Technology and Society

The first question to ask about technology is why it matters. According to a common sense instrumentalist, technology is a neutral tool that may be used for good or for ill. This approach excludes technical matters from politics, except insofar as devices are intermediaries (Bruno Latour's term) for the actions of others. The atom bomb is evidence enough that this view is false.

Opposed to instrumentalism is substantivism. This view holds that technologies (or modern technology as a whole) are bearers of values independent of the interests and actions of users. In its stronger forms, substantivism too treats technology as an intermediary – laden with values embedded by its designers, by capitalism, or by some other social logic. The consequence of both instrumentalism and substantivism can be to rule technical matters and details outside political consideration.

But technical concerns are important. Technologies are created as tools for performing certain tasks. Yet the design of a technology is underdetermined by the purpose for which it is created. If a technology is understood in terms of affordances – which tasks it makes easier and which it makes harder, then the supplementary affordances of a technology beyond the intent of its designers matter a great deal. The Internet, designed to share research, turned out to be at least as important for communication. Its end-to-end architecture, chosen by the U.S. military for resilience and flexibility, provides a more open medium for communication than would a centralized design equally suited to sharing scientific information.

So technical details matter – but to whom? The old question of structure and agency must be raised for technology. This is overlaid with conceptions of technology shaped by capitalism at different points in its history. Scholars focusing on industrial mass production, such as Beniger, Braverman, Mumford, Illich, and Hughes, focus on production, bureaucracy, and scale.

The critical tradition of the Frankfurt School pursues technology as domination. Adorno and Horkheimer argue that the Enlightenment project of scientific and technical progress has turned from the domination of nature to the domination of human beings: we have dispelled the myths of the past only to be mystified by new ones of our own making. Benjamin saw potentials of liberation in technology; Gunster suggests that Adorno's pessimism and Benjamin's optimism be seen as opposing tendencies in dialectical tension. Marcuse argues that the instrumental rationality of the one-dimensional society forgets the transcendental potential of ideas beyond the horizon of the existing society, but that an alternative rationality (which he does not describe) might provide a way out.

Heidegger shares a concern with technical rationality. He sees our understanding of the world structured by a technological way of revealing, a way that draws human beings into a subordinate relation to the same logic of control that we apply to technology. He does not attribute this phenomenon to technological artifacts, however. They themselves are consequences of the technological way of revealing in our society: the technological way of thinking becomes the only way of thinking (in Dreyfus 99). Heidegger's ideas are picked up by Borgmann, who sees modern devices severing means from ends and insulating us from our interactions with the world, to the detriment of things and practices that have historically drawn people together and connected us to our world.

Social constructivists, in contrast, examine the details of technical artifacts and practices. Through case studies, scholars like Pinch, Bijker, and Colins illustrate how the meanings and technical characteristics of devices are socially constructed rather than being determined by technical logic. Bruno Latour goes even further, arguing that social scientists should reject any appeal stable social forces like society and capitalism. He believes they should instead reconstruct specific social associations by tracing the interactions of individual actors, many of which are things. Thus while social constructivism accounts

for and calls attention to the importance of technical details, its narrow focus on specific cases avoids - or in Latour's case explicitly rejects - the search for and critique of larger structural patterns. Feenberg argues for incorporating perspectives like this, that technical details seriously, into a more critical perspective by linking them to theories of rationality and modernization like those of the Frankfurt School and Heidegger.

While the idea of progress is implicit or explicit in nearly all accounts of technology, the engine of progress varies. Beniger, for example, identifies the need for the increasing control, necessitated by the speed of the railway and subsequent technologies, as driving technological and organizational innovation. Braverman points to capitalism. Adorno and Horkheimer find a movement in the expansion of instrumental rationality. Hughes describes the evolution of technical systems as they expand. Zittrain describes threats to continuing innovation on the Internet. One factor, however, is never mentioned as a driver of change: the environment. Nature is something dominated or despoiled by technology, or it is a passive resource waiting to be exploited, or it may be respected by technology – but it is not an actor. Nature is present as the object of technology. It is not present as a subject, or in the more encompassing and role of an environment that is not other from human life, but part of it (Latour is an exception, but he goes into little detail). The steam engine is seen as an innovation, rather than as the exploitation of a resource windfall. As with my readings about the commons, this is a significant gap given the environmental limits apparent today.

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