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### Editor's Note

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## EDITOR'S NOTE

Technology is intimately related to human thinking or knowledge, patterns of social relations, and, ultimately, survival. Even narrowly defined as the application of a particular technique to overcome a concrete and immediate impediment, technology is surely an “anthropomorphic necessity” of the battle for human existence.<sup>1</sup> A common denominator of earlier civilizations (*e.g.*, Mesopotamian, Indian, Chinese, Egyptian, Greek, Mesoamerican, etc.) and the contemporary ones is the degree to which all channel the creativity of some of their denizens toward deciphering and manipulating the physical world around them, and the uses to which the insights are put.<sup>2</sup>

Technological inventions or innovations, then, no matter how ingenious, are hard to conceive without some science—a disciplined interrogation of nature to unlock and make sense of its mysteries. And yet, the two have not always been integrated. On the contrary, traditional practitioners of science saw the vocation as (and were treated as) “aristocratic, speculative, and intellectual in intent.”<sup>3</sup> Technology, on the other hand, was thought of as “lower-class, empirical, action-oriented.” Accordingly, the functional merger of conceptualization and making—that is, the mind and the material—is primarily a middle 19th-century phenomenon linked to earlier upheavals in Europe that were brought forth by political changes that, in turn, undercut old social hierarchies and categories. More precisely, the fast propulsion of modern science within European societies could be construed as a combination of three interlocking loci of activities: the long-range and deep transformation of feudal orders into a more mercantilistic and expansive capitalism, increasingly solicitous of technical innovation; an aggregation of identities into nationalist and competitive projects; and individual as well as close networks of scientific groups engaged in research and disputation for personal and team glory. In this formulation, technology is an inherent element of historical structures at any given epoch.

Technology thus carries within its . . . system the scars of the socio-economic system that gave birth to it and hence of history, more specifically, the particular scars of a particular history. In that sense, technology is history (the flow of socio-economic systems) congealed in a hardware (material) or software (information) form.<sup>4</sup>

A judicious reading of technology as history conjures up at least three extremely relevant points: the barely discussed yet causally critical heritage from non-European civilizations; Europe's rise and subsequent domination of scientific thinking and innovation; and the paradox of celebration of technological abilities and melancholic situatedness. In a discerning attempt to capture at once the enormous debt of the technological West to the endowment of other cultures and the emergence of new aspirations, Lynn White, Jr., tells us:

In the present-day vernacular, modern science is supposed to have begun in 1543, when both Copernicus and Vesalius published their works. It is not a derogation of their accomplishments, however, to point out that such structures as the *Fabrica* and *De revolutionibus* do not appear overnight. The distinctive Western tradition of science, in fact, began in the late 11th century with a massive movement of translation of Arabic and Greek scientific works into Latin. A few notable books — Theophrastus, for example — escaped the West's avid new appetite for science, but within less than 200 years effectively the entire corpus of Greek and Muslim science was available in Latin, and was being eagerly read and criticized in the new European universities. Out of criticism came new observation, speculation, and increasing distrust of ancient authorities. By the late 13th century Europe had seized global scientific leadership from faltering hands of Islam.<sup>5</sup>

With a momentum initially buttressed by an apprenticeship to others but fueled by curiosity and the lure of rewards, science in Europe entered into a partnership with both the state and emergent accumulators. This fearsome coalition became unbeatable in the generation of power. For those who happened to live in such societies, new class formations notwithstanding, relative material and psychological benefits beckoned. For others, now to be treated as backward zones, auxiliary marginality and subsequent structural vulnerabilities became increasingly part of their common fate.<sup>6</sup>

This costly unevenness is not to be interpreted as a mere fact from a long-faded time. Far from it, the one-sidedness of the encounter has a contemporary guise, one primarily compounded by a new and ever tighter alliance between the core states, their universities, and firms. With a specific reference to biotechnology, here is one instructive verdict:

Once the resources are discovered in their raw form, they are collected and carried to the laboratories of the developed world where they are subjected to research for useful properties. If found, these properties form the basis of new patentable products and procedures. When pharmaceuticals or agricultural products do make it to markets, companies often see a phenomenal return on their investment, but usually it is only the *companies* that see the profit while the community or country that is the source of the knowledge or the natural resources used in the new product is often left without any benefits from the discovery.<sup>7</sup>

