

*FOCUS: THE ELUSIVE ICON:
EINSTEIN, 1905–2005*

Introduction

*By Peter Galison**

ABSTRACT

As Einstein's portrait comes increasingly to resemble an icon, we lose more than detail—his writings and actions lose all reference. This is as true for his physics as it is for his philosophy and his politics; the best of recent work aims to remove Einstein's interventions from the abstract sphere of Delphic pronouncements and to insert them in the stream of real events, real arguments. Politically, this means attending to McCarthyism, Paul Robeson, the Arab–Israeli conflict. Philosophically, it means tying his concerns, for example, to late nineteenth-century neo-Kantian debates and to his own struggles inside science. And where physics is concerned, it means attending both in the narrow to his responses to others' work and his reactions to his own sometimes misfired early work on, for example, general relativity and to the wider context of technological developments. Einstein remains and will remain a magnet for historians, philosophers, and scientists; the essays assembled here represent a strong sampling—but only a sampling—of a fascinating new generation of work on this perennial figure.

IT IS EASY TO FORGET THAT—in 1905 or 1915 or 1950—Albert Einstein had an address. Cosmopolitan, refugee, genius—each of these categories seems to leave him more a planetary citizen than a resident of turn-of-the-century Bern, Weimar Berlin, or McCarthy-era Princeton. Einstein no doubt multiplied this effect through his oracular pronouncements. After all, when he asked, “How much choice did God have at the beginning of the universe?” he ceded little to the here and now. Especially in his later years, Einstein often depicted himself as outside the world, not good at human relations, ironically detached from his time, isolated in his search for an ever-more-unified physics and a more complete successor to Copenhagen quantum mechanics. Indeed, over the decades, even Einstein's countenance has become something other than a face, as it morphed into a multinational logo. Bit by bit, his name emptied of specific significance until it could function as a placeholder for quips and advertisements: “He's no Einstein.” His words—

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already, by the 1940s, quoted until they were evacuated of significance—have by the early twenty-first century been splintered into modules, stripped of context, and rendered into slogans on sale in quotation books. The Einstein that we encounter in daily life is one produced by millions of Web sites, repeated until they reach the vanishing point—another anodyne sign. But just as Einstein disappears into the neutral universalism of “Person of the Century”—friend of everyman, offensive to none—there is a curious twist. The most interesting work of the last years has begun to move in exactly the opposite direction, rematerializing this most famous disembodied brain.

The three articles that follow particularize Einstein in quite different ways—and then use that specificity to paint on a broader canvas.

Einstein’s politics have all too often been smoothed over, rendered into the odd predictions of a do-good naïf. Yet everything we know and are learning (one thinks here of Thomas Levenson’s *Einstein in Berlin*) indicates that he was not a political sap in his youth and did not become one in his maturity.¹ From Berlin, Einstein had signed a public letter against many of his German nationalist colleagues in the middle of World War I. When a large and rather unpleasant crowd cheered at an anti-Einstein rally a few years later, he was anything but cowed: he bought a ticket and showed up. That political thick skin did not peel away at the debarkation port when he arrived in the United States in 1932. Enter Fred Jerome. For years, Jerome fought—in the end successfully—to extricate Einstein’s vast FBI files from the clutches of bureaucracy. From these texts—even with all their errors, blackened portions, and missing pages—it becomes quite apparent that J. Edgar Hoover did not consider Einstein a harmless academic eccentric. The head G-man took the most prestigious theorist to be a threat and had plans for his incarceration. Hoover knew what we, a half century later, have too often forgotten: that Einstein in the 1940s and 1950s was choosing his political causes and organizations with care and forethought—and then backing them significantly. Jerome’s essay for this issue shows us an important and little-known Einstein, an Einstein who would not buckle under the post-World War II reaction against black civil rights activism. Einstein lectured on black campuses, defended W. E. B. Du Bois, and—at a time when sympathizers were being harassed and worse—invited Paul Robeson to his Mercer Street home.

It might seem that historians working on Einstein’s special relativity would, a hundred years after its publication, be fishing in very still waters. But Einstein’s “Electrodynamics of Moving Bodies” continues to fascinate us, continues, like a Shakespearean play, to attract ever-new interpretations that add to our understanding. Perched at the bend in the road between the classical and the modern, this work is surely the most cited in all of modern physics. Over the last years Olivier Darrigol, building productively on an earlier generation of scholarship, has labored to locate Einstein’s work in the broader history of electrodynamics. In his essay here, Darrigol takes on the all-too-vexed question of Einstein’s relation to the French mathematician, philosopher, and physicist Henri Poincaré. It is vexed in the first instance because Einstein and Poincaré could not bear to cite each other on relativity theory. As far as we know, they did not once exchange so much as a postcard on the topic; and they had only one meeting, which went rather badly. Tension resulting from this lack of mutual recognition was, in the second instance, greatly exacerbated during the Nazi years when, in Germany and in many of the countries that fell under its domination, Einstein was triply damned: as a Jew, as an internationalist, as an

¹ Thomas Levenson, *Einstein in Berlin* (New York: Bantam, 2003).

advocate of a new form of physics. Anti-Einstein enthusiasts used Poincaré (and the Dutch physicist H. A. Lorentz) to displace Einstein from his own work, to relabel the accomplishment as the relativity theory of Lorentz and Poincaré. In the years that followed, the task of sorting out credit, never very productive, has glowed radioactively with the heat of nationalism, anger, revisionism, and righteous indignation. Darrigol rightly wants to leave those debates behind and bring some analytic clarity to the various alternative accounts given of the complex issues surrounding the relation of Einstein to Poincaré. With his usual care, he sorts through the two theories, considers the various accounts of their relation to one another, and reminds us how deeply embedded both were in their time and how fully the theory was reworked in the years that followed.

