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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, 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,

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.

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

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.

2. H. Dooyeweerd, "The Secularisation of Science," *International Reformed Bulletin* 9 (1966) 2-17.
3. H. Dooyeweerd, *Roots of Western Culture: Pagan, Secular, and Christian Options* (Toronto: Wedge, 1979) 150.
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. H. van Riessen, *The Society of the Future* (Philadelphia: Presbyterian and Reformed, 1957).

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

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

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. E. Laszlo, *A Strategy for the Future: The System Approach to World Order* (New York: Braziller, 1974).
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).
9. *Natuur en Cultuur* (ed. R. Corbey and P. Van der Grijp; Baarn: Ambo, 1990).
10. H. Dooyeweerd, *Reformatie en scholastiek in de wijsbegeerte* (Franeker: Wever, 1949).

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 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

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. B. Goudzwaard, *Capitalism and Progress* (Grand Rapids: Eeerdmans, 1980).
13. Ibid., 210, 230, 236.
14. E. Vermeersch, *De ogen van de panda. Een milieufilosofisch essay* (Brugge: Van der Wiele, 1980) 24.
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. R. B. Pippin, "On the Notion of Technology as Ideology," in *Technology, Pessimism, and Postmodernism* (ed. Y. Ezrahi et al.; Dordrecht: Kluwer, 1994) 96.

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 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.

17. E. J. Dijksterhuis, *The Mechanization of the World Picture* (Princeton: Princeton University Press, 1986).
18. R. Hooykaas, *Religion and the Rise of Modern Science* (Edinburgh: Scottish Academic Press, 1972) 72.
19. B. Farrington, *Francis Bacon: Philosopher of Industrial Science* (London: Micmilton, 1973).
20. E. Schuurman, *Tussen technische overmacht en menselijke onmacht. Verantwoordelijkheid in een technische maatschappij* (Kampen: Kok, 1985) 9-30.

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 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.

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

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 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.

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22 22. A. L. Caplan, "Ethical Engineers," *Science, Technology, and Human Values* 33/6 (1980) 24ff.
23. R. Wuthnow, *The Restructuring of American Religion: Society and Faith since World War II* (Princeton: Princeton University Press, 1988) 287.
24. M. Minsky, *The Society of Mind* (Boston: MIT, 1986).
25. H. Sachsse, *Anthropologie der Technik. Ein Beitrag zur Stellung des Menschen* (Braunschweig: Vieweg, 1978) 240ff.
26. L. Marx, "The Idea of 'Technology' and Postmodern Pessimism," in *Technology, Pessimism, and Postmodernism* (ed. Y. Ezrahi et al.; Dordrecht: Kluwer, 1994) 12.

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, 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

27. Ibid., 24.
28. J. F. Lyotard, *L'inhumain. Causeries sur le temps* (Paris: Galilee, 1988).
29. Marx, "The Idea of 'Technology,'" 24.
30. *Voorruitkijken naar vooruitgaan. Technologie in de toekomst* (ed. A. J. M. M. Maes; Den Haag: Directie Algemeen Technologiebeleid, 1993).

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 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 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

31. E. Schuurman, *Technology and the Future: A Philosophical Challenge* (Toronto: Wedge, 1980) 81, 86ff.
32. Ibid., 87; M. Heidegger, *The Question Concerning Technology* (New York: Harper and Row, 1977).
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. J. Ellul, *The Technological Bluff* (Grand Rapids: Eerdmans, 1990).
35. S. Toulmin, *Cosmopolis: The Hidden Agenda of Modernity* (New York: Free Press, 1990).
36. G. Vahanian, "Christliche Religion und Kultur," in *Handbuch der christlichen Ethik* (ed. A. Hertz et al.; Freiburg: Herder, 1984).
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.
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.

has made on culture, and they all, in one way or another, identify technicism as the main cause of our cultural problems.[39]

