einstein submitted the manuscript for publication to Wilhelm Wien, the editor of *Annalen der Physik*, the leading journal in physics at the time, on March 19, 1916. In the submission letter, Einstein informed the editor that he had also discussed, with the publisher of the journal, an additional publication of this manuscript as a separate booklet. The article “Foundation of General Relativity” was published on May 11th in *Annalen der Physik* and also separately.

The general relativity manuscript is now part of the Albert Einstein Archives at the Hebrew University of Jerusalem. How it got there is a complex story, the details of which are not completely known. Apparently, Einstein gave the manuscript to his friend the physicist astronomer Erwin Freundlich, with whom he had an ongoing dialogue on possible observational tests of phenomena predicted by the new relativistic theory of gravitation. In 1920, Freundlich was one of the founders of the Einstein Donation Fund, which supported the construction of the Einstein Tower in Potsdam, where such tests were to be conducted. We do not know when and why Einstein gave the manuscript to Freundlich. The nature of this “gift” later became a point of dispute between them. By the end of December 1921, the relationship between the two colleagues and friends had deteriorated. Einstein resigned from the board of trustees of the fund and demanded that Freundlich return the manuscript. In an angry letter to Freundlich he wrote:

As concerns my manuscript, I ask you to arrange to have it handed over to me immediately, without wasting another word on it. I had requested that you send it back to me in the summer. You promised in writing to send it back immediately upon your return from your summer trip. When you did not follow through with it then, my wife wrote you a letter in this regard, to which you did not respond. Now

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Erich Mendelsohn:
Sketches for the design of
the Einstein tower, 1918.
bpk / Kunstbibliothek,
Staatliche Museen zu Berlin

you retrospectively contend I had given the manuscript to you, for which there was absolutely no reason. As if this were not enough, you took steps behind my back to sell the manuscript abroad, as you yourself told me. I hope now that you will do your duty without my having to admonish you again.⁶

Einstein retold the story of the manuscript in a letter to Arnold Berliner,⁷ editor of the journal *Naturwissenschaften*, who tried to mediate this dispute. Einstein concluded: “I find Freundlich’s conduct such that I want nothing to do with him. . . . It no longer concerns the manuscript but the man, whom I cannot trust anymore.” The handwritten draft of this letter contains a sentence that Einstein crossed out: “Auf das Manuscript verzichte ich hiermit; mit Freude daran.” (I am happy to do without the manuscript.)

Freundlich returned the manuscript, and in April 1922, Einstein entrusted the industrialist and philosopher of science Paul Oppenheim with selling it, giving the following instructions: “The Jewish University of Jerusalem shall be given half of the proceeds; of the remaining half you may dispose as your conscience tells you.”⁸ Thus, Einstein left it to Oppenheim’s discretion to decide on Freundlich’s claim to rightful ownership of the manuscript, although in a postscript Einstein stated that he was deeply convinced that Freundlich had no right to it and that his behavior was deceitful. Oppenheim was a friend of both adversaries and did not want to serve as a moral judge between them. Rather, he wished to restore their friendship.

In July 1923, Einstein took another course of action. He asked Heinrich Loewe, a prominent member of “The Preparatory Board of the Hebrew University and the Jewish National Library in Jerusalem” to sell the manuscript. This time the instructions concerning the allocation of the proceeds were very specific: They were to be distributed in equal parts among the library in Jerusalem, the Einstein Donation Fund, the fund securing Mrs. Freundlich’s pension, and Einstein himself, who would then donate his share to charity. These instructions were confirmed in a letter from Loewe to Einstein.⁹

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The manuscript was not sold, and its fate is revealed in correspondence between Einstein and his wife Elsa when in 1925 he spent two months in South America. Only his letters to Elsa survive; we do not know what she wrote to him. On April 15, in a postscript, he wrote: “Do not give away the manuscript, dear Elsa. . . . The time is not good for selling it. Better after my death.”¹⁰ Einstein did not know that on March 19th, Leo Kohn had already received the manuscript from Elsa on behalf of the Board of Trustees of the University of Jerusalem. The document,¹¹ signed by Kohn, that confirms this transaction stipulates that it be returned “without delay to Professor Einstein, in case any inconvenience be caused to him by the University’s acceptance of the manuscript.” This document also states that Mrs. Einstein should receive 2000Mk, to be transferred to the Einstein Fund in Potsdam for the use of Prof. Dr. Freundlich, and 400Mk should be given to Mrs. Einstein for her charities.

When Einstein learned that the manuscript was on its way to Jerusalem, he wrote to Elsa, on April 23rd, with relief: “I am glad that I now got rid of the manuscript and thank you for doing me this favor of love (*Liebesdienst*); better than burned or sold.”¹²

The general relativity manuscript has been in the possession of the Hebrew University since its opening on April 1, 1925, and is cherished as one of the university’s most precious treasures. The manuscript was displayed for the first time in its entirety at an exhibition marking the 50th anniversary of the Israeli Academy of Science. Each one of its 46 pages was enclosed in a box with controlled illumination and microclimate. Like its 1912 predecessor, the manuscript attracted crowds of interested and excited visitors.

In 2013, the European Space Agency launched an Automated Transfer Vehicle (ATV-4), named “Albert Einstein,” carrying supplies and equipment to the International Space Station (ISS). The cargo of ATV-4 contained the first page of the manuscript described in this book, which astronaut Luca Parmitano signed on board the ISS as a symbolic gesture



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acknowledging the importance of this manuscript and of what it represents in the history of mankind.

This is the story of a single albeit very important manuscript. The Albert Einstein Archives at the Hebrew University contain many such manuscripts, all of which constitute inspiring chapters in the history of physics. They are being edited and explored by historians of science at the Einstein Papers Project at the California Institute of Technology and elsewhere. All shed light on how science was done in the formative years of modern physics.

NOTES

1. Walter Benjamin, *The Work of Art in the Age of Mechanical Reproduction* (London: Penguin, 2008).
2. Albert Einstein, "On the Electrodynamics of Moving Bodies" (1905), in CPAE vol. 2, Doc. 23, pp. 140–171.
3. The facsimile copy of this manuscript was published by George Braziller as *Einstein's 1912 Manuscript on the Special Theory of Relativity* (New York: Braziller, 1996).
4. It has been analyzed in detail in Michel Janssen, "Of Pots and Holes: Einstein's Bumpy Road to General Relativity," *Annalen der Physik* 14 (2005), Supplement: 58–85; and in Tilman Sauer, "Einstein's Review Paper on General Relativity Theory," in *Landmark Writings in Western Mathematics, 1640–1940*, ed. I. Grattan-Guinness (Amsterdam: Elsevier, 2005), 802–822.
5. Einstein to H. A. Lorentz, 17 January 1916, CPAE vol. 8, Doc. 183.
6. Einstein to Erwin Freundlich, 20 December 1921, CPAE vol. 12, Doc. 330, AEA 11–314.
7. Einstein to Arnold Berliner, 24 December 1921, vol. 12, Doc. 339, AEA 11–318, AEA 11–319.
8. Einstein to Paul Oppenheim, 15 April 1922, CPAE vol. 13, Doc. 146, AEA 11–323.
9. Heinrich Loewe to AE, 30 July 1923, AEA 36–860.
10. Einstein to Elsa Einstein, 15 April 1925, AEA 143–186.
11. Leo Kohn, 19 March 1925, AEA 36–863.
12. Einstein to Elsa Einstein, 23 April 1925, AEA 143–187.