H-Net Reviews
in the Humanities & Social Sciences

Susan Hough. *The Great Quake Debate: The Crusader, the Skeptic, and the Rise of Modern Seismology.* Seattle: University of Washington Press, 2020. Illustrations, maps. 328 pp. $29.95, cloth, ISBN 978-0-295-74736-1.

Reviewed by Xiaoyu Liu (University College London)

Published on H-Environment (June, 2021)

Commissioned by Daniella McCahey (Texas Tech University)

When reading Susan Hough's book, *The Great Quake Debate: The Crusader, the Skeptic, and the Rise of Modern Seismology*, one may at first realize that the location of Los Angeles should not be taken for granted and that the wealth of the city used to be threatened by an earthquake hazard, or, to be more precise, by debates over whether such a hazard really existed. For readers who are stunned by the prosperity of the city today without knowing the history of its construction, Hough shows that earthquake hazards had been a basic fact in turn-of-the-century California. She presents Los Angeles as the setting for a debate that was not only important to the planning of California and to American seismology but also illustrative of how science, business, and local society contributed to risk reduction in such a city. This was the great quake debate.

It is not unusual for historians to regard debates as milestones in the history of earth science. A debate among geologists over an undetermined age of one certain fossil or an unexpected product of some underground reaction not only led to a well-grounded and widely accepted conclusion but also helps historians understand the situation of science in an era, such as its principles, its organizations, and its contributors. Hough's book is not an exception, and it touches the history of a subfield of earth science that has been only rarely studied before: seismology. Besides, while a historian may prefer to focus on the debate itself as an event, Hough uses a narrative that is more dramatic, where the plot is actually the lives of two leading roles in the debate, Bailey Willis and Robert T. Hill, or, in Hough's words, the former as protagonist and the latter as villain.

Therefore, Hough uses nearly half of the book's length to tell what had happened to the two figures before they settled in California and witnessed an earthquake, and she makes it clear from the beginning of the book that Willis and Hill were strikingly different in almost every aspect. Their differences were determined largely by personal experiences. Willis enjoyed a peaceful childhood and joyful schooling, while Hill suffered hunger and a broken family due to the Civil War; Willis graduated without difficulty from Columbia University School of Mining with two degrees, while Hill struggled to leave Cornell on time, failing to fulfill the requirement on Latin. Although both developed an early interest in geology and first encountered each other in the United States Geological Survey (USGS), Hough suggests that they had grown into different personalities by that time and their different personalities would influence the rest of their lives and careers. Willis was generally

welcomed in the USGS even after his leave for a while to work with the North Pacific Railroad Company, while Hill had more trouble with his collaborators. Hill, though, gained his reputation for his momentous survey of Texas and a heroic close observation of erupting Mount Pelée.

Both men turned to California for their later careers. In this part of the book, a discerning historian of science may be able to note some echoing topics for further studies. Here one can notice how the first-hand experience of an earthquake might have started Willis's crusade to warn about the risk of greater earthquakes and how his warnings were received by local building societies, insurance industries, and civil associations, such as the Chambers of Commerce in San Francisco and Los Angeles. One may also be intrigued to find out how Hill's rather reserved denial of the possibility of a certain type of earthquakes was distorted after his book, ***Southern California Geology and Los Angeles Earthquakes*** (1928), was published and then misinterpreted by media and the public. Meanwhile, Hough shows that other geologists were actually equally important in the great quake debate with different scientific institutions behind them. It is a pity, though, that few of these topics are deeply investigated in Hough's book. Having said that, Willis's and Hill's stories in the book provide a detailed and valuable account of the work and life of geologists in the late nineteenth- and early twentieth-century United States, such as how they conducted fieldwork, how they wrote for both the professional and the public, and how they got along with their colleagues.

As an established seismologist who works with the USGS, Hough notices how seismology a hundred years ago differed from that today. However, this is not equal to the "rise of modern seismology" in the subtitle of the book. On the one hand, she does not provide a clear definition of either modern or traditional seismology. Nor does she offer a proper comparison between seismology before and after the debate. On the other hand, it would have been helpful if a panorama of seismology at that time were in the book, illustrating some main questions and conclusions, methodologies and epistemology, and the connection between seismology and geology. It would also have helped if more maps of Appalachia, Texas, and, of course, faults and even plates around California had been added into the book. Nevertheless, Hough's careful examination of Willis's and Hill's works gives readers a glimpse of existing knowledge about earthquakes, without interrupting the whole engaging story.

Although it might be expected that Hough's book reveals something that could be generalized about industrial and societal factors that can influence science, the legacy of the great quake debate is limited and closely concerns its main participants, namely, Willis and Hill, leaving a blank for lessons in risk reduction while completing a drama about these two remarkable figures. Despite being dramatic, Hough's book is based firmly on personal documents and archives not only of the two leading roles but also of their colleagues, the state, and the USGS, with occasionally referring to secondary literature. Hough successfully makes full use of these original papers to resolve misunderstandings in existing biographical works and to sketch more accurate profiles of the great quake debaters.

If there is additional discussion of this review, you may access it through the network, at https://networks.h-net.org/h-environment

Citation: Xiaoyu Liu. Review of Hough, Susan. *The Great Quake Debate: The Crusader, the Skeptic, and the Rise of Modern Seismology.* H-Environment, H-Net Reviews. June, 2021.

URL: https://www.h-net.org/reviews/showrev.php?id=56224