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Reading Response

Inventing Accuracy. A Historical Sociology of Nuclear Missile Guidance
by Donald Mackenzie

"If we dig deep enough, can we not find a solid foundation of technical fact, matters that rationally cannot be disputed? Is there not, ultimately, a sphere of the technical that is genuinely insulated from politics and the clash of organizational interests?" (p 340)

In this passage from *Inventing Accuracy*, Donald Mackenzie, professor of sociology at the University of Edinburgh, raises a profound question for the developers and the users of technology; can we rely on technical facts? Mackenzie's work addresses "how facts are produced." Currently, he is pursuing this question in the realm of financial markets. However in 1990, when the cold war was still in progress and the threats and the facts of nuclear war were more pressing than they are today, he published *Inventing Accuracy*.

Inventing Accuracy demonstrates how the technical facts of nuclear missile guidance systems are subsumed within a world of numerous social and political pressures. According to Mackenzie, the technical and the political components of this world cannot be easily teased apart. In fact, he argues that the two are part of a seamless system. How does this square with Mackenzie's acknowledgement that the material world has limits, that "the material world cannot simply be shaped at will?" Can't we somehow access the material limits of the world?

Mackenzie's work deals with social facts, interpretations of the material world. Though the material world may be obdurate, interpretations can vary wildly. For example, in the case of computer simulations, Mackenzie argues that what is important is not "how valid computer simulation is" but rather "how valid it is believed to be." Another example of this "plasticity of implications," can be seen in the treatment of uncertainty about the accuracy of guidance systems: "[It] was drawn on to argue for manned bombers, for the cancellation of MX and a more dovish defense policy for radio guidance and for larger missile warheads!" How do interpretations of the material world become believable? Mackenzie deftly argues that facts about the material world become believable when technical and political realms are convincingly decoupled; (technical) facts are valid only when seemingly isolated from (political) interpretation.

Mackenzie supports a prevailing belief among the community of scholars who practice sociology of science, that the separation of technical and political realms is an illusion.

However, he argues that it is an illusion that serves a purpose. Mackenzie explains this separation as a necessary part of the culture of technological development. The belief in an autonomous realm of technical truth protects technologies from outside (political) criticism; it preserves the black boxes that technologists rely upon. Black boxes are the building blocks of technology. Without black boxes, a seemingly "natural" technological trajectory can never be achieved. I believe that this is Mackenzie's most startling assertion. Is he really able to see behind the illusion, to the unconscious motives that condition the validity of technology?

Mackenzie argues that the boundary between the technical and the political is preserved by technologists and project managers who benefit from this division. This division is concretely instantiated in a division of labor; it allows technologists to practice without (political) value judgments. Mackenzie even goes so far as to argue that technologies can be shaped by the difficulties of keeping politics and technology separate.

Inventing Accuracy is meant to be an antidote for technological and political passivity. Mackenzie admirably tears down many illusory barriers to intervention in these realms. However, he does not show us any ways in. Mackenzie helps the reader elude the dangers of determinism, but then he leaves the reader trapped in the rhetoric of relativism. Can the various political and technical "facts" of guidance systems be reconciled? Are there strategies for bridging or mapping between different interpretations of the material world? If not, the implication may be that Mackenzie's claims to truth, sadly, are as baseless as those of the technologists and politicians he writes about.