7. Christian Faith and Culture

Now I come to an assessment of the position of Christians in the technological culture. Generally speaking, Christians have accepted the ongoing technological development uncritically. The main reason for this is that they have been spellbound by the positive effects of technology, such as the enrichment of material life, the enhancement of the duration of life, the turning of the tide in the struggle against poverty and illness, and so on. Are those things not all signs of the kingdom of God? Abraham Kuyper, founder of the Free University (as a Christian institution) in Amsterdam in 1880, stressed the need for technology. But he did not recognize the danger of technicism, the ideology of technology. Perhaps he was already a victim of it himself, when he wrote in his *Pro Rege* that the wonders of technology are greater than the miracles of Jesus.[40] Although Simon Ridderbos has made clear that Kuyper's view of technology was rather more complex,[41] it cannot be denied that Kuyper warns more against dance, theater, and card playing than he does against a technicistic trend in our culture.

The error of Kuyper—as a child of his time—was that he accepted technology as free of problems; in a certain sense he accepted technology as neutral with respect to values. Kuyper, and most Christians with him, forgot the biblical warning that since the Fall technology in the sense of the craftsman's technique has been a power that leads astray—the more so as the ages roll by. Technology has more than once been a means to rival God, to make a name for oneself on the earth and to build a culture without God, that is, a Babel-culture.[42] The origin is the Fall into sin: human autonomy with a main connection to (classical, small-scale) technicism. At its core, technicism wants to save human life without God. The Bible teaches us about Cain, about Lamech, about the building of the Tower of Babel, about Nebuchadnezzar, and so on. The Renaissance, Descartes, and the Enlightenment have given a new impetus to the modern form of technicism, namely, absolutized scientific-technological control. The possibilities of modern technology have enhanced the ideology of technology. This ideology is mainly implicit. The gravity of this situation is often concealed by the numbing effects that emanate from a sweeping material prosperity.

Most Christians have failed to give much attention to technicism. Is it not astonishing that the Second Social Conference, held in 1991 in the Netherlands, gave little or no critical attention to the ongoing development of technology under the guidance of

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).
40. A. Kuyper, *Pro Rege* (Kampen: Kok, 1911) 1.143ff.
41. S. J. Ridderbos, *De theologische cultuurbeschouwing van Abraham Kuyper* (Kampen: Kok, 1947) 217ff.
42. Schuurman, *Christians in Babel*; id., "Modern Babylonian Culture."

technicism? And cannot the same be said of Christianity in general when during the Conciliar Process within the churches the same theme is forgotten? Can it be that the biblical prophecy is not taken earnestly enough?

The last book of the Bible speaks prophetically about the New Babel (Revelation 17 and 18). That prophecy is a test for what I have said about the ideology of technology or technicism and its countless problems. When Christians only accept technology positively and uncritically—for instance, by reducing the creation mandate to a technological mandate—they are blind to what is really going on. They do not see that after the collapse of the collectivistic materialism of Marxism experienced today in countries of the former Soviet Union, the individualistic, liberal, Western form of materialism will also collapse.

Not seeing the background of our times in religious terms, Christians are perhaps trying to Christianize the secularized ideas of the Enlightenment. In reality they have closed their eyes to the central fact that human autonomy is concentrated in the scientific-technological control of everything. In any case, they seem unable to offer significant resistance against the unrestricted scientific-technological manipulation of reality.

Man-without-God is trying to be lord and master over God's creation. He wants to realize a worldly paradise, a technological paradise. In the meantime the perspective of eternity is lost. Heaven is closed. Given the split between the divine world and earthly reality, man has set his heart on technology and its results. This technicistic mind is the religious driving force in our technological society and is enormously stimulated by welfare politics. If Christians are not aware of this religious component, they really lack the capacity to offer an adequate critique of our technological culture and to indicate the right, reforming normative direction to go. It is a pity that in the circles of the Reformational Philosophy—of which I am a representative—we have spoken a lot about the reformation of philosophy and science but not enough so far about the reformation of culture. I think therefore that it will take a long time to analyze the technological development critically and adequately. We are lagging far behind and as Christians have failed to develop a lifestyle suitable to a healthy culture. In a technological culture the Christian worldview seems to have been reduced to a private belief lacking the capacity to reform culture.

