

Jean-Marc Ginoux

# ALBERT EINSTEIN DEMYSTIFIED

Preface by Jean Dhombres



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*Albert Einstein demystified*

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Translated by Neelam Pirbhai-Jetha

  
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*Depuis 1876*



# Translator's Preface

DR (MRS) NEELAM PIRBHAI-JETHA  
Centre for Digital Humanities,  
Université des Mascareignes (Mauritius)

A few words on translating Jean-Marc Ginoux's work:

Ask anybody who Albert Einstein is? The first words which will pop out of our mind are "Einstein, the genius, the one who discovered the theory of relativity, or the great scientist who received the Nobel Prize of Physics". Jean-Marc Ginoux's work on demystifying the canonical image of Albert Einstein has taken us back into history; and by minutely analysing press clippings, letters, and various other documents, the author has depicted Einstein in another light, that of a man, with all his flaws!

We often hear the expression "Traduire c'est trahir," "Traduttore, traditore," "Translator, Traitor". Indeed, reading a text in its original language is certainly much better, especially as, while translating, we often lose certain cultural inferences or connotations. We have tried, as far as possible, to keep to the author's style of writing and stay faithful to the original work, but we too have encountered a few challenges. Translating technical terms and some scientific jargons was not easy; and despite the numerous advances of technology, machine translation devices or online dictionaries, it was sometimes difficult to grasp some sentences, phrases or uncommon idiomatic expressions.

However, I would say it was a pleasure translating and reading this great work, which was made simple and easy to understand for any laypersons by the author.

Before ending, I would like to add that this translation would not have been possible without the support of Angheenee Busgeeth-Dhotah (Mrs), a third-year student at Université des Mascareignes (Mauritius), who also devotes a lot of time to many, if not all, of the projects of our Centre. I would also like to thank Jean-Marc for his friendship and for giving me such a great opportunity to discover and develop my other competences.

# Living with Einstein

JEAN DHOMBRES

Einstein is a name that may even be heard in the courtyards of schools, as the aura of this scientist was and remains strong, having no other points of comparison perhaps than Archimedes, Galileo and Newton. There is the association of a theory, relativity, whose name alone gives metaphysical shivers, with two aspects, restricted and general relativity, a double subject of astonishment, still active to-day, more than one hundred years after their expositions. A name is obviously not enough to make a reputation, if there is no adequacy of the name to a physical theory that we can represent at least roughly, and if this theory does not come at the right time. There was a major intellectual crisis at the very end of the 19<sup>th</sup> century and the beginning of his successor, when Auguste Comte's positivism had become a banality no longer carrying innovation, and even was disfigured by scientism, or when Laplace's achievements in celestial mechanics required that kind of new vision that Einstein had with the brownian motion. René Thom, who had nicely coined the expression "theory of catastrophes" did not benefit from the same aura as the core of his work remained in pure mathematics, hermetic to many, and in a way was far too aristotelian by taking the world as it looks like. Einstein's relativity, which completely revisits the notions of space and time, too provides a sense of deep continuity to Galileo's revolutionary thought. But there are so many other features which have enriched, but as well disfigured Einstein, by creating more than one myth. It happened in the same way to Laplace or Galileo. The present book aims at presenting this great personality that should no longer be treated as if he were an untouchable : there is here a lively Einstein demystified. Think

of what we far too roughly know generally about the American atomic bomb discussions or his refusal to preside over the State of Israel in 1952.

Precisely, the great advantage of this book by Jean-Marc Ginoux, a confirmed physicist and historian of sciences, is to deal with ten precise questions. With energy, the chronicler follows a very sure method: he stages dated documents – letters, scientific texts, memoirs, journalistic articles – here all translated into English –, and the ten chosen themes are as many questions both asked to Einstein but also to the very historiography of the “father of relativity”. It’s a way of telling science as embedded in time that is involved here. World fame was in a way a first occurrence, both a burden and an advantage from which Einstein knew how to take benefit. Magnificently in this interrogative narrative, if there is a distinction, there is no separation of the scientific world and the world at large, as the general background is the use of celebrity. Thus the theme “Einstein pacifist” which makes the third chapter, or rather the third question, is inserted between a chapter on special relativity with the question of “priority” by Henri Poincaré which is masterfully treated in few pages, and a chapter on general relativity which is quite readable by a neophyte, without being reduced to trivialities. It was normal, after the information of these last years, that we have a chapter “Einstein and the women”, less obvious that we have another “Einstein and the family” and quite classic that we have a “Einstein and religion ». And this is welcomed, using dated precision without pedantry, and an alert style.

