



Critical Theory of Technology and STS

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Introduction

Long before contemporary Science and Technology Studies (STS), Marxism, pragmatism and various theories of modernity were associated with the study of technology. These were broad and often speculative theories that related technology to a social and political context. STS sought to supplant these competing approaches and has been largely successful. Today few look to Mumford or Dewey, Heidegger or Marcuse for insight into technology. However, when STS took what Wiebe Bijker called "the detour into the academy" to focus on empirically based case histories, it gave up the political concerns that had inspired these earlier approaches. This renunciation was easier to justify before the widespread controversies over medical care, the Internet and the environment directly implicated technology in so many different aspects of contemporary politics. Some STS researchers have now also become aware of the more politicized approaches favored in the developing world, especially Latin America. But how can the achievements of STS be preserved in the context of politically charged investigations of controversial issues? This talk proposes one way of doing this, the critical theory of technology.

Critical theory of technology draws on fundamental methodological assumptions of STS to elaborate themes of the earlier tradition of modernity theory, specifically Lukács's early Marxism and the Frankfurt School. The key such assumptions are the notions of underdetermination, interpretative flexibility, and closure developed in the social constructivist tradition. In addition, the concept of co-construction drawn from actor network theory is useful methodologically, although critical theory of technology does not follow ANT to its radical ontological conclusions. The application of these notions to particular technologies is fruitful, but attempts to generalize them as a full fledged social theory, for example, in the writings of Bruno Latour, are not as successful as the case histories for which STS is famous.

The attempt to build a political theory on the basis of STS needs to confront the principle insight of the earlier tradition, namely, the strange fact that modern societies have a “rational” culture. By this is meant the generalization of methods and concepts from mathematics and natural science as a framework for thought and action in every social sphere. This is not merely a subjective disposition but is reflected in the multiplication bureaucracies, technologies and technical disciplines which effectively organize and control most of social life. A phenomenon of this scope requires a broad approach.

Critical theory of technology addresses this issue from the standpoint of the theory of rationality elaborated by the Frankfurt School. The articulation of this theory in the context of an STS-inspired approach requires significant revisions. Where the Frankfurt School proposed a very general critique of “instrumental rationality,” critical theory of technology looks to a more concrete critique of the social bias of technical disciplines, bureaucracies and technologies. The identification of such biases employs methods explored in STS and yields a critical approach to the culture of modern societies.

Methods

Following STS, critical theory of technology highlights the inherent contingency and complexity of technical artifacts masked by the coherence of technical explanations. In this context I suggest that the concept of a palimpsest can serve as a useful analogy. Technological design resembles a palimpsest: multiple layers of influence coming from very different regions of society and responding to different, even opposed, logics converge on a shared object.

Marx sketched such an approach in the "Introduction to a Contribution to the Critique of Political Economy." There he writes that "[t]he concrete is concrete, because it is a combination of many objects with different destinations, i.e. a unity of diverse elements. In our thought, it therefore appears as a process of synthesis, as a result, and not as a starting point, although it is the real starting point and, therefore, also the starting point of observation and conception" (Marx 1857/1904, 293).

In this passage Marx anticipates the genealogical method Foucault found in Nietzsche. These de-reifying approaches treat social "things," such as artifacts, institutions and laws, as assemblages of functional components held together by their social roles. The components disaggregate and recombine as society changes. Social history cannot rely on an Aristotelian model in which an essence endures through accidental changes. It must identify these ontological differences in the construction and meaning of its objects.

The genealogical approach is useful in the case of technology. Devices and systems often retain the same name while changing components. Genealogy is especially applicable where the technical code imposed by the dominant actor is not alone in shaping design. In such cases the technology must serve a multiplicity of interests through more or less coherent assemblages of parts with a variety of functions. The interests are also translated into higher level meanings, such as ideologies and worldviews. The technocratic concept of efficiency is an example, at each historical stage translating

particular interests and technical arrangements conducive to the exercise of technocratic authority. Technical disciplines and artifacts give a deceptively rational form to the multiple and ambiguous influences that appear clearly for what they are in other social institutions.

Conclusion

The writings of Marx and Foucault free us from a naïve belief in the universality of technological and administrative efficiency. In this they converge with recent Science and Technology Studies which has rediscovered the interdependence of the social and the technical. The technical underdetermination of artifacts leaves room for social choice between different designs that have overlapping functions but better serve one or another social interest. The key point is the influence of the social on the content of the artifact and not merely on such external factors as the pace of development, packaging or usages. This means that context is not merely external to technology, but actually penetrates its rationality, carrying social requirements into the very workings of the device.

References

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