I am afraid that Christian thinking has indeed made few contributions to the reformation of our technological culture because the reformation of thought has not been placed in a broad cultural context but has instead been reduced and restricted to the inner circle of the university. Although such an approach has its meaning, it ought to be broadened and deepened so as to include the whole of culture. That means fighting against technicism, scientism, and economism, and at the same time looking for the authentic meaning of all cultural activities and developing, in both practice and thought, a normative approach to each cultural field. This perspective or new direction will be possible with the help of the Holy Spirit under the guidance of the biblical groundmotive.

But before considering that, we need to see again more clearly what is going on in our culture. There has never been a time as technological as ours, but there has also never been an age so spiritually empty. Materialism, consumerism, greediness, redundancy,

and "killing time" are expressions of the withering of culture and spiritual death. Technicism is the deepest element of secularization today, of the loss of faith and the experience of the remoteness of God.[43] Our spiritual situation hinders us from seeing the depth and the impossibility of solving our countless cultural problems, including the exhaustion of raw materials, the pollution of the environment, the structural unemployment, the fragmentation of society in the form of individualism, the gap between the rich and poor countries, and so on.

Meanwhile, our obedience to the main norms of technological development such as that of effectiveness, of technological perfection, the technological imperative (what can be made, ought to be made), and efficiency has brought our culture into a gigantic, dynamic process, which is at the same time destructive. If the second and third worlds are brought up to the same dynamic level of material welfare as the West—and do they not have the right to it?—the problems for the future will grow enormously. The future seems not to end in a technological paradise but in an enormous chaos. There seems a demonic scenario in the development of Western culture. The future of the earth appears to be at stake.

Therefore, Feenberg wants to democratize technological development such that there will be a balance between efficiency, justice, and humanity.[44] But when we look at the results of such a democratization we can better speak about "relegitimation" than about "reformation." The same can be said about the ideas of Habermas, when he tries to disclose rationality in a social and democratic sense.[45] He wants to bring rationality under the guiding norms of information and communication.

It is understandable that new philosophical movements are opting for the other pole of the cultural dialectics, the adoration of nature. Christians ought also to be aware that these reactions do not offer a way out. The Norwegian philosopher Arne Naess, with his concept of "deep ecology." is fully ecocentric.[46] Circles around the Dutch philosopher Ton Lemaire are associated with this movement of deep ecology.[47] This movement desires in a certain sense to see a rebirth of animism: nature is divine in character and hence cannot be violated without punishment. A militant group within the movement of deep ecology is *Earth First!* which tries to destroy modern machinery.

Another reactionary group is guided by James Lovelock and Lynn Margulis.[48] The earth is seen and accepted as an organismic whole: *Gaia*. Gaia is involved or incorporated as a messiah. She can restore all that has been destroyed on earth, under the condition that man accept himself as a part of nature without a normative cultural calling as a steward, without believing that reality is the creation of God the Creator, and without confessing the Fall into sin and Christ as Redeemer and Re-creator. Over

43 43. Tillich, *The Spiritual Situation*.
44. A. Feenberg, *Critical Theory of Technology* (Oxford: Oxford University Press, 1991).
45. J. Habermas, *Towards a Rational Society* (Boston: Bacon, 1970).
46. A. Naess, *Ecology, Community and Lifestyle: Outline of an Ecosophy* (Cambridge: Cambridge University Press, 1991).
47. *Natuur en Cultuur*.
48. J. E. Lovelock, *Gaia: A New Look at Life on Earth* (New York: Oxford University Press, 1980); Ferkiss, *Nature, Technology and Society* (London: Adamantine, 1993).

against the "technological paradise," these naturalistic thinkers are reclaiming the original paradise.[49]

