

2014 Mary C. Rabbitt History of Geology Award

I am greatly honored to receive the 2014 Mary C. Rabbitt History and Philosophy Geology Award from the History of Geology Division of the Geological Society of America, especially because my own work has been in philosophy and history of science, concentrating almost entirely on geology and geophysics. I want to thank Michele Aldrich and Alan Leviton for their kind remarks. An undergraduate zoology/chemistry major at Oberlin College, I studied philosophy of science at Ohio State where I worked with Peter Machamer. In 1976, five years after taking a position in the philosophy department at the University of Missouri – Kansas City (UMKC), I learned of the plate tectonics revolution. I'm a slow learner! What a grand opportunity for a philosopher of science to test philosophical accounts of scientific change. It took no imagination to see that here was a post-Kuhnian revolution overdue for philosophical and historical analysis. After finding that Kuhn's model did not fit, while I. Lakatos', and L. Laudan's fared better, I discovered to my surprise that I wanted to know what happened during the controversy quite independently of testing various accounts of science change. I wanted to find out why various participants claimed what they did when they did. Epistemology was still central to my task, but by 1985 I had become more a historian than a philosopher of science. For the next thirty years, longer than the span between the rise of paleomagnetism and acceptance of plate tectonics, I tried to figure out what happened during the drift controversy.

Your honoring me with this award is a tribute to your broad-mindedness. I owe much to you for welcoming me into your community. I recall the encouragement I received over the years from Cecil Schneer, Ursula Marvin, Robert Dott Jr., Stephen Brush, Michele Aldrich, Gregory Good and Ken Taylor, all past recipients of the Mary C. Rabbitt Award. I have also benefited from the interviews by Ron Doel of many scientists who worked at what is now the Lamont-Doherty Earth Observatory. I also want to emphasize the help I received from two historians of geology, Rachel Laudan and Mott Greene. Early on, Rachel and I discussed applying various accounts of scientific change to the drift controversy, while Mott has been a tremendous help not only in understanding Wegener, but in tossing ideas back and forth about why Wegener's versions of continental drift were received as they were. Bill Ashworth, Bruce Bubacz, Ray Coveney, George Gale and Dana Tulodziecki, all former colleagues at UMKC, helped me articulate my views about the drift controversy. I also received assistance from Debra Day, former archivist of the Scripps Institution of Oceanography, Bruce Bradley, bibliographer of Linda Hall Library, Nancy Green, head of digital services at Linda Hall Library, and Susan Francis, my editor at Cambridge University Press. Their patience and expertise helped me complete my work on drift controversy. I also thank Nanette Biersmith, former Administrative Assistant of the Philosophy Department at UMKC. She edited all my works; her judicious suggestions greatly improved them.

My debt to many of the participants in the controversy over continental drift and rise of plate tectonics is enormous. Initially, I interviewed some of the key participants in person, continued to correspond them, and to correspond with many, many more. Without their patience, I would not have understood some of the geology and geophysics, or untangled individual contributions to group projects – paleomagnetism being the best example. Jan Hospers, Keith Runcorn, Ted Irving, Ken Creer, Neil Opdyke, Ian Gough, Ernie Deutsch, Ron Green, Don Tarling, and Richard Doell were especially helpful, even in those instances when I questioned their memory or asked why they had done something questionable or failed to do something that seemed reasonable. The same may be said of the many marine geologists and geophysicists, and seismologists with whom I spoke. I had lengthy discussions with Robert Dietz, Bob Fisher, James Heirtzler, Drum Matthews, Bill Menard, Walter Pitman, Marie Tharp, John Sclater, and Fred Vine. Bryan Isacks, Jack Oliver, and Lynn Sykes helped unravel what was novel about their work. As for plate tectonics itself, Jason Morgan, Dan McKenzie and Robert Parker proved invaluable in understanding the differences in their approaches and support of plate tectonics.

I have been so lucky: so lucky that the plate tectonics revolution was winding down when I began studying philosophy of science; so lucky that I had become so interested in scientific revolutions; so lucky that almost every major participant in good health was willing to discuss what they did and why they did it; so lucky that major participants were willing to carry on lengthy correspondences about their work and that of others who worked on the same problems; so lucky that a few participants were interested in my getting the whole story right, not just their own or their institution's story right. Here I want to thank particularly Bob Fisher, Ted Irving, Dan McKenzie, and Fred Vine. Finally, I've been so lucky that Paula, my spouse of 45 years, who has had only slight interest in the plate tectonics revolution, has put up with me, often telling me to quit complaining and get back to work.

Hank Frankel