
ETHICS, SCIENCE, TECHNOLOGY, AND ENGINEERING

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J. Britt Holbrook, Editor in Chief
Carl Mitcham, Associate Editor

the non-directedness of life's history, namely, that small initial differences could have made subsequent evolution radically different.

Spencer, Herbert. 1851. *Social Statics*. London: Chapman.

Argues that civilization is a natural, continual process of humans adapting to changing circumstances and that progress toward perfection is the same as the achievement of a perfect adaptation to surroundings.

Spencer, Herbert. 1861. *Education: Intellectual, Moral, and Physical*. London: Williams and Norgate.

Outlines Spencer's educational theory.

Spencer, Herbert. 1862–1893. *A System of Synthetic Philosophy*. 10 vols. London: Williams and Norgate.

Contains all of Spencer's major works, including The Principles of Psychology 1855; First Principles 1862; The Principles of Biology 1864, 1867; The Principles of Sociology 1882, 1898; and The Principles of Ethics 1892.

Spencer, Herbert. 1884. *Man versus the State*. London: Williams and Norgate.

Champions a laissez-faire state and free market toward the ultimate goals of freedom, peace, and justice.

Wright, Robert. 2000. *Nonzero: The Logic of Human Destiny*. New York: Pantheon.

Uses game theory to argue that cultural evolution leads to higher levels of complexity just as biological evolution does.

Adam Briggie

SPENGLER, OSWALD

Oswald Spengler (1880–1936) was born in Blankenburg, Germany, on May 29, and attended the Universities of Munich, Berlin, and Halle, where he studied mathematics and the natural sciences, which led to his becoming a secondary school teacher of mathematics in Hamburg. He abandoned teaching in 1911 to work on his magnum opus—*The Decline of the West* (1918–1922)—which he did steadily during World War I. He intentionally published the first volume to coincide with the German military defeat and industrial collapse of 1918, and the second four years later. From this time until his death in Munich on May 8, 1936, he wrote other, shorter books and pamphlets on social and political subjects, including *Man and Technics* (1931).

Despite his marginal status in the German academic world and the controversy with which his ideas were greeted, Spengler's influence on social science was far greater than that of those who tried furiously to refute him. His impact derives from the fact that in examining the nature of Western Europe and North America, he makes predictions about its future, drawing inferences based on a metaphysical reading of history during a period of serious crisis.

The key to Spengler's philosophical anthropology and accompanying philosophy of history is his use of the

Faustian legend in popular German literature to interpret modern technology. According to him, humans are the only predators able to select and design weapons for attacking nature and each other. At some point around the tenth century this ability developed to such an extent in Western European culture that humans seized for themselves the prerogatives of domination over nature. This inexorable destiny is a radical break with earlier periods of thought, in which humans saw themselves as subject to nature; yet it was a destiny made possible by nature, when nature gave human beings both mental superiority and hands. The hands are fundamentally weapons. More than a *tool of tool*, as described by Aristotle, the hand perfects itself in conflict more than manufacture. Indeed, just as Spengler interprets the plow as a weapon against plant life, so he sees instruments of worship as arms against the devil. But Spengler does not confuse technology with tools or technological objects. Technology is a set of procedures or practical means for producing a particular end in view. In Spengler's words, technology is *the tactics of living*, a conception that goes beyond human life. Following Friedrich Nietzsche, he identifies life with struggle, a fierce and merciless struggle that springs from the will to power, with the machine being the subtlest of all possible weapons.

Having placed the origin of Faustian culture in the Nordic countries, Spengler interprets the Enlightenment as the moment when the machine replaced the Creator. The machine became a god, with factories for temples and engineers for priests, whose mysteries were the esoteric features of mechanization. Nineteenth-century machine age industrialization imposed itself on nature with standardized, inert forms that are hostile to the natural world and the precursors of decline. But in order to feed the technological-machinist army, Western Europe and North America furthered the destruction of nature across the globe, creating an untameable monster that threatens to conquer humans themselves and lead culture to a grandiose suicide. The tragedy of humanity lies in humans raising their hands against their own mother—nature. The struggle against nature is a struggle without hope, even though people pursue it to the end.