8. The Biblical Groundmotive and Culture

Now I come to the point of confronting the cultural dialectics of (technological) culture and nature with the biblical groundmotives of creation, fall, redemption through Christ in communion with the Holy Spirit, and re-creation.[50] This confrontation—which is founded neither in anthropocentrism nor ecocentrism (or naturalism) but in theocentrism, or better, Christo-centrism—will dominate the next age. This struggle is concentrated in the struggle between two cultural directions. The one is related to the *Civitas Terrena*, the terrestrial or technological paradise (dialectically related to "Mother Earth"), and the other one to the *Civitas Dei*, the kingdom of God. Nevertheless, Babel (Revelation 17 and 18) is parasitic on the meaning and fulfillment of creation in the re-creation, the new Jerusalem as a gift of God, in which human cultural activities are interwoven in a way that is not fully understandable (Revelation 21). This gives a liberating and hopeful perspective. The dialectic in the technological culture gives space for the possibilities of a normative direction, even when the dialectic intensifies and assumes the dimensions of a worldscale. Only when the whole of reality, including the relation between man and nature or between man and technology, is seen as a unity founded in the creation, disturbed in the fall, restored in redemption, and soon to be fulfilled in re-creation as God's intervention, will a meaningful development of culture be possible.

It is actually the given, normative structure of reality—as an expression of God's will—that points us in a responsible direction and that will help us out of the crisis of the "technological culture" without our having to abandon science, technological science, scientific control, and technology. These will however have to conform to the normative limits of the Creator.

But what can be said about this given, normative structure? It consists of a large number of distinct but interrelated normative principles to which all human beings are obliged to *respond*. The direction of this *guide* for life is "horizontal" (or immanent) as well as "vertical" (or transcendental). Human beings are required to work out these principles into norms that must function as signposts for responsible cultural activity. This *response structure* ought also to characterize science and technological science in its serviceable relation to the development of modern technology. As has been shown, usually that is not the case. Moved by the spirit of technicism and a naive view of progress, what can be made is made. Few seem to notice what is actually happening. The result is that raw materials are wasted, ecosystems are damaged, jobs are dehumanized, and no account is taken of future generations.

When one proceeds from a recognition that man is meant to do his work in culture *coram Deo*, before the face of God, and guided in doing so by the normative character

49. J. McCormick, *Reclaiming Paradise: The Global Environmental Movement* (Bloomington: Indiana University Press, 1989).

50. Dooyeweerd never added "Re-creation" to the formulation of the reformational groundmotive. Because the second coming of Christ ought to have, and mostly has, an important place in Christian life, and because this expectation is of importance for a Christian view on culture and its development, I need the addition.

of the dynamics of creation—and that man is not, as in technicism, himself the center of reality, but in his cultural activities should deny himself in love towards God and his neighbor—then the motives for the various cultural activities receive a different content. Instead of the central motive of power, in which everything man does revolves about himself, we have the central motive of love, which produces divergence in man's various cultural activities.

Setting our sights by the normative structure implies a broad passage and, at the same time, a fixed course. This path begins with accepting the motive of love, which must pervade science and technology, and which differentiates between science as seeking for *wisdom* and technology as *building and preservation*. "Wisdom" and "preservation" have often been forgotten. With "preservation" we are talking, for example, about preserving the integrity of nature and maintaining a healthy biosphere. Contemporary developments in technology often lead to the technologizing of nature. All too often there is no sense that technology needs a more comprehensive scientific basis and that this basis, as a contributing factor to growth in wisdom, leads to creative and judicious activities within modern technology.

