A Confrontation with Technicism As the Spiritual Climate of the West

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Much reflection has been done on the relationship between faith and science. But mostly the cultural influence of religion and faith is restricted to the field of philosophical and scientific thought. Generally speaking little has been said about the structural consequences of the humanistic faith in science in the development of culture as a whole, a culture which philosophy and science influence greatly through technology. This ought to be done. For under the guidance of religion, by conditioning philosophical thought and science, this humanistic faith has also influenced our *culture*, which is a scientific-technological[1] culture. Technology and technological thinking is today the basis and the mark of nearly every cultural activity or field. Therefore, I hope to show that an approach which makes clear the relation between religion and culture offers a broadening and deepening insight into what is going on in our culture and into what we have to do about it. Such an approach leads to a better understanding of the current crisis of our culture and to a liberating perspective with broad relevance,—relevance, for instance, to a confrontation with postmodernism.

The analysis of our technological culture in the light of the relation between faith and science could be meaningful and helpful for Christians and others who are seeking to gain their bearings in modern culture, the typically technological culture that has now evolved.

1. Religious Spirit

Although much has been written about the relation between Christian faith and science that is of interest as a problem for university scholars, generally speaking it has hardly broadened and deepened the analysis in the direction of the influence of science on culture outside the university.

For example, little is said about the influence of science on technology and on the cultural fields in which technology is a decisive factor, such as industry, economics, agriculture, health care, all kinds of education, politics, and so on. Consider, furthermore, the reverse, that is, the possible influence of technology on science. May not the overwhelming influence of technology leave its mark on the development of philosophy and science,

[1] 1. Because the qualification of "culture" and "control" is a technical one, it should be better to speak about a "scientific-technical" culture or control. But I am told that "scientific-technological" sounds better in English. In the English language there is no distinction between "technique" and "technology" as the science of technique. Nevertheless, this article makes clear that this distinction is an important one.

rather than, as is so often said, the other way around? And could it be that Western thinking is more than only technicistic thinking?

Historically seen, the usual perspective is correct: the rise of modern science preceded the surprising progress of modern technology. But is the religious *spirit* of technological control not active earlier in both history and science? The Dutch Christian thinker Herman Dooyeweerd more than once implicitly alludes to that spirit as a *creation power* which, after it has broken down the God-given creation order, reconstructs an order according to the ideas of human autonomy. Dooyeweerd says: "Creative power was attributed to theoretical thought, to which was given the task of methodically demolishing the structures of reality as they are given in the divine order of creation, in order to create them again theoretically according to man's own image."[2] The substance of Dooyeweerd's thought here can also be interpreted to mean that the outcome of creative freedom is concentrated in scientific-technological thought and control. Westen philosophy clearly holds that modern technology is a consequence of science or scientific rationality. Under the influence of technicistic thinking, the relation as such is distorted to the extent that the reverse is more plausible. Dooyeweerd therefore speaks about the ideal of science as an ideal of control, as a technological ideal so to speak.

> Proudly conscious of his autonomy and freedom, modern man saw "nature" as an expansive arena for the explorations of his free personality, as a field of infinite possibilities in which the sovereignty of human personality must be revealed by a complete *mastery* of the phenomena of nature.[3]

It is my opinion that this technicistic spirit actualizes itself first in philosophy, science, and modern technology, then subsequently in many fields of culture.

If this is so, the consequences for understanding our culture are far-reaching. In our culture, usually, science is developed as applied technology rather than technology as applied science. Science is used as an instrument. Reality is brought under control *with the help* of scientific

thinking.[4] Instrumentalism here means the subjection of original, irreducible activities to absolutized technological control. Van Riessen expresses a similar view when he says that the crisis in our culture is caused by the spirit of absolutized technological power.[5]

2. Faith, Science, and Technological Culture

[2] 2. H. Dooyeweerd, "The Secularisation of Science," *International Reformed Bulletin* 9 (1966) 2-17.

