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1

THE GENESIS AND SCOPE OF THE *AUTOBIOGRAPHICAL NOTES*

THE MATTER WAS OF THE UTMOST IMPORTANCE, AT LEAST TO THE SENDER OF THE LETTER. A turning point in world history seemed to be imminent. The message was to be heard all over America, by over 25 million listeners, and from there the message would surely spread across the globe. There was only one person who could authentically stress its urgency and lend it universal credibility, a man sixty-seven years of age, not a politician but a scientist. But given his fragile health, he needed to be convinced to take on the long journey from the East Coast to the Great Lakes, either by train or by plane and deliver a speech at a stadium in front of forty thousand people that would simultaneously be transmitted by radio.

The urgent issue was the establishment of a world government—in the aftermath of the most devastating war and the most horrific genocide the world had ever seen and on the eve of an even larger catastrophe casting its shadow on the fate of mankind as a whole. It was April 1946, about a year after the liberation of Auschwitz and the dropping of atomic bombs on Hiroshima and Nagasaki. While leading Nazi officials were sentenced in Nuremberg for their crimes against humanity, in March 1946 British Prime Minister Winston Churchill spoke for the first time of the Iron Curtain dividing Europe; later he would argue in favor of the United States of Europe. In the beginning of the year, the General Assembly of the United Nations had met for the first time; the first radar contact with the moon was established on the same day. The time seemed ripe for a planetary view on the future of mankind. Yet, as citizens turned their gaze from the horrors of the immediate past to the immediate future, a new abyss was opening, that of the Cold War, which would hover for much of the rest of the century at the brink of a hot war with the potential to destroy the entire planet.

That was one of the reasons why the establishment of a world government seemed to be so urgent to the sender of the letter: “What is absolutely necessary today—actually *sine qua non*—is world government! But of course it will not happen unless more and more people realize this, even if they are only driven to it through fear of the atomic bomb.”¹ In May of the same year another letter insisted on the necessity to address the millions in favor of a world government “for the sake of humanity”: “I am indeed absolutely certain

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that you could not support the cause that is dear to all our hearts—namely to save the world from annihilation—any better, most honorable Mr. Einstein, than by accepting the present invitation.”²

The sender of the letters was Paul Arthur Schilpp, a professor of philosophy, of German origin, who had taught after World War I at several American universities and was now deeply involved in the Brotherhood Banquet, a mass movement organized by the National Conference of Christians and Jews in Chicago. The recipient was none other than Albert Einstein, the iconic scientist who had since long associated his fame in science with the cause to save mankind from the perils of the Atomic Age he himself had inadvertently helped to bring about, if only as a theoretician concerned with detached questions concerning the universe. The two men also had other business together. During the time they exchanged letters about how best to save the world, Schilpp suggested that Albert Einstein write an intellectual autobiography. Schilpp had initiated and edited a series of volumes titled *The Library of Living Philosophers* and expressed the wish to devote one volume to *Albert Einstein: Philosopher-Scientist*.

It took some time and required Schilpp’s persuasive skills before Einstein agreed, in a letter to Schilpp, to deliver a handwritten scientific autobiography and a response to critical essays by a selected group of physicists and philosophers that were to be included in that volume.³ Thus, at the age of sixty-seven, Einstein did what he had refused to do in the past—he sat down to write his *Autobiographical Notes*. Once he agreed, he acknowledged that “. . . it is a good thing to show those who are striving alongside of us how our own striving and searching appears in retrospect.” At the same time, he warned the reader, “Every reminiscence is colored by one’s present state, hence by a deceptive point of view” (p. 3 [p. 157]). This did not deter him from undertaking this project, because only he had access to his conscious experience to share it with others.

How were the two enterprises that united Schilpp and Einstein connected? And how would Einstein describe his own striving? Would he refer to the global crisis of the world and take the occasion to write an account in the style of Mahatma Gandhi, whose life he considered one of the greatest testimonies of true human greatness? Gandhi’s autobiography, *The Story of My Experiments with Truth*, focuses on the quest for a spiritual and moral life that, in the midst of the turmoil of the world, offered him the wisdom and strength for political protest. Gandhi’s autobiography is not just the story of an inner journey but the realistic portrait of a troubled world. Which are the conflicts, temptations, and aspirations that would take center stage in Einstein’s autobiography?