Wisdom and the motive of "building and preservation" dictates that modern technology *ought* to involve itself with the immediate situation in which people find themselves. This includes attending to nature, the environment, and even, for example, the landscape. Modern technology ought to be an *adaptable* and *ecologically responsible technology*. Where disruption has occurred, the greatest possible effort must be made to restore things. That in no way means reverting to the technology of the craftsman. Compared to present developments, an adaptable technology ought to be expanded. This differentiation in technological development clearly will also require a cultural dimension. Technology ought not to conflict with the state of cultural development, and the rich variation within it, but to tie into that development in such a way that technology enhances a culture. Unfortunately, the opposite is often the case in third world countries. But even in industrial countries there are serious problems. Sometimes technological waste is very harmful to the environment and to human beings. We are going to have to realize—and this applies in the first place to the engineer as a technological scientist and technician—that hazardous wastes cannot be a part of responsible technology. The engineer's task includes finding a solution for these by-products. Sometimes this task proves to be very successful. One example: for a long time people thought there was no solution to the obnoxious smelling and polluting by-products of factories where potatoes are worked up into flour. Later they found that what was first considered waste could be transformed into new products. This was, of course, both ecologically and economically advantageous. Perhaps we could even say that waste is not acceptable when we recognize that our reality is God's creation.

If technology proceeds from the starting blocks mentioned above, modern and alternative technologies, which E. F. Schumacher calls interme diary technologies,[51] need not remain opposed to each other, but can complement each other. Presently these approaches are mutually exclusive. On the one hand, there is the overestimation of scientific-technological control and scientific-technological design method (technicism); on the other hand, there is the plea, often in reaction to present hazards,

51 51. E. F. Schumacher, *A Guide for the Perplexed* (New York: Harper and Row, 1978).

for alternative technologies that are motivated by a romantic view of nature (naturalism). The same tension is evident, for example, between a scientific-technological approach to agriculture and the movement towards organic farming. This tension, which is caused by scientific-technological control and the problems it raises, elicits reactions. This tension can be avoided and abated when the development of technology and technological control simultaneously satisfy the standards set by a good number of interrelated normative principles.

We will briefly review these principles and their articulation in norms. A discussion of their significance for modern technology will be limited to a few key points. The *cultural-historical norm* is the standard of differentiation and integration, of continuity and discontinuity, of centralization and decentralization, of large scale and small scale, of uniformity and pluriformity. The various components of this norm may not be taken as opposites. Setting the sights of the scientific design method and technology on one side of this norm will put them on a one-sided and eventually dangerous course. For example, when the focus falls on integration, continuity, centralization, large scale, and uniformity, the problems of technicalization will by and large be the result. In addition, the technological development that follows this skewed target will, in turn, result in overproduction and redundancy.

When both components of the cultural-historical norm are met, a more steady development of technology ensues. Then there is also room for creativity and innovation, evident in new inventions and implementation of existing possibilities. When the cultural-historical norm is satisfied, the adaption of technology to the existing culture will be guaranteed, renovation will become possible, and a stimulatingly diverse technology can arise. For example, rather than expecting nuclear reactors to answer all energy problems, people will attend to as many different energy resources as possible. But additional normative principles and their responsible articulation in norms must also be observed.

Technology unfolds, and its meaning deepens, when the lingual and social norms are obeyed. The lingual norm is that of *information* and openness. This means that clear and public information must be made available for every technological renovation. Only then can those working with the technology, or purchasing its products, exercise their responsibility to evaluate things and make decisions. This is why this norm is closely connected to the social norm, namely, to the norm of *communication* or interaction. Without open communication, it is impossible for those who participate in technology to fulfill their communal and individual responsibilities. Taking time for information and communication means that the responsibility of everyone involved in developing technology has more content. Quite obviously, people in the technological sciences, in particular, have to honor these norms of information and communication, for they are the ones who stand, as it were, at the cradle of every new technological development.

