Wegener's Disadvantage

An Illustration of the Importance of Universalism in Science

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The practice of science is not immune to flaws in social structures. Sociologist Robert K. Merton was aware of this indelible connection between sociology and science and argued for the importance of four social norms — universalism, communism, disinterestedness, and organized skepticism — for the proper application of the scientific method and prevention of ideological contamination in science (Bowler 11). Universalism, in particular, is the condition in which all scientific claims are evaluated independently of the personal, social, or nationalistic qualities of their presenter. Merton argues that universalism is necessary for objectivity in science (Merton 270). An example of a failure of universalism can be found in the early twentieth century, when American geologists attacked and ultimately disregarded Alfred Wegener's theory of continental drift.

Wegener suggested continental drift — the idea that Earth's continents had once been connected as a large supercontinent and had since drifted apart — in 1912 (Bowler 238). Once academic discussions reopened after the First World War, his ideas were met with great hostility by the global geological community, particularly in America. It was not until the 1960s that, as a result of Cold War technology, Wegener's theory was accepted as the framework for an accurate description of the motion of continents over time.

Many arguments made against Wegener's theory were widely accepted at the time, but modern analysis has diminished the amount of sympathy that Wegener's opponents can reasonably be granted. The main complaint from Wegener's opponents was that he did not provide a mechanism for his proposed geological theory (Chamberlain 84) (Bowler 238). However, Naomi Oreskes argues extensively in *The Rejection of the Theory of Continental Drift* (1999) that there were numerous conceivable mechanisms for continental drift proposed by

respected geologists by the late 1920s, some of which resemble our modern understanding of plate tectonics. Wegener's opponents seemed to have disregarded these explanations.

There were other technical objections to Wegener's theory, many of which were outlined by some of the world's most renowned geologists in the proceedings of a 1928 conference (Chamberlin) (Newman). This publication is, however, shrouded with bias. The conference was a meeting of the American Association of Petroleum Geologists, and along with the publication is considered the primary force for the silencing of Wegener's theory in America in the early twentieth century (Greene 522) (Newman 70). Oreskes makes use of personal correspondences to comprehensively demonstrate that the conference and its proceedings were designed precisely to tear down Wegener's thesis and not to objectively examine evidence (Greene 522). In particular, the conference organizers actively recruited opponents of Wegener (Oreskes 196) and expressed their hopes that Wegener's hypothesis would not hold true (Oreskes 187). An example of the consequence of this administrative bias is Rollin Chamberlin's editorial "Some of the Objections to Wegener's Theory," which includes instances of blatant sarcasm and name-calling (Newman 12-13) (Chamberlin 83). Historians have clearly described the bias against Wegener's ideas; to understand the potential motivations, we must examine the nationalistic tensions in the scientific community around this time.

In 1914, Yale geologist Joseph Barrell warned his British and American colleagues of the "pseudo-science" represented by a large proportion of German academic work (Barell 340). The growing distrust between the German and American academic communities stemmed from a disparity in ideologies. German academics at this time were more willing to consider theoretical work as legitimate, while Americans were particularly concerned with the problem of induction and did not want to draw speculative conclusions from incomplete data (Oreskes 234). To add to

our understanding of the nationalistic challenges that Wegener and other geologists faced, historian of science Mott Greene describes geology as the most nationalistic of the sciences, citing government involvement in the practice and funding of geology (483). Nicolaas Rupke furthers this idea in his 1996 essay "Eurocentric Ideology of Continental Drift," where he describes the tradition of Eurocentrism in geology as an influence for American distrust in European geology, and in particular Wegener's theory of continental drift. The science of geology at this time was clearly intertwined with nationalism, and historians have argued that this negatively affected the acceptance of Wegener's theory.

Modern historical analysis demonstrates that American geologists' response to Wegener's theory of continental drift for the first half of the twentieth century was biased toward criticism and dismissiveness. A strained relationship between German and American geology may explain this. Here we have a prime example of the importance of Merton's universalism; the American scientists' failure to view Wegener's work independently of his nationality led to a delay of what is now the accepted and well-supported theory of the movement of continents.

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