Finally, thinking about humankind and technology usually leads to a discussion of ideas, agency, institutions, and the general direction of history. Here, no concept comes more immediately to mind, attracts more attention, or ignites more heated contestations than *progress*. One version is celebratory of the social utility of technology. For instance, we remember Francis Bacon's 1627 publication, *The New Atlantis*, a utopian tale brimming with a mixture of enthusiasm for scientific empiricism and millenarian fervor. Such eagerness continues into our digital age.<sup>8</sup> Now the focus is not only the usual application of new techniques to domesticate nature and create greater earthly riches, but, most ambitiously, to splice humans and machines.<sup>9</sup>

But there has always been a more skeptical and companion perspective on the consequences of the uses of technology. Alarmed by the onset of environmental dessication, deep and instrumentalist penetration of social liveworlds, and the triumph of logocentrism, these voices dissent from the uncritical conflation of technologism and the very being and welfare of humanity. From this angle, *progress* is interpreted, at best, in terms of experiences thick with exorbitant and ironic paradoxes. In his "Ninth Theses on the Philosophy of History," Walter Benjamin writes:

A Klee painting named 'Angelus Novus' shows an angel looking as though he is about to move away from something he is fixedly contemplating. His eyes are staring, his mouth is open, his wings are spread. This is how one pictures the angel of history. His face is turned toward the past. Where we perceive a chain of events, he sees one single catastrophe which keeps piling wreckage upon wreckage and hurls it in front of his feet. The angel would like to stay, awaken the dead, and make whole that has been smashed. But a storm is blowing from Paradise; it has got caught in his wings with such violence that the angel can no longer close them. This storm irresistibly propels him into the future

to which his back is turned, while the pile of debris before him grows skyward. This storm is what we call progress.<sup>10</sup>

## II. The Roundtable

We commence the Roundtable with a keynote address by **David Harvey**. At the center of his insights is the concept of “fetishism.” Long a source of preoccupation for those thinkers who worry about the danger of idolatrizing what humans create, Harvey stresses the social embeddedness of technology and the consequences thereof.

The second session is organized around **Joel Mokyr’s** presentation. His arguments revolve around the positive relationship between competent or enlightened institutions and technologically driven economic growth. In response, **David Tallman** underscores both the imperatives of establishing “effective institutions” for the purpose of transferring technology to those who need it and reforming local structures to halt the movement of deadly technologies. **Peter Ferderer** concurs with most of the points of the essay. His reaction focuses our attention on the dramatic improvements of the human material condition primarily due to liberalization of trade and technological innovation.

**Nazli Choucri’s** contribution is the subject of the third discussion. She explores the affinities between technology and development, with an eye to the play of both in the Middle East. **Hande KolçakKöstendil** points to the “unpredictability” of technology and raises a set of important concerns, including the interplay of war and technology. **Franklin Adler** asks for more theoretical elaboration of the key concepts of the essay, and suggests that the geographical unit of the Middle East needs greater and more disciplined articulation.

We conclude with **Aphra Kerr’s** essay. Hers is a meditation on the effects of the penetration by private capital of Irish and European media. **Andrea Purdekova** problematizes unequal access, diversity of programming, and the role of the state in the encounter between the “media technology and society.” **Stephen Burt** extends the conversation into the realm of “new media trends,” and offers the concept of “localist internationalism” to underscore the complexities of the current moment.

2003 will be the *tenth* anniversary of the Macalester International Roundtable. We plan to bring together a group of scholars and artists (a musical ensemble from Korea) to mark the occasion.