The economic norm of *stewardship* must also be honored, but not to the exclusion of the others. As it applies to technology, we are talking here about the matter of *efficiency*. Its presently one-sided application is due especially to the prevailing influence of economic theory within industry. Influenced by technicism, industry has adopted far too narrow a focus and a natural scientific sense of efficiency, in which only those goods that can be expressed in monetary terms determine what has

"value." The economic norm must be taken as one norm integrated within an integral framework of norms. It should also not only be applied to the process of production, but to many other areas as well. Raw materials, energy use, nature, the environment, landscapes, animals, and even the people involved in developing technology, must all be dealt with economically. Problems arise when we limit the economic norm exclusively to techniques of production. Technology and the economics of industry "develop" into a jumble. But when the economic norm, in conjunction with other norms we are discussing, is simultaneously applied across the board, we can prevent a kind of *overdevelopment* in the production of surpluses and we can restore a kind of *underdevelopment* in our dealings with and stewardship of nature. We will begin to attend more to nature and the environment, to the scarcity of raw materials and energy, and will come to see that people are much more than their ability to function economically within a technological context. The responsibility of employer and employee both must be acknowledged.

The normative development of technology is advanced when we do what is right according to the norm of *harmony*. Non-essential surpluses, the decadence of the materialistic way of life, and the degradation of nature, make it abundantly clear that this norm is not being followed. If it were, and given the other norms we have discussed, people would realize that technology ought to be developed in a balanced manner. This norm also re quires that the introduction and incorporation of new technological possibilities may never be done in a revolutionary fashion. Doing so can bring with it societal unrest and a loss of communal support. This norm of harmony must also be taken into account in the multifaceted interrelationships among nature, people, culture, and technology. Technology ought to adapt to people, not people to technology. For example, it is not without reason that we appreciate user-friendly tools. That is the way all tools should function. When that is the case, those who operate them will also have greater pleasure in doing so.

In honoring the norm of *justice* we oppose any and all cases of injustice that the development of technology may bring about. Engineers, instructors, and employees must all ask themselves whether their contribution to technology does justice to the plant and animal kingdoms, to our sources for raw materials, to consumers, to society, to culture, to third world countries, and the like. This norm of justice is an intrinsic part of technology. When it is disregarded, the government must take specific measures to restore justice. It is worth emphasizing that the positive influence of technological developments that obey this norm will also be felt in the many sectors of society in which technology is playing an increasingly important role. That is especially the case, for example, in modern agricultural practices and health care. The crisis in which these areas of society find themselves can take a turn for the better when this normative sense of justice is maintained with consistency.

All of the norms indicated above are opened up and deepened when people hold themselves to the ethical norm of *care and love*. We are called upon to nurture a concern and compassion for everything that has to do with technology. This, of course, includes a care and love for our neighbors, far off and close by, but also for the great diversity of "natural" creatures. When love binds itself only to scientific-technological control, people become so obsessed with control that it is frightening. When this norm is honored on all sides, people become more and more alienated from

their work; for example, the farmer becomes alienated from the land, nature, and his animals.

The last norm to which scientific-technological development is subject is the *pistical* norm, that is, the norm of faith. In a restrictive sense, this norm is trust. Those who use the tools of technology have to be able to trust that these tools work and are safe. When this norm is met, they will be. Or more broadly, when people accept and operate according to the framework of norms, sketched above, as a guide for responsible development of technology, technology will be safe. That does not necessarily mean that all of technology's problems and hazards are completely abated, but that these problems will be kept within bounds. We have to remember that with all cultural work there is a price to pay. No cultural work is a "path of roses." "Thorns and thistles" will continue to accompany the work of our hands. Within the integral framework of norms that we have sketched, however, cultural problems will not become intolerable or insurmountable. That is due to the transcendental direction of the norm of faith, namely, the acknowledgement that nothing in the world, as a creature, stands on its own, but is dependent upon the Creator and ought to be directed to him. When people who trust in technicism and believe in the scientific-technological mastery of all our problems, self-confidently think to put themselves in the driver's seat, the ultimate effect will be the opposite of what they expect. The problems will expand into dangerous, intolerable tensions, some of which could easily erupt into catastrophes. This faithful allegiance to technology is the background for the many problems that technicalization calls for.