[3] 3. H. Dooyeweerd, *Roots of Western Culture: Pagan, Secular, and Christian Options* (Toronto: Wedge, 1979) 150.

[4] 4. H. Dooyeweerd, "De gevaren van de geestelijke ontwapening der Christenheid op het gebied van de wetenschap," *Geestelijk weerloos of weerbaar* (ed. J. H. de Goede; Amsterdam: Uitgevers-mij, 1936) 173.

[5] 5. H. van Riessen, *The Society of the Future* (Philadelphia: Presbyterian and Reformed, 1957).

In the light of the above it is clear that our understanding of the relation between *faith*—as an expression of religion—and *science* undergoes a deepening and broadening when extended in the direction of the relation between *faith* and *technological culture*, a process which may exceed the university context. In any case, thinking about faith and science ought always to be done with the relation between faith and culture in mind. Because that has not always been done in the past, Christian Philosophy has contributed less than it might have done to the development of a normative perspective for modern culture. Now that our culture is in a profound crisis there is an opportunity to speak about this relation more pertinently than ever before.

Nowadays, it is undeniable that the ideal of control has manifested itself in the history of culture as a force of disturbance. This includes various forms of dehumanization, destruction of nature, pollution of the environment, structural unemployment for many, risks of nuclear energy and threat of a nuclear war, and the danger that our highly developed technological culture will become increasingly and even fatally unstable.

The instrumental use of science leads to the shaping of reality after the characteristics of science, including its functionalism and universalism. When that use is large-scale and unrelenting, the abstractions of science lead to the reduction and ultimately even the destruction of reality and its meaning. Such a loss of meaning is evident on a large scale today in the fragmentation of nature and society. In bio-industry, for example, through reproductive and productive technologies the integrity or essence of animals is often reduced to mere economic utility.[6] Furthermore, as a consequence of the fragmentation of global society there is an absence of harmony and social justice between the overdeveloped and the underdeveloped countries.

Uncritical efforts are made to solve these problems by introducing new forms of science and high technology, such as the systems approach,

information technology,[7] bio-technology, and even genetic manipulation. Our culture has become marked by technicization in all fields.[8]

It is seldom asked—and this is the critical question—whether technology is suitable to solve all of our problems, and especially the problems technology itself has created, such as pollution of the environment, deficiencies in agriculture, and so on.

3. The Dialectic of Culture and Nature

[6] 6. E. Schuurman, "Crisis in Agriculture: Philosophical Perspective on the Relation between Agriculture and Nature," *Research in Philosophy and Technology: Technology and the Environment* (ed. F. Ferre; London: Jai, 1992) 196.

[7] 7. E. Laszlo, *A Strategy for the Future: The System Approach to World Order* (New York: Braziller, 1974).

[8] 8. H. J. Meyer, *Die Technisieriung der Welt. Herkunft, Wesen und Gefahren* (Tübingen: Niemeyer, 1961); E. Schuurman, *Christians in Babel* (Jordan Station: Paideia, 1987); id., "The Modern Babylonian Culture," in *Technology and Responsibility* (ed. P. Durbin; Dordrecht: Reidel, 1987).

The absolutized influence of the scientific-technological control sheds light on the actual structural coherence of many of our cultural problems. Insight into these problems gives reason, however, to speak about a dialectic reaction. Nowadays the dialectic finds its orientation in (*technological*) culture and nature. "Nature" has come to mean "organismically interpreted reality"; and that is *naturalism*. The consequence is that the dialectic rages between the anthropocentrism of the technological culture and the ecocentrism of a "counter-culture" committed to *certain* alternative technologies, alternative agriculture, alternative medical care, and so on.[9] But absolutized "technological control" enjoys primacy over absolutized "organismically interpreted nature" because no way can be found from the existing technological culture to a future ecological culture. Culture always needs control.

