Why Technology Advanced So Quickly the Past 200 Years

It's generally believed that, compared with previous human history, technology has advanced exponentially since the Industrial Revolution 200 years ago.

But why?

That's a question I've frequently wondered about, and one that Lewis Mumford sought to answer in his 1934 classic *Technics & Civilization*.

His answer might be summed up in the phrase coined by Richard Weaver: "Ideas Have Consequences." Mumford admits that there had been a steady development of technology for several centuries before the Industrial Revolution. However, according to Mumford, the technological boom of the modern era also required an ideological shift: "Before the new industrial processes could take hold on a great scale, a reorientation of wishes, habits, ideas, goals was necessary."

Below are four of the ideological shifts that Mumford believes prepared the way for the modern development of technology:

1) The Invention of the Clock

The invention of the mechanical clock—which appeared in medieval cities in the 13th century—was prepared for by the European monasteries, which desired to create a more ordered and regulated existence apart from the chaos that dwelt outside their walls. The result, according to Mumford, was that the mechanical clock "dissociated time from human events [and organic sequences] and helped create the belief in an independent world of mathematically measurable sequences: the special world of science."

2) A Changed Understanding of Space and Movement

The Middle Ages tended to conceive space as primarily symbolic of the divine. According to Mumford, “a revolutionary change in the conception of space took place” between the 14th and 17th centuries, when “space as a hierarchy of values was replaced by space as a system of magnitudes.” A new interest in perspective in art led to an interest in distance and conquering it through movement, e.g. through locomotion, better roads, voyages to faraway lands, and weaponry that annihilated distance.

3) The Influence of Capitalism

The shift from a barter economy to a capitalist one brought about “constant reference to abstract symbols of wealth: gold, drafts, bills of exchange, eventually merely numbers.” Mumford believes this change made people more comfortable with abstraction and calculation, thus creating habits necessary for an increased emphasis on science and mathematics. In addition, Mumford thought it extremely doubtful that technology would have increased so rapidly if capitalism hadn’t striven to use machines to increase private profit.

4) A Turn from the Supernatural to the Natural

“Meanwhile, with the transformation of the concepts of time and space went a change in the direction of interest from the heavenly world to the natural one… Nature [now] existed to be explored, to be invaded, to be conquered, and finally, to be understood.”

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