This right, normative direction or meaningful perspective for technological development is also the perspective for all other qualified cultural activities. This perspective stands over against both the accelerating technological culture with its problems and crisis on the one side and the naturalistic or ecocentric alternatives on the other. Every field of cultural activity ought to be influenced by the biblical motive. That groundmotive implies the acknowledgement that we are living between the times, that is, between the first and second coming of Christ. We are looking back in history and ought to be motivated radically and integrally by our calling for the future. Although the effects of the Fall will persist and be felt between the times, we have to live in hope and expectation because the coming kingdom of God is the most decisive. Our position between the times is fundamentally that of struggle against every idol and for the acknowledgment that God is the Creator, Redeemer, and Fulfiller, and that we are living in his creation, the meaning of which will be revealed, together with the divine mystery in history, in the kingdom of God.

Seen in that light, we have in our times and in the first place to struggle against technicistic thinking and the power of absolutized scientific-technological control—or the influence of technological imperialism—in nearly every field in our culture. We ought to separate ourselves from the motives of secularized technological culture and turn to God in love, for he has loved us first in Christ, so that we can then return in love to the technological culture and our neighbors. Living in faith and hope and acting in love means that we are free both from technicism and its dialectic pole of naturalism.

Amidst centralizing, large-scale technological power devoted only to effectiveness and efficiency, we ought to seek the direction of differentiation or diversity.

Effectivity and efficiency are not the most important elements. In the first place there ought to be love, righteousness, justice, service, readiness to make sacrifices, mercifulness, and thankfulness.[52]

It is a constant consolation to know that man on his own and by himself cannot negate this meaning of creation, the kingdom of God. On the contrary, the fact that the kingdom of God is already on the way means that at any moment people may be converted and led once again to seek the kingdom—even in a technological society. A radical and integral change of heart, a *metanoia* to God as followers of Christ—which is too often left entirely unmentioned in philosophical discussions—implies a different position in culture. That is the position of a "cross bearer" in the struggle against technicism and naturalism. That position does not mean separation, alienation, or distance from technology; we could not live without it and we need it, but our hearts ought not to be set on it. Technology ought to be no more than just an individual and societal prosthesis; that is the authentic meaning of technology. Technology would then be able to make a meaningful contribution to all cultural sectors. In such a wholesome culture one would be able to speak about the *blessing of technology*. Although not all problems would be solved, they would be bearable, and life in society would be livable.

In conclusion, Christian thinking as *thinking faithfully* ought to stand over against controlling thinking. In several publications I have tried to express clearly that such faithful thinking offers an integral framework of norms, resting in God's law as an expression of his will. God's ordinances, which are revealed through the Scriptures and the creational order, provide the guide which we need.[53] That guide expresses the relativity of all cultural work, but at the same time it expresses the individual and institutional responsibility to control culture and nature harmoniously.[54] This struggle ought to be fought in the full armor of faith in the One who holds all the power in heaven and on earth.[55] In the fulfillment of Christ's power, the hidden ideology of technology—as the strongest ideology in human history—comes *definitely* to an end. Re-creation will overcome every distortion of creation. This final victory gives meaning to our cultural calling. We all should orient our cultural task to this perspective of eternity at the end of the twentieth century.

"In the world you shall have tribulation: but be of good cheer; I have overcome the world" (John 16:33).

52. Ibid.
53. *Responsible Technology: A Christian Perspective* (ed. S. V. Monsma; Grand Rapids: Eerdmans, 1986); E. Schuurman, "Crisis in Agriculture"; id., "Technicism and the Dynamics of Creation," *Philosophia Reformata* 58 (1993) 185-91; id., *Philosophy of Technology* (Sioux Center: Pro Rege, 1995).
54. Schuurman, *Tussen technische overmacht en menselijke*.
55. H. R. Muller-Schwefe, *Technik und Glaube, eine permanente Herausforderung* (Mainz: Matthias-Grunewald, 1971).