This dialectic reveals our time to be postmodernistic and at the same time neo-pagan. The orientation of many people to the pole of "nature" demonstrates the influence of neopaganism in our secularized culture. This essentially pre-Christian motive, which is connected with the religions of culture and nature associated with the Greek groundmotive of *form and matter*,[10] has acquired in the neo-pagan period of our times the sense of a deification either of scientific-technological control (and often of the ma terial welfare associated with it, as we shall see), or else of nature, of "mother earth." The religion of nature, which is represented in several streams of the New Age movement where the earth is adored as goddess Gaia, stands opposed to the religion of control, of technology. This religious dialectic characterizes the development of our culture. Such is the spirit of our time.

It is perhaps unnecessary to note that philosophers who are influenced by this religious groundmotive of control and nature and who orient themselves to one of its poles manifest dialectically in their thinking the other

pole as well. For instance, consistent environmentalists often speak of "space-ship Earth." Some philosophers endeavor to achieve an impossible synthesis between the two poles.[11]

4. Technicism

So far I have tried to make clear that the crisis of our culture brought about by the humanistic religious groundmotive of control and nature is not related to science in the first place but rather to technology. More than one Christian thinker has concluded that *scientism* or rationalism is the dominant characteristic of our culture. Other representatives of Christian Philosophy stress that *economism* is the main characteristic of the crisis of our culture. Bob Goudzwaard, for instance, locates the main characteristic of our culture in the form of capitalism.[12] Such an analysis is very fruitful. Ironically, however, in elucidating the reduction of modern economics, Goudzwaard speaks about

[9] 9. *Natuur en Cultuur* (ed. R. Corbey and P. Van der Grijp; Baarn: Ambo, 1990).

[10] 10. H. Dooyeweerd, *Reformatie en scholastiek in de wijsbegeerte* (Franeker: Wever, 1949).

[11] 11. M. Bookchin, *Toward an Ecological Society* (Montreal: Black Rose, 1980); id., *The Ecology of Freedom: The Emergence and Dissolution of Hierarchy* (Palo Alto: Chehire, 1982).

[12] 12. B. Goudzwaard, *Capitalism and Progress* (Grand Rapids: Eeerdmans, 1980).

capitalism more than once in categories of technology. Thus we have economic "mechanisms," the "tunnel" economy, the "spaceship" economy, and so on.[13] Well then, it appears that economism too is reductive and in a certain sense insufficiently broad and deep to make perfectly clear what is going on in our culture, and perhaps especially in our economy.

The Belgian philosopher Vermeersch speaks of the complex of Science-Technology-Capitalism as he seeks to understand our culture, but focuses his critiques on science and especially on capitalism.[14] Such a cultural critique is of course generally well accepted, at least among philosophers. Yet I want to stress that neither scientism nor economism but *technicism* is the deepest background of our culture. This is because technology is ontologically and historically—in the sense of technique or classical technology—prior to science.[15] Technicism—one can even speak of the (implicit or hidden) *ideology* of technology, because there seems to be no room for critical distance in relation to technology[16] influences science and economy. "Technological push" has priority over "economic pull." Science and economy as such are usually interpreted technicistically, whereupon via positive feedback they reinforce technicism. Then together they feed a greedy society.

There are other arguments for giving priority to technicism. Let us look at the beginning of modern philosophy. Basic to Descartes' natural philosophy is his paradigm of the automaton, the model of machine. This conclusion, someone wrote, introduced the mechanical view of the world.[17] "Nature is a machine," wrote Descartes, "as easy to understand as clocks and automatons, if only we investigate her carefully." This means that nature can be thoroughly analyzed and guided, for man is "master and owner of nature." Such is the technicistic pivot of the Cartesian natural philosophy. It is not hard to see that such a worldview resulted both in the rise of modern natural science and technology and in the impoverishment and reduction of the world of experience.

