



Editorial

Divergent Stories in the History of Physics

In his fascinating autobiographical reflections in this issue, physicist N. David Mermin recalls the events that led to his short but widely cited 1965 paper in *Physical Review*, “Thermal Properties of the Inhomogeneous Electron Gas.” Mermin’s colleague Walter Kohn asked him to generalize a theorem, a task that Kohn assumed could take as much as a year. Both Kohn and Mermin were delighted to find that the work took considerably less than twelve months, but the actual time required remains a matter of dispute. As Mermin tells us, Kohn later claimed that solving the problem took Mermin a day; Mermin maintains that the work took an hour, and the remaining twenty-three were used to explain the result to his surprised taskmaster.

A widely held belief persists that the laws of physics are independent of the identity of the observer, and that the valid results of physical experiments do not change depending on the experimenter in question. Many would argue that the same cannot be said for history, which often diverges depending on who is writing and reading it. The case of Mermin and Kohn’s collaboration is endearing, but sometimes divergent stories about the history of physics have higher stakes, exerting huge influence over livelihoods and reputations.

In this issue, Mark Walker explores the various histories that have been written regarding “Hitler’s Atomic Bomb” since 1946, exploring key divergences that have arisen. First, Dutch-American physicist Samuel Goudsmit created a narrative based on his preconceived notion that Naziism had ruined science, and that German scientists including the famous Werner Heisenberg had made considerable errors. In response, Heisenberg implied that German physicists had in fact planned to sabotage Hitler’s plans of world domination, leading to one of the most pervasive myths in physics. Heisenberg’s claim has fallen out of favour with the historical community, but the reasons that Adolf Hitler never gained a nuclear weapon remain a source of debate.

Historians, for the most part, feel no drive toward a grand unified theory. The question of why Hitler never got his hands on nuclear armaments might be abandoned, but it will never be settled definitively. Historical questions are often relitigated in light of new evidence, which can tip the scales one way or another, but the evidence will never be exhaustive. More often questions are reevaluated when changes in our own world cause us to approach them in different ways. Our predecessors might regard those ways as mistargeted; our successors might be apt

to view them as simplistic. Sometimes this can lead to frustration at the historical community—where is the progress, what is the aim?

In one stereotypical view, historians are effete antiquarians, locked away in ivory towers, but the truth is that most historians like to be useful. Many like to be useful to particular communities. Indeed a whole cadre of popular historians serve the glory of physics alone, worshiping at the altar of lone geniuses and heroic deeds. Another group serves the physics community more critically, pointing the way to better practice. Others like to be useful to particular causes or world-views—Boris Hessen’s seminal 1931 paper *The Social and Economic Roots of Newton’s Principia* attempted to put Newton’s work in a Marxian framework, and Loren Graham has showed this was also to change understandings of the relations between ideology and physics in ways that might help Einstein’s relativity. In the current day, attempts to claim certain countries as the “birthplace of science” serve all sorts of nationalist agendas. Other historians feel that they will only become useful with future generations, once their work breaks free from the prison of the present with all of its assumptions and prerequisites.

Worrying about the uses of history because it rarely displays the markers of progress more familiar in the physical sciences is therefore a bit like asking “what is the point in life?” Everyone will have a different answer, but that does not mean that the answers are useless.

Robert Naylor
Joseph D. Martin
Richard Staley

Publisher’s Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.