Our storyteller is not an author distanced to the point of being indifferent and this sort of a thematic file on Einstein is not without challenges: Jean-Marc Ginoux intervenes in a clear way in some kind of well structured conclusions in the manner of history textbooks in the French tradition, and as well they are questionable. So that the famous photograph of Einstein sticking out his tongue to journalists no longer appears as an anomaly, but basically as the play-spectacle of someone fundamentally cultivating German anti-conformism, that is to say with a certain dogmatic rigidity which cannot be confused with British eccentricity, but where

sometimes a paradoxically humorous depth of an atheistic Jewish wit predominates. At the end of this reading organized at a beating drum rhythm, Einstein's individualism does not appear as an ill-considered or hasty attitude, but is often the fruit of a long and properly personal process along which the opinion of many others, even in science, seem to have been sieved by a criticism leading to a choice, which is often irritatingly reversible. So, for the presidency of Israel, it is perhaps the reflection on his own life that makes him refuse the glorious position, preferring the contemplation of the structures of the universe to the often tragic game of political relations. But, perhaps, was Einstein reluctant to represent a State that was not accepted by the Arab world? This attitude was taken with an amused interrogation on the true motivation of those who made this proposal to him.

If I strongly invite you to read this beautiful and exciting book where science is not just a phantom, because not presented in jargon terms, it is also that the story belies this witty remark from Chaplin to an Einstein who complimented him on his play with physiognomy without words, and the actor said that to the contrary Einstein spoke a lot, but most people did not understand a word. Here no one is lost, and even if we do not share this or that interpretation, at least we have something to argue about. We have finally left the goody-goody talk on scientific life, with the usual omissions on a personality and his ego; Einstein appears as an exceptional being who is neither out of historical time, nor out of human relationships, knowing how to take advantage of the intelligence of others, without losing his own freedom to imagine a world and make it understood by others.



## From myth to reality

Let's go back to that one afternoon of November 6, 1919, at Burlington House, on Piccadilly, when Royal Astronomer: Sir Frank Dyson, announced that the observation of the solar eclipse of 29 May 1919 confirmed the predictions of the theory of the general relativity of Albert Einstein. Media around the world covered the event, and overnight Einstein became immensely famous. A myth was born. Since that moment, Einstein's works were the subject of countless biographies and a multitude of articles in newspapers like the *New York Times*. In one of those early writings, dated May 1920, one can read in the Preface:

EINSTEIN's contributions to our ideas of time and space, and to our knowledge of the universe in general, are of so momentous a nature, that they easily take their place among the two or three greatest achievements of the twentieth century<sup>1</sup>.

These first sentences seem to foreshadow the media runaway which occurred then, and which still continues, as evidenced by the exponential growth of the number of works devoted to Einstein. This tremendous craze undoubtedly has its origins in the fact that the consequences of Einstein's theories such as the curvature of light or the possibility of time travel could only arouse amazement and admiration among the general public. A feeling reinforced by the historical context which played a very important role at that time. Indeed, after a fratricidal war between France and Germany, there was a need to rebuild an imaginary, capable of erasing, if not at least, eroding the visions of horror engendered by the First World War.

The print media, which then knew its "golden age," and which lasted until the 1950s, was looking for a new hero. With

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1. B. Harrow, *From Newton to Einstein: changing conceptions of the universe*, New York, D. Van Nostrand company, 1920.

his extraordinary personality, his outspokenness, his somewhat extravagant appearance for the era, Einstein feeds the chronicles of the biggest daily newspapers. He is thus called upon to pronounce on all kinds of questions relating to politics, religion, philosophy, ethics... The answers he brings and the commitments he makes to defend this or that cause allow him to shape his image which gradually becomes that of a genius, an eccentric, a pacifist, an atheist, sticking out his tongue at the photographers or walking barefoot, in sandals.

