



Editorial

Writing Things Up: Endings and Beginnings

Endings are difficult. Even when bringing a successful project to a conclusion, real questions might remain about what to say about critical issues, about who should be included in a list of authors or acknowledgments, or about whether it is too early to have the final say. The contributions to this issue each feature attempts to write things up, announce a discovery, settle an affair—and more. They illustrate the ambivalence that often attends endings, and outline some characteristic features, including how they can cause us to rethink beginnings.

After taking over the Bevatron in early fall 1955 with an elaborate setup featuring quadrupole magnets and Čerenkov counters to help select particles by mass and velocity, Owen Chamberlain, Emilio Segrè, Clyde Wiegand, and Thomas Ypsilantis sent a brief letter to *Physical Review* to announce that they had confirmed the existence of antiprotons—having observed all of sixty. This was the first of three letters, with an ever-widening circle of collaborators. Even as they staked a claim, they wished to keep moving. Kevin Orrman-Rossiter’s detailed account shows that their first letter was enough to establish the reality of the observations, rule out some spurious observations, and identify the antiproton, but still more was needed to confirm just what they had discovered. Their third letter communicated an observation of an annihilation event with an energy release large enough to involve a nucleon—which was enough to finally prove that this was a Dirac-type entity, the antiparticle of a proton. As this trio of letters indicates, endings are often extended events; deciding when enough has been done is delicate work. Sometimes endings spur new beginnings, too. Chamberlain and Segrè dramatized the latter point by dividing their 1959 Nobel Prize speeches. Chamberlain discussed what had been required to prove the existence of the antiproton, whereas Segrè talked about the work that had followed that first series of publications.

Apportioning credit features in the writing up of detection or discovery claims in at least two ways. One concerns the way discussing origins frames the meaning and significance of contributions. Chamberlain and his colleagues’ first letter carefully noted the contingencies that left real questions about whether further antiparticles should have been expected after the 1932 discovery of the positron, and also pointed to earlier observations consistent with an antiproton without offering clear proof—thereby showing the significance of the diverse steps they had taken. Similarly, their paper ended with a nod to others integral to the achievement, though less successful. In 1972 Oreste Piccioni went so far as to sue

Chamberlain and Segrè because he thought they had denied him his due. (Because of the statute of limitations, the case was dismissed without considering its merits.)

Stephan Schwarz considers a much more ambivalent event for which there is considerably less documentary evidence, the occupation of Niels Bohr's Institute of Physics in Copenhagen by the German *Wehrmacht* from December 6, 1943, to February 3, 1944. In this case, remarkably, the closest we have to a write-up was inaccurate in almost every detail. This is a set of notes that probably reflect a report from an expert commission involving Werner Heisenberg and Kurt Diebner. That its rather weak arguments about origins (in Niels Bohr's earlier flight from Denmark) and assertion of the inability of the institute to conduct war-related research served to officially resolve the issue might be surprising. It points Schwarz to the overriding pertinence of the changing political context in Denmark.

The primary evidence for Robert Fleck's discussion of themes shared between physics and art is of course visual rather than documentary, and he returns to the beginning of his arguments in concluding with a female nude and Paul Gauguin's extraordinary painting "Where Do We Come From/What Are We/Where Are We Going." Fleck tells us that Gauguin looked to science for answers to these questions, and notes that physics since has gone a long way further in addressing them, but it is the religious references that most viewers will have noted in his painting—which was intended as a concluding statement. Living in Tahiti since 1891, Gauguin in 1897 had learned of the death of his daughter in Copenhagen, suffered from painful "eczema" (or syphilis), and gone into debt. He wrote to a friend that in December he had decided he would kill himself, but before doing so wanted to paint a large canvas. It featured monumental figures with a child picking fruit, an idol that seems to represent the beyond and an old woman close to death, who "appears to accept everything, to resign herself to her thoughts. She completes the story! At her feet a strange white bird, holding a lizard in its claws, represents the futility of words." Gauguin thought it surpassed anything else he had done or would do. Yet he survived the suicide attempt he made once he'd finished the painting, and took up his work again.

Whether through brief letters, an incidental report, or a concluding image, these works show that endings are often passage points too.

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