

Preface, Acknowledgments, and Notes on Format

There are already a zillion books on Einstein and/or relativity. So why did I write this one? There are several reasons. Many good books that explain relativity are out of print. Those still in print often lack a biographical component. There are many very good biographies of Einstein, but the discussions of science are erratic – from poor to adequate, with only a few being quite good. Nonetheless, even the good ones mainly focus only on Einstein’s physics, with minimal information on the larger historical context of his science. Mostly they contain only brief discussions, a few sentences or a short paragraph, on say Galileo’s or Faraday’s or Newton’s work that influenced him. There is a critical and vital difference between some physics in the context of Einstein’s life and the fuller and deeper milieu within the history of physics – the latter framework being implied in the title to this book. This leads me to a further rationale.

I was first exposed to Einstein’s theory of relativity from popular books explaining the theory in simple terms. Later, the theory was taught in my university courses, from which I learnt more through lectures and especially by problem solving. But I only fully *understood* the theory when I studied it historically as a graduate student. The goal of this book is to track the history of the theory of relativity through Einstein’s life, with in-depth studies of the background, tracing ideas through earlier scientists. A perusal of the Table of Contents shows that sometimes entire chapters are on this larger context.

So now, there are a zillion-and-one books on Einstein. This one, I hope, is an explanation of the world of relativity, based on an extensive journey into earlier physics and a simultaneous voyage into the mind of Einstein, written for the curious and intelligent reader. If, furthermore, you are holding a paper version in your hands, you may note that another goal was to keep it reasonably short.

* * *

A transparent theme of this book is Einstein’s indebtedness to other scientists, despite his self-imposed isolationism. I, as well, do not work in a vacuum. I wish to thank my long-term friend and former student, Wayne Choma, along with my friend and colleague from Physics, Dwight Vincent. I am also especially grateful to my

newer friend, Martin Clutton-Brock, Professor Emeritus of the University of Manitoba, who has been a continuous source of inspiration and help in this endeavor. Nonetheless, I alone am responsible for any errors, gross or otherwise, that the diligent reader may find.

My teaching career was almost exclusively at the University of Winnipeg, to which I am especially thankful for a study leave to complete this book. Further appreciation goes to the students in my 3904/3 course on Einstein in the fall of 2011, who allowed me to expose them to a draft of this book, looking for the logic, clarity, coherence, and correctness of my argument; I hope that, in the process, I taught them something about Einstein and relativity.

I cannot end this register of gratitude without acknowledging my wife and companion, Sylvia, who has endured these many years of Einstein in her life. He was seemingly everywhere – on the couch, on the kitchen table, in the bathroom, in the bed, with us on holidays.... She is now quite free of Einstein omnipresent, except for this one book.

* * *

On the format of this book, I have several points to make. The recent decline of real footnotes at the bottom of pages in books baffles me, given the ease and simplicity of inserting them with word processing programs. I understand that editors wish to appeal to the common desire of many readers to have a continuous narrative of flowing words in books. Thus footnotes – if they are used at all – are now usually relegated to the back of books and called endnotes – a sort of residue of marginalizing the unwanted by forcing them to the back of the bus. I am deliberately bucking this trend by belligerently keeping my footnotes where they belong: at the foot of the page. For the life of me I cannot see how these interfere with the flow of the text above: the reader may ignore them by a mere turn of the page (real or virtual), if so desired.

Personally, I recall with pleasure my early university years when I was first introduced to scholarly books and was exposed to some texts that occasionally contained pages where the area of the footnotes was larger than that of the narrative text. I learnt to appreciate the information in these notes, to see how they put the text into a larger scholarly context, and eventually I found myself sometimes reading almost solely footnotes and avoiding much of the text in some books. This experience is in contrast to that of Noel Coward, the late witty writer, composer, and singer, who compared reading footnotes to having to answer the doorbell while in the midst of making love.¹ I prefer to think of footnotes as presaging today's links of hypertext – while I just ignore the doorbell.

* * *

However much footnotes may or may not interfere with the flow of the text, the core narrative of this book, I wish to point out, is intermittently interrupted with

¹ Quoted in Grafton, [79], pp. 69–70, and which provides me with my first informing, imparting, irritating, or interrupting footnote – depending on your point of view.

short summaries of overt scientific material. These **Summary** sections (there are six of them) are set apart by being in *italics*.

* * *

The **Bibliography**, placed at the end, contains all material cited in the book. The idiosyncratic citation method used in the footnotes is as follows:

Author(s) or alternative term [item number in the Bibliography] [date of the original document or publication, if relevant], page(s).

Example: Einstein [38] [1923], p. 483.

Decoded: This work, by Einstein, is item number 39 in the Bibliography; it was published in 1923, and I am citing page 483.

I have used extensively *The Collected Papers of Albert Einstein* (Princeton: Princeton University Press, 1987+), a projected 25+ volume series, published in the chronology of Einstein's life (1879–1955); at present it is up to Volume 12 (up to 1921). Each volume consists of a hardbound book of primary sources in the original languages (mainly German) and a paperback book of English translations of selected documents. Each document is given a unique number. I cite this source as:

Einstein Papers, Vol. #, Doc. #.

Since the document number is the same in the original language volume and in the English translation, it is usually unnecessary to specify which book is used. This method simplifies the citation, since obviously the page numbers differ in the two books. Occasionally, however, I do cite specific pages. The symbol **ET** means the English translation.

* * *

Notation in the text of the book for figures is: Fig. 4.2 means Chap. 4, Fig. 2. I have drawn all 30 figures; those few that are copies of images published elsewhere are drawn to avoid copyright infringement. The present obsession over ownership of images, and intimidation of litigation for violations, is a bane to contemporary scholarship. Luckily, the originals of most such images can quickly be found on the Internet.

Finally, I would be remiss if I did not mention what is the ultimate depository of all of Einstein's writings: the Einstein Archives housed in Jerusalem. In his last will, he left his entire estate to the Hebrew University in Jerusalem. Today, the Archives remain on the campus of the University. For information on the Archives, as well as the Einstein Papers Project (mentioned above), go to: <http://www.albert-einstein.org/index.html>.

<http://www.springer.com/978-1-4614-4781-8>

How Einstein Created Relativity out of Physics and
Astronomy

Topper, D.

2013, XVI, 256 p., Hardcover

ISBN: 978-1-4614-4781-8