Cartesian thinking can also be found in Descartes' somewhat older contemporary, Francis Bacon. Bacon's declarations that "knowledge is power" and "in order to conquer nature we must obey its laws" anticipated later technological developments in which knowledge of the natural sciences was to be used to control the realm of nature. Bacon was encouraged in his views by the new discoveries of his time. Extrapolating from this reductionistic world and life view, he anticipated that relationships among natural objects could be established chemically, that man would be able to change the species of plants

[13] 13. Ibid., 210, 230, 236.

[14] 14. E. Vermeersch, *De ogen van de panda. Een milieufilosofisch essay* (Brugge: Van der Wiele, 1980) 24.

[15] 15. D. Ihde, "The Historical-Ontological Priority of Technology over Science," in *Philosophy, Technology and Human Affairs* (ed. L. Hickman; Texas IBIS Press, 1985).

[16] 16. R. B. Pippin, "On the Notion of Technology as Ideology," in *Technology, Pessimism, and Postmodernism* (ed. Y. Ezrahi et al.; Dordrecht: Kluwer, 1994) 96.

[17] 17. E. J. Dijksterhuis, *The Mechanization of the World Picture* (Princeton: Princeton University Press, 1986).

and animals, that man would discover new metals, and that he would one day be able to intervene in the climate. Though Bacon couched his theories in Christian terms, it cannot be denied that he was motivated by apostate pride.[18] In his utopian *Nova Atlantis* he suggests that the development of science and technology must be interpreted as simulations of the divine works of creation. He changes biblically eschatological perspectives into the idea of progress. Benjamin Farrington has demonstrated that Bacon was the first philosopher of the industrial era.[19] According to Bacon, the application of science and technology would materially remove the effects of man's sin. He saw in his plans for the progress of science the restoration of the power man enjoyed before the Fall. This redemptive motive is characteristic of *technicism*.[20]

There are also historical reasons. History shows that economism—as materialistic economy—is not always all-determining, for instance during wars. Military technology or defense technology may require great financial sacrifices that have no positive effect on economic welfare. That happened, for instance, in the former Soviet Union. The technology of space-travel cost a great deal to develop and reflected the conflict between the two "superpowers." The competition between them was especially technologically qualified.

That technicism is much more important than scientism or economism becomes even more clear when we consider the matter of our worldview. To speak of a "technological worldview" is more satisfactory than to speak of a "scientific or economic worldview." Since the appearance of the theory of relativity and quantum physics, a scientific worldview offers no certainty and is fraught with many questions. The "technological worldview" seems to be stronger, reaching more broadly and deeply than an approach from scientism or economism.[21]

In short, technicism—or what is the same, the (implicit) ideology of technology—is the dominant spirit of the West. Technicism entails the pretension of the autonomous man to control the whole of reality: man as master seeks victory over the future; he is to have everything his way; he is to solve problems old and new, including the problems caused by technicism; and he is to guarantee material progress. Technicism also always implies an obstacle or enemy: it may be God, nature, another country or state, or competitor. Is it not amazing that technological development was the strongest during the Cold War?

Technicism not only reduces science to its instrumental use, but also—as in Western culture today—economy is interpreted technicistically, with utilitarian economics as a

[18] 18. R. Hooykaas, *Religion and the Rise of Modern Science* (Edinburgh: Scottish Academic Press, 1972) 72.

[19] 19. B. Farrington, *Francis Bacon: Philosopher of Industrial Science* (London: Micmilton, 1973).

[20] 20. E. Schuurman, *Tussen technische overmacht en menselijke onmacht. Verantwoordelijkheid in een technische maatschappij* (Kampen: Kok, 1985) 9-30.

[21] 21. Dijksterhuis, *Mechanization*; S. Strijbos, *Het technische wereldbeeld* (Amsterdam: Buijten en Schipperheijn, 1988).

complement. Moreover, the influence of technicism on technology itself is also negative. Technological development becomes a destructive cultural power.