Schilpp’s aspirations were, in any case, satisfied. When he received the manuscript of the *Notes*, he responded enthusiastically:

Thus, honorable Professor Einstein: my best and most sincere thanks! And not just *my* thanks (because who am I?), but rather in this case I may already extend to you the most profound gratitude of innumerable readers and even of those as yet unborn people who in the coming decades—and yes, even centuries—will be grateful to you for this marvelous (and altogether Einsteinian) work and will owe a debt of gratitude. This you have done simply splendidly! If I, after having read your autobiography, think back to when I first asked you to contribute to the creation of such a volume, and you said “No!” and that the entire world could have been

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deprived of and remained without this wonderful autobiography, I still shudder at the thought.⁴

Every autobiography is a time machine—of a kind that relativity theory has not accounted for and never will. It draws the reader into the world of another mind of another time, it draws the author into his or her own past, and it speaks to all those fellow travelers in time who have undertaken a similar journey—or will do so in the future. Einstein's autobiography carries our imagination to the world immediately after World War II, to the small university town of Princeton, New Jersey, to a modest house on Mercer Street where Einstein sat down, writing his own obituary as he mockingly began his text. His own thoughts quickly escaped from this world, however, to a time before the great wars, to the youth he spent in Germany, Switzerland, and Italy. These were troubled times as well, even if seemingly still infinitely far from the catastrophes of the twentieth century. But even the usual troubles of the world, the struggle to make a living, the political tensions, the foreshadowing of the future drama, all fade into the background of Einstein's account.

Central to Einstein's autobiography are the troubles, challenges, and tensions encountered along his quest for a scientific worldview. Throughout the entire text it is clear that what counts at the end is the striving and struggle and not the final formulation of successful breakthroughs, which brought Einstein universal fame. He does not even mention the groundbreaking papers of the "miraculous year" 1905, on light quanta, on Brownian motion, and on special relativity, which constitute his Copernican revolution and became the pillars of modern physics.⁵ On the other hand, he explores the origins of those achievements, his thought process, and his search for new principles. Likewise, he does not mention his final formulation of the general theory of relativity in November 1915, which was celebrated as another great revolution one hundred years later. This theory became the basis of modern cosmology and, hence, of our understanding of the universe. His recollections on the emergence of the theory of general relativity rather focus on why it took seven more years from the seminal idea to its groundbreaking consequences.

Einstein's quest, as he describes it in his autobiography, was, at the same time, the search for the role and path of a young man curious about his own as well as humanity's place within the world. On this account, finding one's place in the world and comprehending its inner secrets become part of the same quest. Einstein is known for his often ironically distanced way of treating God as an interlocutor and counterpart of his scientific quest. Einstein did not believe in the monotheistic religions' conception of God's role in punishing and rewarding human beings. In this sense he objected to the concept of a "personal god." For him, God was an embodiment of the laws and harmony of nature, and it is with this god that he maintained a lifelong dialogue. On this we can quote a characteristic statement: "I believe in Spinoza's God who reveals himself in the harmony of all that exists, but not in a God who concerns himself with the fate and actions of human beings."⁶ "Subtle is the Lord, but Malicious is He not" he would claim, or show himself certain that "God does not play dice."⁷ Einstein's *Autobiographical Notes* sometimes addresses the reader, but it actually lets the reader participate in how his dialogue with God—that is, his struggle for an understanding of the physical world—evolved over time.⁸

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In a word, Einstein's *Autobiographical Notes* is, in a sense, his confession, a secular counterpart to the famous *Confessions* of St. Augustine, a monument of Western thought. Augustine of Hippo also lived in a time of great changes, in the fourth and early fifth centuries, which also saw a division of East and West and the beginning of the decline of the western Roman Empire. As it turned out, Einstein had read the *Confessions* and was apparently fascinated by the way St. Augustine accounted for his inner journey within a troubled world. It is not an exaggeration to claim that this text of late antiquity acted at a distance of over a millennium and a half, shaping the way Einstein presented his own life to himself and his readership. It can be characterized as a striving for inner freedom and comfort within the larger community of those striving for an eternal truth that will always be in flux.