Contrary to the views of Enlightenment theorists such as Henri de Saint-Simon or Auguste Comte, the domination of nature by Faustian technology does not seek human emancipation, but is the manifestation of a blind will to power over the infinite. As Hermínio Martins (1998) argues, Spengler rejects the rationality of technological history. The history of Western European and North American technology is simply human tragedy because the infinite is always greater than efforts to tame it. Inspired also by Nietzsche's cyclic vision of history, Spengler sees culture, rooted in the soil, being replaced by

civilization, in which the intellect prevails, decaying again eventually into culture.

The significance that Spengler attributes to technology, his defense of science-as-technology, his cultural pessimism, and his hostility to liberal, democratic values and institutions were commented on by Max Weber, and influenced thinking during the Nazi regime, despite the fact that he rejected National Socialism completely in 1934. Many of his insights and expressions regarding the essentially nontransferable character of Western European and North American technological culture as a destiny, the will to power as the foundation of technology, and the conceptual and ontological dependency of science on technology are further echoed in Martin Heidegger and Ernst Jünger, as well as in some members of the first generation of the Frankfurt school.

SEE ALSO *Faust; German Perspectives.*

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José Luís Garcia

SPORTS

Ethical issues related to science and technology in sports only began to attract critical attention during the second half of the twentieth century. Scholarly inquiry was driven principally by concerns about athletes using doping technologies to enhance their performances and whether this jeopardized the value of sport. The concurrent rise of science and medicine shaped sports, yet it also generated anxieties about how technology may compromise our appraisal of natural human talents, which sports embody. These parameters define the ethical territory concerning sport science and technology.

The foundation of the Philosophic Society for the Study of Sport (now the International Association for the Philosophy of Sport) in 1972 consolidated scholarly

interest in these issues, as debates about what sports mean, why we value them, and what place they have within society began (Morgan and Meier 1995). Initially, such inquiries were found primarily within kinesiology departments. Only since the 1990s did ethical issues about sports technology find a broader range of approaches from such areas as bioethics, disability studies, engineering, and medicine (Miah and Eassom 2002).

This is not to say that sports technology has not presented challenging ethical issues for the sports industries over the years. Yet the starting point for any debate about the ethics of sports technology must first take into account how technological development is constitutive of many sports. Since the beginning, innovation has made sports practice possible, especially at the level of mass participation, where economical mass production has developed the participatory communities that make sports culture what it is today. In this respect, technological development is, *prima facie*, consistent with the ethics of sport. Indeed, many sports have evolved along with new technological developments, from the transition from wooden tennis rackets, for example, to those made of carbon composite materials. In this sense, one cannot naively negate the influence of innovation as a driver for the modern sports industry.

MODERN SPORTS DEVELOPMENT

This scientization led to a shift in sporting values, which have a longer trajectory. In *From Ritual to Record* (1978), Allen Guttmann describes how the development of timing technology introduced the possibility of records, now a dominant feature of modern sports. He also describes a broader shift in the role sports played within society as an indicator of the state of human evolution. Our fascination with identifying the fastest runner or the strongest man in the world was born out of the Enlightenment preoccupation with quantification and with recording humanity's progress. The late nineteenth-century British public school games, which championed *muscular Christianity*, repositioned physical exertion as central to the development of a productive and civil society. The growing significance of global records also led to the politicization of sports and, along with the revived modern Olympic movement, which began in 1896, steadily led sports competitions to becoming devices of international political propaganda. In short, sports became a way for nations to demonstrate their health via the winning of medals and the breaking of records.

Ethical discussions concerning technology in sports generally focus on establishing what constitutes just or fair competition. The limited accessibility of a technology is often presented as a reason for prohibiting its use in competition. However, in many cases, there are also