The complete application of technicism will result in a society built on a technological model. This process of technicalization is aided by man's powerful materialistic inclinations. And as the process intensifies, its perils will become more ominous. It is also true that technicism's definition of reality is really alien to reality. Reality, defined biblically, is an entity with an origin, existence, and destiny given to it by God. But modern man's technical world has no relation to meaningful creation. In other words, man pretends that his technical world is identical to total reality, reducing everything to components of a great technical whole. However, created reality does not allow such a reduction. Creation coheres meaningfully. If the meaningful coherence is denied, distortions and destructions ensue. And as the technological process intensifies, these side effects will become both prominent and perilous. Actually, the technological world cannot be made independent from creation. As technological development continues, it becomes clearer that it is restricted by the limited potential present in creation.

Making the technological world independent by means of potential available to modern science also reduces and dehumanizes personal relationships and thus fragments society. The commandment of love is replaced by the commandment of effectiveness and efficiency. Technicism draws

nature into this reduction, and so destroys it. Environmental problems, the pollution of living nature, acid rain, the contamination of oceans and seas, and the pollution of soil, water, and air clearly show that technicism means exploitation. Attempts to make the technological world independent clash with limited energy and mineral resources.

In addition, the technological process itself betrays internal tensions: the dangerous development of nuclear arms, nuclear energy, and genetic manipulation are but a few examples. Increasing use of computers accelerates dehumanization, isolation, and alienation among human beings. Specific and unique humanity, as well as the individual and creative responsibility of humankind, are eliminated in that process. The culture is defined by scientific-technological integration, it is torn asunder, fragmentized, made abstract, uniform, and homogeneous.

What I have said thus far entails many cultural consequences. Why? Because technicism has left its stamp on many cultural activities, which at the same time has meant a reduction, disturbance, and fragmentation of such activities. The symptoms can be found not only in science and economy but also in agriculture, in health care, in instrumental justice, and even in ethics, where people today are talking about ethical engineering.[22] Even the Christian religion of many Americans has, according to Wuthnow, been increasingly influenced by technicism.[23] Moreover, technicism is the

[22] 22. A. L. Caplan, "Ethical Engineers," *Science, Technology, and Human Values* 33/6 (1980) 24ff.

[23] 23. R. Wuthnow, *The Restructuring of American Religion: Society and Faith since World War II* (Princeton: Princeton University Press, 1988) 287.

spiri tual background not only of large cultural problems but also of micro-ethical problems, including abortion, euthanasia, and procreation technology.

To make the picture more complete, I want to add that much of theology—although unknown to the theologians themselves—also seems to be influenced by technicism. Technicistic theology shows up, for instance, when one speaks about God as a *design* that we have made, and when theological theories seem constructions of the autonomous man rather than limited reflections on divine revelation. Some philosophers, moreover, such as Marvin Minsky with his ideas about artificial intelligence,[24] exhibit technicism very clearly when they conceive of both society and man as expressions of a very complicated information machine or system.

Generally speaking, one can argue convincingly from a technicistic standpoint, that (the *main* trend of) Western philosophical thought is best characterized as "*thinking through technology*,"[25] as technicistic or controlling thinking, so to speak. That means that science and rationality in general are distorted, because they have been used as instruments in the service of controlling power.

In conclusion, I believe that a great variety of cultural problems and the cultural crisis can be better understood more satisfactorily from the standpoint of a critique of technicism than through the other approaches that are usually taken, and that we also get a better grasp of several irrationalistic streams by considering them as reactions against technicism rather than rationalism. Think, for instance, of existentialism, neomarxism, counter-culture philosophy, New Age thinking, postmodernism, and so on. They all express the increasingly shared sense that we live in a ruined world of our own making.

5. The (Hidden) Ideology of Technology and Postmodernism

From this standpoint postmodernism is a form of technological pessimism.[26] This understanding helps to explain the controversy between post modernism and the mainstream of the Enlightenment and its idea of Progress. Postmodernism demonstrates the failure of Western technicistic philosophy and culture.

