

### Methods in the History of Technology

The introduction of the artifacts discussed in this encyclopedia, ranging from the automobile and the radio to the spacecraft and the computer, from wired electric lines to wireless electronic nets, and from the atomic bomb to the nuclear reactor, took place in a century more accustomed to rapid technical change than the nineteenth century—a century marked by the creation of the “machinery question” and the development of political economy to answer it. By the twentieth century, the question no longer concerned the introduction of one wave of novel machines, but had to be reformulated to analyze the historical pattern of succeeding waves of novel machines. The question could no longer be answered by political economy alone, birthed to make sense of the world of steam engines. Over the course of the twentieth century, as steam engines were already passé while new machines kept appearing, the study of the past had to be enlisted to help society understand its own relationship to technology. The twentieth century, then, witnessed the emergence and establishment of the history of technology as a distinct historical subdiscipline.

As new machines were coming at an accelerating pace, a mass faith in the equivalence between technical and social progress reposed as the twentieth century's ideological analog to medieval religious dogma. In response, the methods of the history of technology have been overdetermined by the challenge to interpret the appeal of the so-called ideology of “technological determinism.” Noticeably, history of technology as such was logically impossible before the twentieth century because the modern use of the word “technology” was not established before the first decades of the twentieth century. Satisfied by how much their subdiscipline has advanced by the wise agreement to not force one definition of technology upon its members, the community of professional technology historians now agrees that the vagueness of the word “technology” is only consistent with the protean persistence of technological determinism. In the face of a definitional openness of technology, perceptions of the object of the history of technology, propositions about what its key concepts ought to be, and, correspondingly, suggestions over practices and methods have remained pluralistic and defy any easy act of subsumption under a single theoretical framework.

For convenience, we may distinguish between two historiographical periods, separated by the foundation of the Society for the History of

Technology (SHOT) in 1958, with *Technology and Culture* serving as its journal of record. Melvin Kranzberg is unanimously recognized as the single most important founder of SHOT. By focusing on technological change as the outcome of “invention,” individual contributions before 1958 tended to choose methods that privileged the study of individual agency over social structure. Yet, debates investigating the proper relationship between the two concerning technical change were also present in schools of thought like the “sociology of invention,” known by the works of S. Colum Gilfillan, W. Fielding Ogburn, and Abbott Payson Usher. Culture was certainly the starting point for Usher, an economic historian (*A History of Mechanical Inventions*, 1929), the literary and social critic Lewis Mumford (*Technics and Civilization*, 1934), and the art historian Sigfried Giedion (*Mechanization Takes Command*, 1948); the three individuals commonly credited for being among the most distinguished contributors to history of technology's pre-SHOT period. Moreover, the interest on invention survives to the present, quite clearly as an interest in the study of the transformation of inventiveness as a socially situated manifestation of human creativity during the transition from the individual inventor's workbench to the expansive settings of industrial research.

We now know the importance of history of technology was acknowledged by several other early historiographical currents emanating from outside the U.S. Known for its sensitivity to the history of material civilization, the French *Annales* school invited historians to favorably regard the history of technology. As early as 1935, Lucien Febvre called for a tripartite methodological synthesis of a competent understanding of the technology under consideration, of a proper placement of this technology to a series, and of the appropriate move from these series to total history. Subsequent interpretations of Febvre's manifesto frequently placed the accent on the first or the third of its ingredients, thereby privileging technical and social history respectively. Technical history has been a strength of the long-lived British *Transaction of the Newcomen Society*, founded in 1920 by the Newcomen Society for the Study of the History of Engineering and Technology. The publication of an analogously focused German history of technology journal as early as in 1909 by the Association of German Engineers (now called *Technikgeschichte*) suggests that the interest in enriching engineering studies was a second strong motivation behind the foundation of the history of technology. Evidently,