By presenting himself as a simple patent verifier, who discovered, all by himself, the two greatest theories of the twentieth century and as a pacifist firmly opposed to war, journalists and biographers thus gave birth to the “myth of Albert Einstein”. To maintain it, some do not hesitate to erase all the little-known and not very shiny aspects of the character, and to refer to an audience always more eager for the extraordinary and sensational polished image of the idealized scientist that they have thus constructed.

If throughout his existence, Einstein’s work was exposed, commented and discussed in the press, in numerous specialized works and in the biographies written by some of his colleagues or friends, the details concerning his intimate life were limited to only those he was willing to let filter. After his disappearance on April 18, 1955, his faithful secretary, Helen Dukas, and his executor, Otto Nathan, exercised the strictest censorship on a number of documents, notably on a large part of his correspondence. But between the mid-eighties and the start of the second millennium dozens of letters began to surface, some revealing the existence of a hidden daughter, others highlighting his relationships with his two wives and children or his many infidelities. This intrusion into his private life, far from being an indiscretion, sheds new light on the complexity of his multifaceted personality and makes it possible to draw its outlines more finely. Against all odds, and despite these revelations, the “Einstein myth” remains intact and unaltered. To understand the reasons, we must first understand the term “myth” which is often defined as a “traditional, idealised and sometimes false representation, concerning a fact, a man, an idea; and to which isolated individuals or groups

conform their way of thinking, their behaviour”. Historiography does not readily accept radical changes that upset or challenge previous work. Also, certain authors have continued to maintain the myth, even if it means sinking into hagiography, and presenting Einstein as they wished he was and not as who he really was. This book therefore aims, as its title suggests, to put an end to the myth of Albert Einstein. To achieve this, we confronted myth with reality on the basis of the following questions:

- ↳ Why did Einstein become a simple patent verifier in Bern and not an assistant at the university?
- ↳ Did Einstein really develop the theory of special relativity alone?
- ↳ Was Einstein really pacifist?
- ↳ Did he participate in the development of the atomic bomb?
- ↳ Is Einstein at the origin of the concept of curvature of light?
- ↳ What were Einstein’s relationships with Mileva, Elsa and his children?
- ↳ What were his relationships with women?
- ↳ What were his political commitments?
- ↳ Was Einstein an atheist?
- ↳ What were his relations with the press?

These questions make up each of the chapters of this book, to which the answers have been provided by analysing archives, in particular the *Collected Papers of Albert Einstein (CPAE)*, the online publication which offers great accessibility to original documents, biographies or parts of biographies, whose extracts could be corroborated by proven facts and press clippings from the *New York Times* and relating to known events or unpublished anecdotes from the life of Einstein.

So rather than presenting a biography of Einstein’s life and work<sup>2</sup>, this book offers a thematic approach in the form of independent

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2. The author has published on this. See. J.-M. Ginoux, *Albert Einstein: a biography through the Time(s)*, Paris, Hermann, 2016.

chapters which can be approached in any order without affecting the coherence of the whole. A brief chronology of Einstein's life presented in the appendix will allow the readers to relate these chapters to the different stages and events of his existence. Through their reading, the readers will be able to take an objective, even a critical look at the reality of "Einstein's myth," and wonder about the reasons for its creation. Above all, they will be able to get a much more precise idea of the life and work of Albert Einstein, which will seem to them to be far removed from the idealised image that has been offered for far too long.

## Einstein at the patent office in Bern

### A REBEL AND FAR FROM AN ASSIDUOUS STUDENT

In 1896, the young Einstein, barely seventeen years old, joined the *Polytechnicum* in Zurich after an unsuccessful first attempt. Indeed, his career seemed to have been mapped out. At that time, this polytechnic school, surnamed the “Poly,” enjoyed a great international reputation. The teaching of mathematics was on a much higher level and was done by Hermann Minkowski<sup>3</sup>. However, the young Einstein was not much interested in his classes and it was just at this time that he lost interest in pure Mathematics as he recalled later:

The fact that I neglected mathematics to a certain extent had its cause not merely in my stronger interest in the natural sciences than in mathematics but also in the following strange experience.