With general relativity we again find ourselves with an Einstein by no means isolated from the key work in physics being pursued in his surroundings. Jürgen Renn, like Darrigol, is one of the new generation of Einstein scholars who have worked hard to reconstruct the detailed technical problematic that Einstein faced. This has meant dismantling a mytho-historical account of Einstein's hunt for a general theory—disassembling the too-easy story that depicted Einstein as a solo worker criticizing his special relativity, seizing the equivalence principle, and, exploiting the new mathematics, marching triumphantly into the promised land of his tensor theory of gravity. Undoing and replacing this failed view has been the task of some of our best historians of physics these last years. It has meant, for example, following the detailed annotations of the mathematician David Hilbert's copy of Einstein's paper—which showed quite clearly that Hilbert made a key step in his own (mathematical) arguments for the field equations only after seeing Einstein's physically grounded ones. Elsewhere Renn and his collaborators have taken apart, notation by notation, Einstein's ruminations in his 1912–1913 “Zurich Notebook.” Einstein's private meditations come alive in the notebook, revealing his reasoning in the years before his final formulation of his theory of gravity—and showing how deeply his gravitational work was embedded in the science of his time. Here, Renn intriguingly suggests that the *internal* dynamics of Einstein's work on gravity followed its own complex path, which was neither one of frantic Kuhnian crisis nor one of positivistic incremental continuity. Instead, Renn finds periods of tinkering (fall 1912) and systematic searching for a new theory (1912–early 1913) giving way to a period of consolidation (1913–mid 1915) and eventually to one of physical reinterpretation of the earlier results (mid 1915 to publication in November 1915). Throughout, Einstein was well aware of contemporaries' work that bordered on his—the Einsteinian contribution was one of disruptive and novel synthesis, not creation *ex nihilo*.

It is all too evident that neither these papers nor any collection of papers that can be written today will finish with Einstein's works. That will not happen, any more than we will finish with the paintings of the Expressionists or the plays of Shakespeare. But what we can expect—in my view, happily—is that this current generation of scholarship will locate Einstein in a technical and a cultural world that will shed light on the historically specific nature of both.²

² These three fine contributions, and the references they contain to other works, may give the reader some sense of how far scholarship has come from deracinated hagiography. The authors' work may be further pursued in Fred Jerome's *The Einstein File: J. Edgar Hoover's Secret War Against the World's Most Famous Scientist* (New York: St. Martin's, 2002); in Olivier Darrigol's *Electrodynamics from Ampère to Einstein* (Oxford: Oxford Univ. Press, 2000); and at the Web site “The Living Einstein” that Renn has developed: http://zope.mpiwg-berlin.mpg.de/living_einstein/. Renn has edited a four-volume series, entitled *The Genesis of General Relativity*,

which is due out from Kluwer Academic at the beginning of 2005. He is also organizing an exhibition, "Einstein: Engineer of the Universe," in Berlin; it will open in March 2005. My own work on Einstein has focused on the ways in which physics, technology, and philosophy crossed in his work: Peter Galison, *How Experiments End* (Chicago: Univ. Chicago Press, 1987), and *Einstein's Clocks, Poincaré's Maps: Empires of Time* (New York: Norton, 2003). While the 4.1 million Einstein Web sites would make anyone tremble before offering further bibliography, noteworthy recent work includes important contributions by Leo Corry, Michel Janssen, John Norton, and Andrew Warwick; this work builds squarely on earlier crucial scholarship by, among others, Gerald Holton, Martin Klein, Arthur Miller, Michel Paty, and John Stachel. With Michael Gordin and David Kaiser, I edited a volume of classic secondary articles and reviews on the history of Einstein's two relativities: *Making Special Relativity* (New York: Routledge, 2001) and *The Roots of General Relativity* (New York: Routledge, 2001). Finally, a crucial point: standing as a pillar for all contemporary and future work on Einstein is the massive, decades-long project that is gradually filling out the remaining volumes of the *Collected Papers of Albert Einstein*. These volumes have been edited by Diana Kormos Buchwald, David C. Cassidy, Jozsef Illy, Michel Janssen, Daniel J. Kennefick, Martin J. Klein, A. J. Kox, Christoph Lehner, Jürgen Renn, Tilman Sauer, Robert Schulmann, and John Stachel in editions finely prepared by Princeton University Press (1987–). This is a great contribution, one of the most impressive editing projects in the history of science. It combines the redaction and translation of original papers and correspondence with helpful commentary and notes.