This is just one of the surprising insights Einstein's extraordinary book has to offer, which is indeed perhaps the most extraordinary of all books he wrote. Here we undertake the attempt of a new reading of this text. Based on the background of decades of Einstein scholarship, we are now in a better position to place this text within his own biography and its manifold contexts, to understand the allusions he makes, to interpret the omissions, and to grasp the subtle hints he gives. Just like St. Augustine's text, Einstein's *Autobiographical Notes* is a message in a bottle, a time capsule coming from a specific place and historical situation, but conveying insights that by far transcend those specifics, insights that capture the essence of a lifetime of thinking about the universe and humanity's place within it.

Einstein's narrative is confined to the early and the late stages of his scientific career. There is hardly anything about his activities after his formative years as a scientist and before his later years in Princeton. The emphasis is on his work during the years preceding 1905 and on his road to the general theory of relativity. From there he jumps directly to his concerns about the status of quantum mechanics and the quest for a unified field theory at the time of writing these notes.

The main part of our book consists of thirteen commentary chapters. The first of these introduces the quest for a unified worldview as a theme on the agenda of the scientific community at the beginning of the twentieth century. The other twelve chapters essentially trace Einstein's text. The second chapter describes how his personality and his chosen life course evolved from his childhood years and social environment, mentioning specifically two biographical experiences—his brief religious episode at the age of twelve and his formal school education. In the third chapter we discuss Einstein's introspective account of his way of thinking, specifically, thinking that leads to scientific discovery. Einstein believed that scientific inquiry should be based on and guided by epistemological principles. This belief motivated him to formulate an "epistemological credo," which we discuss in our commentary. The next two chapters are devoted to an exposition of classical nineteenth-century physics and its drawbacks, leading to its final decline with Einstein's revolutionary discoveries.

The following chapters deal with Einstein's work leading to the *annus mirabilis* 1905. The discussion of this period in the *Notes* is brief, narrated in an entangled style and sometimes confined to mere hints. We begin with his reaction to the groundbreaking work of Max Planck on black-body radiation. We then discuss Einstein's own derivation of statistical mechanics and explore his motivation to undertake this endeavor, comparing his formulation with the classical kinetic theory of thermodynamics developed by

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Ludwig Boltzmann. The next chapter is devoted to Einstein's interest in thermodynamic fluctuations, which led to the understanding of Brownian motion and, eventually, to convincing evidence for the reality of atoms. We then discuss Einstein's thought experiment on a reflecting mirror suspended in the radiation field enclosed in a cavity. The analysis of this setup provided compelling arguments for the corpuscular nature of light. Another chapter, related to Einstein's work in the period preceding the "miraculous year," is devoted to the origins of the special theory of relativity, which emerged from the same framework of considerations that led to his other achievements in the year 1905.

Not much is known about this period from contemporary documents, beyond the papers published in those years. There are sporadic references to Einstein's ideas and interests during these years in the love letters he exchanged with his student companion and wife-to-be, Mileva Marić.⁹ We shall quote them whenever appropriate. The *Autobiographical Notes* and these love letters provide two complementary perspectives: one from the vista point of old age and one from the midst of the struggles.

We then comment on Einstein's account of his road to general relativity and on the difficulties he encountered as he struggled toward this goal. We have written an entire book on this subject.¹⁰ Here we compare Einstein's recollections of this process with the perception based on extensive contemporary documents and correspondence. Einstein's answer to his question "Why were another seven years required?" (actually it took eight years) is not the full story. We can wonder if this is how he remembered it, or if this is how he wished it to be remembered.