Although postmodernism proclaims the end of ideology, still the ideology of technology is implicitly at work in it. Therein lies the continuity of postmodernism with modernism. Let us look more closely at postmodernism. Leo Marx says:

> A common feature…of the umbrella concept of postmodernism, is the decisive role accorded to the new electronic communications technologies. The information or knowledge these technologies are able to generate and to disseminate is said to constitute a distinctively postmodern, increasingly dominant, form of capital, a 'force of production', and in effect a new,

[24] 24. M. Minsky, *The Society of Mind* (Boston: MIT, 1986).

[25] 25. H. Sachsse, *Anthropologie der Technik. Ein Beitrag zur Stellung des Menschen* (Braunschweig: Vieweg, 1978) 240ff.

[26] 26. L. Marx, "The Idea of 'Technology' and Postmodern Pessimism," in *Technology, Pessimism, and Postmodernism* (ed. Y. Ezrahi et al.; Dordrecht: Kluwer, 1994) 12.

dematerialized kind of power. This allegedly is the age of knowledge-based economies.[27]

Postmodernism is, we could say, the spirit and philosophy of the post-industrial society. Traditionally, power was thought of as firmly entrenched. It could be attacked, removed or replaced. But postmodernists like Jean-François Lyotard[28] and Michel Foucault[29] envisage forms of power that have no central, single, fixed, distinctive, controllable locus. For the first time in history, concentrations of power and social hierarchies will disappear. An overabundance of information can result in incoherence, fragmentation, and disorientation. Thus it seems as if technicism is evolving from a central technocracy to an anarchic technocracy. Technological power is present everywhere but is concentrated nowhere. Hence postmodernism acknowledges no normative direction for technology. It is "comfortable in

change." Micro-electronics, information technology, telecommunications, and systems technology seem to hold sway over history without a controlling subject and to alter the meaning of time and place.[30] Everything is technologically possible and everything is technologically allowed.

This postmodernistic outlook, when combined with the operation of multimedia, tends to validate the idea that life is dominated by large technological systems. Enormous, unmanageable stores of information appear to function autonomously in information systems. Computer programs become incomprehensible. As a result, the postmodernistic attitude towards technology is one mainly of melancholy, resignation, or fatalism. Fatalistic pessimism is an ambivalent tribute, however, to the decisive, all-determining power of technology.

Even so, when postmodernists become active as technological anarchists, they manifest a senseless optimism about modern technology. The (hidden) ideology of technology in the postmodern era gives priority to the individualistic instead of to the collectivistic version of it. Societal fragmentation is interpreted by postmodernism in a positive way as "the revenge of the particular." As such, it expresses a new, postmodern form of dialectic in relation to technology.

6. Philosophers Today

The analysis of the absolutized, culturally formative power of technology presented in this paper is confirmed by several present-day philosophers from different backgrounds, each in his own way. Some promote the current development positively or optimistically while others are negative or pessimistic. One sees no way out, another tries to find a liberating or saving perspective. I have learned a good deal from several of them. While

[27] 27. Ibid., 24.

[28] 28. J. F. Lyotard, *L'inhumain. Causeries sur le temps* (Paris: Galilee, 1988).

[29] 29. Marx, "The Idea of 'Technology,'" 24.

[30] 30. *Voorruitkijken naar vooruitgaan. Technologie in de toekomst* (ed. A. J. M. M. Maes; Den Haag: Directie Algemeen Technologiebeleid, 1993).

remaining faithful to my biblical, reformational basis and perspective, I have welcomed their insights with appreciation.