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## Notes

1. E. C. Schrodinger, *Science, Theory and Man* (New York: Dover Publications, 1957).
2. Dick Teresi, *Lost Discoveries: The Ancient Roots of Modern Science—From the Babylonians to the Maya* (New York: Simon and Schuster, 2002); J. D. Bernal, *Science in History* (New York: Hawthorn Books, Inc., 1956); D. Chattopadhyaya, *Science and Society in Ancient India* (Calcutta: Research India Publication, 1976); Seyyed Hossein Nasr, *Science and Civilization in Islam* (Cambridge, Mass.: Harvard University Press, 1968); Ahmed Y. Al Harun and Donald R. Hill, *Islamic Technology: An Illustrated History* (Cambridge: Cambridge University Press, 1986); Joseph Needham, *Science and Civilization in China*, Vol. 1–7 (Cambridge: Cambridge University Press, 1954–1988); Arnold Pace, *Technology in World Civilization: A Thousand-Year History* (Cambridge, Mass.: MIT Press, 1990); and Bruce Mazlish, *The Fourth Discontinuity: The Co-Evolution of Humans and Machines* (New Haven: Yale University Press, 1993).
3. Lynn White, Jr., "The Historical Roots of our Ecological Crisis," *Science*, Vol. 155 (1967): 1203–1207.
4. Susantha Goonatilake, *Aborted Discovery: Science and Creativity in the Third World* (London: Zed Books, 1984), p. 121.
5. Op. Cit.
6. Michael Adas, *Machines as the Measures of Men: Science, Technology, and Ideologies of Western Dominance* (Ithaca: Cornell University Press, 1989).
7. Robert L. Ostergard, Jr., Matthew Tubin, and Jordan Altman, "Stealing from the Past: Globalization, Strategic Formation and the Use of Indigenous Intellectual Property in the Biotechnology Industry," *Third World Quarterly* 22, no. 4 (2001): 644. In addition, and Africa-specific, Juma's splendid study notes:  
It is science and technology that largely define the global distribution of productive activity. It can be argued that African development has lagged behind not necessarily because it has been exploited, but because the exploitation has gone hand-in-hand with limited scientific and technological development.  
Calestous Juma, *The Gene Hunters: Biotechnology and the Scramble for Seeds* (Princeton: Princeton University Press, 1989), p. 31.
8. George Gilder, *Microcosm: The Quantum Revolution in Economics and Technologies* (New York: Simon and Schuster, 1989); Esther Dyson, *Release 2.0: A Design for Living in the Digital Age* (New York: Broadways Books, 1997); Borjn Lomberg, *The Skeptical Environmentalist: Measuring the Real State of the World* (Cambridge: Cambridge University Press, 2001); and Jeffrey James, "The Global Information Infrastructure Revisited," *Third World Quarterly* 22, no. 5 (2001).
9. Gregory Stock, *Redesigning Humans: Our Inevitable Genetic Future* (Boston: Houghton Mifflin Company, 2002).
10. Walter Benjamin, *Illuminations: Essays and Reflections*, translated by Harry Zohn (New York: Schocken Books, 1968), pp. 257–258. Martin Heidegger writes:  
The threat of man does not come in the first instance from the potentially lethal machine and apparatus of technology. The actual threat has always afflicted man in his essence. The rule of enframing threatens man with the possibility that it could be denied to him to enter into a more original revealing and hence to experience the call of a more primal truth (p. 308).

Martin Heidegger, "The Question Concerning Technology," *Basic Writings* (New York: Harper and Row, 1957).

Also, see Bill McKibben, *Enough: Staying Human in an Engineering Age* (New York: Times Books, 2003); Lewis Mumford, *Technics and Civilization* (New York: Harcourt Brace Jovanovich, 1963) and *The Myth of the Machine: Technics and Human Development* (New York: Harcourt Brace Jovanovich, 1966); Jacques Ellul, *The Technological Society* (New York: Knopf, 1964) and *The Humiliation of the Word* (Grand Rapids, Mich.: William B. Eerdmans Publishing Company, 1985); Dan Schiller, *Digital Capitalism: Networking the Global Market System* (Cambridge, Mass.: MIT Press, 1999); Langdon Winaer, *The Whole and the Reactor: A Search for Limits in an Age of High Technology* (Chicago: University of Chicago Press, 1986); Donna J. Haraway, *Simians, Cyborgs and Women: The Reinvention of Nature* (London: FAB, 1991); Lawrence Buell, *The Environmental Imagination: Thoreau, Nature Writing and the Formation of American Culture* (Cambridge, Mass.: Harvard University Press, 1995); and Arturo Escobar, *Encountering Development: The Making and Unmaking of the Third World* (Princeton: Princeton University Press, 1995).