Further chapters are devoted to Einstein's views on the status and future of quantum mechanics and to his search for a unified field theory and his opinion on the preferred approach to this goal. Here it is not a question of reminiscences of the past. Surprisingly, he does not at all refer to his famous debates with Niels Bohr on quantum mechanics in the 1920s nor to the different approaches toward a unified field theory that he explored in the 1920s and 1930s. He focuses exclusively on his views on these two topics at the time of writing his *Autobiographical Notes*, evidently using this work as a conduit for documenting what he considered an important part of his scientific legacy. His attempt to formulate a unified field theory begins with the quest for a new and broader symmetry. This reflects Einstein's enduring legacy about the role of symmetry in physics. Symmetry comes first, and it determines the laws of physics and the corresponding equations. He had applied this principle, previously, in his discussion of prerelativity physics, of special relativity, and of general relativity, and he now applies it in his search for a unified field theory.¹¹

At this stage in his life, Einstein believed that the most promising path toward a unified theory was based on the assumption of nonsymmetric fields, and the last part of the *Notes* presents a brief description of this approach. He had devoted the last ten years of his life, exclusively, to the exploration of this option. With Einstein, we conclude our commentaries, pointing out how his lifelong odyssey led him to the conclusion that the future of physics lies in a generalization of his theory of gravity, still based on the classical notion of continuous fields even though he was open to considering alternative foundations of physics.

The inclusion of Einstein in *The Library of Living Philosophers* and the meaningful title of the specific volume—*Albert Einstein: Philosopher-Scientist*—shed a focused light on the philosophical and epistemological thinking that accompanied his scientific journey in search of a unified worldview. This is clearly demonstrated in his own account of

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this journey in the *Autobiographical Notes* and is further expanded and amplified in his responses to the critical essays by selected philosophers and physicists included in this volume. Our account of these responses constitutes another major part of this book. We justify the “philosopher-scientist” attribute of Einstein in our concluding remarks.

NOTES

1. Schilpp to Einstein, 4 April 1946, Albert Einstein Archives (hereafter AEA) 80-507. Unless otherwise indicated, German texts have been translated into English by the authors.
2. Schilpp to Einstein, 3 May 1946, AEA 80-508.
3. Einstein to Schilpp, 29 May 1946, AEA 42-513.
4. Schilpp to Einstein, 8 February 1947, AEA 42-515.
5. See, for example, Jürgen Renn and Robert Rynasiewicz, “Einstein’s Copernican Revolution,” in *The Cambridge Companion to Einstein*, ed. Michel Janssen and Christoph Lehner (Cambridge: Cambridge University Press, 2014).
6. Alice Calaprice, ed., *The New Quotable Einstein*, rev. ed. (Princeton, NJ: Princeton University Press, 2005), 197.
7. “Raffiniert ist der Herrgott, aber boshaft ist er nicht,” CPAE vol. 12, p. liii. “Jedenfalls bin ich überzeugt, daß der nicht würfelt,” Albert Einstein to Max Born, 4 December 1926, in Albert Einstein and Max Born, *Briefwechsel, 1916–1955* (Munich: Nymphenburger, 1969), 129–130.
8. For Einstein’s concept of God, see Yehuda Elkana, “Einstein and God,” in *Einstein for the 21st Century: His Legacy in Science, Art, and Modern Culture*, ed. Peter L. Galison, Gerald Holton, and Silvan S. Schweber (Princeton, NJ: Princeton University Press, 2008), 35–47.
9. See Jürgen Renn and Robert Schulmann, eds., *Albert Einstein—Mileva Marić: The Love Letters* (Princeton, NJ: Princeton University Press, 1992).
10. Hanoch Gutfreund and Jürgen Renn, *The Road to Relativity: The History and Meaning of Einstein’s “The Foundation of General Relativity,” Featuring the Original Manuscript of Einstein’s Masterpiece* (Princeton, NJ: Princeton University Press, 2015).
11. This point is discussed in Albert Einstein, *The Meaning of Relativity*, 5th ed. (Princeton, NJ: Princeton University Press, 1955), 1–23; see also Hanoch Gutfreund and Jürgen Renn, *The Formative Years of Relativity: The History and Meaning of Einstein’s Princeton Lectures* (Princeton, NJ: Princeton University Press, 2017), 7.

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