Consider briefly Heidegger's exposition. He holds that Western philosophy is already technicistic at its core as a result of its Greek origin. Western thinking, he believes, is a controlling, ruling kind of thinking.[31] According to Heidegger, Plato, in constructing his world of ideas, becomes the first technicistic philosopher. Cybernetics and information technology are according to Heidegger the fulfillment and at the same time the negation of Western philosophy.[32]

In this light it is interesting to notice that Jacques Ellul presents a different interpretation of the history of philosophy, yet comes to the same conclusion. He says that philosophers have thought about the future as something positive and glorious, but that in the mean time technicistically inspired scientists, engineers, economists, and politicians with good intentions have really got this wrong and prepared a negative and disappointing future. We have been betrayed by technology,[33] but this betrayal has been hidden through technological bluff.[34]

However that may be, some postmodernists such as Toulmin interpret the leading edge of multimedia—the digital city and so on—as contributing to the justification of a positive evaluation of our cybernetic age and our information society, because the individualistic, particular approach, rather than the universalistic, gets its chance.[35] He thinks that individualization in the postmodern era is a sign of hope. He does not recognize, however, that our society as postmodernistic society depends on the aberrations and problems of the technological culture, from which norms and values are disappearing.

The same wishful thinking can be found in the view of the theologian Vahanian.[36] The philosophers Capurro and Hastedt also see positive connections between the information society and individuals with their personal interests.[37] The American philosopher Bookchin tries to come

[31] 31. E. Schuurman, *Technology and the Future: A Philosophical Challenge* (Toronto: Wedge, 1980) 81, 86ff.

[32] 32. Ibid., 87; M. Heidegger, *The Question Concerning Technology* (New York: Harper and Row, 1977).

[33] 33. J. Ellul, *The Technological Society* (New York: Knopf, 1964); id., *Betrayal of the West* (New York: Seabury, 1978); id., *The Technological System* (New York: Continuum, 1980).

[34] 34. J. Ellul, *The Technological Bluff* (Grand Rapids: Eerdmans, 1990).

[35] 35. S. Toulmin, *Cosmopolis: The Hidden Agenda of Modernity* (New York: Free Press, 1990).

[36] 36. G. Vahanian, "Christliche Religion und Kultur," in *Handbuch der christlichen Ethik* (ed. A. Hertz et al.; Freiburg: Herder, 1984).

[37] 37. R. Capurro, "Zer Computerethik: Ethische Fragen der Informationsgesellschaft," in *Technik und Ethik* (ed. H. Lenk and G. Ropohl; Stuttgart: Philip Reclam, 1987) 287; and H. Hastedt, *Aufklärung und Technik. Grundprobleme einer Ethik der Technik* (Frankfurt an Main: Suhrkamp, 1991) 81.

to a synthesis of postmodernism and naturalism.[38] Dewey, Staudinger, Horkheimer, Sachsse, Ihde, Tillich, Lyotard, Postman, and Rivers, as philosophers of culture, all emphasize the decisive mark that technology has made on culture, and they all, in one way or another, identify technicism as the main cause of our cultural problems.[39]

[38] 38. Bookchin, *Ecological Society*; id., *The Ecology of Freedom*; V. Ferkiss, *Nature, Technology, and Society: Cultural Roots of the Current Environmental Crisis* (London: Adamantine Press, 1993) 173ff.

[39] 39. L. A. Hickman, *John Dewey's Pragmatic Technology* (Bloomington: Indiana University Press, 1990); *Chance und Risiko der Gegenwart. Eine kritische Analyse der wissenschaftlich-technischen Welt* (ed. H. Staudinger and W. Behler; Paderborn: Schoningh, 1976); M. Horkheimer, *Critique of Instrumental Reason* (Minneapolis: Seabury, 1976); Sachsse, *Anthropologie der Technik*; Ihde, *Existential Technics*; P. Tillich, *The Spiritual Situation in Our Technical Society* (New York: Scribner, 1986); Lyotard, *L'inhumain*; N. Postman, *Technopoly* (New York: Knopf, 1992); T. J. Rivers, *Contra Technologiam: The Crisis of Value in a Technological Age* (New York: University Press of America, 1993).