I saw that mathematics was split up into numerous specialities, each of which could easily absorb the short lifetime granted to us. Consequently I saw myself in the position of Buridan’s ass, which was unable to decide upon any specific bundle of hay<sup>4</sup>.

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3. Minkowski (1864-1909) is perhaps best known for his work in relativity, in which he showed, in 1907, that his former student Albert Einstein’s special theory of relativity (1905), could be understood geometrically as a theory of four-dimensional space-time, since known as the “Minkowski space-time”. Minkowski died suddenly of appendicitis in Göttingen on 12 January 1909.

4. See Albert Einstein, “Autobiographical notes” (p. 15) and also “Notes for an Autobiography” in *The Saturday Review of Literature*, Vol. XXXII, No 48, November 26, 1949, p. 10.

At the “Poly,” a large number of students from foreign countries were attending the courses. Some of them will play an important role in Einstein’s life. There, he met Mileva Maric (1875-1948), who he married in 1903, and Marcel Grossmann<sup>5</sup> (1878-1936), who became one of his best friends and provided some valuable services to him:

There were altogether only two examinations; aside from these, one could just about do as one pleased. This was especially the case if one had a friend, as had I, who attended the lectures regularly and who worked over their content conscientiously. This gave one freedom in the choice of pursuits until a few months before the examination, a freedom which I enjoyed to a great extent and have gladly taken into the bargain the bad conscience connected with it as by far the lesser evil. It is, in fact, nothing short of a miracle that the modern methods of instruction have not yet entirely strangled the holy curiosity of inquiry; for this delicate little plant, aside from stimulation, stands mainly in need of freedom; without this it goes to wrack and ruin without fail<sup>6</sup>.

Einstein’s state of mind and his irregular attendance at classes had not endeared him to the “Poly” staff. Moreover, his physics lecturer, Heinrich Weber (1843-1912), called him one day and told him that his cleverness was marred by one great fault:

You’ll never let yourself be told anything.

Einstein retaliated by addressing him as “Herr Weber,” instead of “Herr Professor”. As a consequence, it became evident, that his professors had no intention whatever of taking him on as an

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5. We will see later that it was Grossmann who emphasized the importance of a non-Euclidean geometry called Riemannian geometry to Einstein, which was a necessary step in the development of Einstein’s general theory of relativity.

6. See Albert Einstein, “Autobiographical notes” (p. 17) and also “Notes for an Autobiography” in *The Saturday Review of Literature*, Vol. XXXII, No 48, November 26, 1949, p. 11.

assistant. This is exactly what happened and he didn't receive any direct explanation of this refusal. In 1900, despite the fact that he held a diploma from the "Poly," all his efforts to find a teaching position failed. This is illustrated in the Swiss citizenship papers, in a letter sent to Mileva Maric on April 4, 1901:

In addition, I applied at the Polytechnikum Stuttgart, where a position is vacant & wrote again to Ostwald. Soon I will have honored all physicists from the North Sea to the southern tip of Italy with my offer<sup>7</sup>.

So, as a means of subsistence, he first made some calculations for the director of the Observatory of Zurich. Then, he made a replacement for six months at the Technicum of Winterthur and the year after, at the residential school of Schaffhouse. After a disagreement with the director of this school, he returned at his parents in Milan where he had the great sorrow of losing his father.

#### AT THE PATENT OFFICE OF BERN

In the beginning of the year 1901, Marcel Grossmann talked to his father about the difficulties that his friend, Albert, had to seek a job. Grossmann's father, therefore, recommended Einstein to his friend Friedrich Haller, the director of the patent office in Bern (cf. Fig. 1.1 & 1.2).

To apply, Einstein had to wait for the publication of the vacancy for the post of a second-class engineer in the *Schweizerische Bundesblatt* of December 11, 1901. Albert then obtained a long and difficult interview with Haller. However, Grossman's father's intervention was not entirely in his favor since Haller hired him in June 1902 as a third-class engineer.

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7. *The Collected Papers of Albert Einstein, Vol. 1: The Early Years, 1879-1902* (CPAE, Vol. 1), John Stachel, David C. Cassidy et Robert Schulmann (Eds.), Princeton: Princeton University Press, 1987.



Fig. 1.1 Einstein standing at his desk at the Patent Office in 1904.