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"Boundary-Work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists" Thomas F. Gieryn

How do we know what is science and what is not science? By what criteria can we determine if a new way of creating knowledge is "science"? The answers to these questions are central to the boundary-work that Gieryn explores. Rather than positioning scientists as rational thinkers pointing out the truth of science to all non-scientists, Gieryn creates room for nuance. He presents boundary work as ideological battles in which the weapons that both sides use are ever-evolving and context-sensitive.

In Victorian England, John Tyndall helped to draw boundaries around science to distinguish it from religion and mechanics. According to Tyndall, the aspects of science that make it scientific include its empirical nature, skepticism, objectivity and practical usefulness. In contrast to religion, says Tyndall, science is *useful* (p. 785). In a different battle, Tyndall described another picture of science's intrinsic science-ness: science is knowledge that is grounded in experimentation, valuing discovery for its own sake. Science doesn't have to worry about being *useful*, he says, it has nobler concerns (p. 787).

Tyndall's contradictory descriptions of science and scientific knowledge give great weight to Gieryn's argument that even as we try to draw boundaries around "science" there is actually no objective science to which we can point. Science itself is conceptualized as a monolithic ideological concept that we can skew and manipulate for our ideological and rhetorical (and political, and strategic…) goals.

The uses and results of boundary work are not only ideological. Gieryn identifies real-world purposes of boundary making - expansion of a field of study, monopolization of knowledge creation, protection of research autonomy, creation of scapegoats. Part of boundary making involves creating a technically-knowledgeable elite separate from the general population. This separation means that only those with adequate training can evaluate technical claims - there is no need to poll an uneducated populace to see if a claim is scientifically valid. By virtue of being a scientist doing work in a boundaried area, the scientist's claim is given respect and is thus unchallengeable by non-scientists. As a result, scientific knowledge makers are insulated from public interrogation and from the impacts and implications of their knowledge.

Gieryn hints at the troubling nature of this kind of scientific walled garden, but I would like to see this topic explored further. Can we engage in boundary work that both leaves scientists free to do their research and also holds them accountable for the societal impacts of their scientific and technical products?