TECHNOLOGY IN A CHRISTIAN-PHILOSOPHICAL PERSPECTIVE

by

Egbert Schuurman

Dr. Schuurman teaches the philosophy of technology and the philosophy of culture at the Technological Universities of Delft and Eindhoven, and at the Free University of Amsterdam. He is the author of *Reflections on the Technological Society* (Wedge, 1978), and of *Technology and Deliverance* (forthcoming by Wedge, 1979). This paper was presented as a seminar at the Institute for Christian Studies in April, 1979.

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The development of modern technology is fraught with many
problems. There are tensions between the power of technology and
the freedom of man. There are economic problems. There are the
problems of modern technology itself, such as those related to
nuclear energy and the environment. And all the dimensions of the
problems are growing, so that the development of nuclear energy,
for instance, presents problems which we have never encountered
before: the dangers have new proportions in space and time.
Man's technological innovations tend nowadays to be at once irre-
versible and negative, and destructive to the natural environment.
Man values nature only as a setting for and an object of human
action. He is literally consuming the very foundations upon which
his life is based. He is using natural material resources and
energy resources as if they were limitless. In reality, however,
these resources are not his income but his property, and they are
limited. With an enormous, ever-growing force man is approaching
the limits--and that means he is heading for catastrophe. The
picture is very gloomy if we think of the threatening possibilities
(or impossibilities!) of nuclear weapons.

In the meantime, most of us know that the solution to the prob-
lems is no longer more and better technology. What we need before
all else is a fundamental discussion about the spiritual background
and roots of the modern development of our culture; we need a dis-
cussion not on the level of science and technology but on the level
of philosophy, ethics and religion.

Discussions on that level are already going on. Especially
Jacques Ellul and his followers have already done a great deal of
work in that area. Although we can learn much from their contri-
butions, the direction of their discussions is not, in my opinion,
wholly satisfying. They are asserting that the problems of modern
technology are so weighty that they are too heavy for people to
bear. As Christians they think that modern technology is an auto-
nomous, demonic power. In *The Technological Society*--but also in
his books of later date: *Ethics of Freedom* and *The New Demons*--
Ellul says that man is not the master of technology but rather its
slave and its victim. Man is the victim of a universal, artificial,
monistic, self-directing power. Technology means doom; in any case,
it cannot be a blessing. It seems clear to me that thinking about
the future of technology in this way, which I think does not meet
the requirements of a biblical approach, leaves no room for a
perspective of deliverance.

I do not agree with Ellul. I acknowledge, however, that it is
difficult for people to control modern technology. The idea that we

are dealing with an autonomous development arises, I believe, precisely from that difficulty. Take computer technology, for example. The computer works autonomously, and as such gives the impression or appearance of <u>absolute</u> autonomy, whereas in reality it is only <u>relatively</u> autonomous. I maintain that technology is not an autonomous force. The fact that the development and direction of technology proper are guided and set by norms from outside and the fact that it is humans who determine the character of its development show that technology is not an autonomous force. Nevertheless, the problems are immense.

To better understand these problems and to make possible a new, liberating perspective, we need in the first place a Christian, biblical view of history. I shall therefore begin by suggesting the basic outline of such a view. We shall then be in a position to consider together the predominant ethos in science and technology today. Finally, we will consider what a Christian-philosophical perspective on technology might be, and in that light will look at the true blessing and curse of modern technology.

Some thoughts on a biblical view of history

Man himself cannot provide a complete view of history. Many people, however, especially philosophers, seem to think they can. They try to lord it over history, to control it. Most modern thinkers advocate using science and technology to dominate history, to make the future entirely subject to man's ideas. We can see this desire on a grand scale in Marxism and in modern "system" philosophy. But the outcome of such tension is inevitably the reverse of what is promised. Man becomes not the master of history but its slave because, despite his assumed autonomy, man is incapable of securing such mastery. Mortal man, being fully historical himself, cannot control history. His aspiration to give meaning to history will therefore result finally in historicism, relativism and even nihilism. He thinks he can find a way out, a perspective, on his own; but the result is that he knows nothing for certain anymore. And in the meantime--as in our time--science and technology manifest themselves as apparently autonomous cultural powers.

The cause of this development is the secularization of the Christian idea of history. This secularization begins with man himself, with his idea of autonomy, and it leads to man's being confronted with seemingly autonomous powers. Already here my disagreement with Ellul becomes apparent. Ellul begins with the autonomous powers, but neglects their root: man's own assumption of autonomy. In relation to the question of history and of human freedom and responsibility, he is therefore struggling, in my opinion, with an incorrectly formulated problem. According to God's revelation, man needs to know and to believe that he cannot speak the first and the last word on history. Man is not the giver of history's meaning; he is neither autonomous, nor self-sufficient, nor sovereign.

We must learn to acknowledge that it is only through the guiding light that comes from outside history, that man can ever know history's meaning. It is not human reason or human technology, but the Revelation of God that places man in that light. In the Christian perspective the cornerstone of history is not man, but the revealed Word of God in Jesus Christ; Jesus Christ Himself <u>is</u> the light of the world. Man may pretend to enlighten history by his reason or technology, but the result will only be deeper darkness. That is clear from the experience which Neo-Marxist thinkers like Adorno and Horkheimer have had with their *Dialectics of the Enlightenment*.

The important question for us now is: what is the <u>content</u> of that biblical light for an understanding of history?

The Bible as God's Revelation gives us the basics. This does not mean that Christians can answer all the questions. They can give a biblical perspective, but the deepest meaning of history is a divine mystery (see Deut. 29:29 and Rev. 10:4). This mystery stresses on the one hand that man is not the master of history; but on the other hand he <u>is</u> responsible for its development. Because man is a servant of God, not his own master, he is account-able for his actions.

Let us now look at four basic biblical givens:

1. <u>The Cultural Mandate</u>

One basic biblical given is the cultural mandate for man. It is found in Genesis 1:28. Man has received the calling to dress or to build the creation, and to keep it (Gen. 2:15). Having been created in the image of God, man must work in God's Kingdom so that everything in creation will unfold and find its proper place. It is via man's cultural task in history that the fulfilment of all possibilities in the creation is to be realized.

2. <u>The Fall</u>

A second biblical given is the fall of man from community with his Creator. Man forsook his original task. He himself wanted to be God the Creator. He became incapable of fulfilling the cultural mandate and history could no longer be wholesome but instead was disastrous. The way of life was changed into a way of death, and what was meant to be a disclosure of creation became a distor-tion. Nature, now under a curse, became a threatening environment for man; and man became mortal. The sin of Adam and Eve incurred a lessening of the earth's spontaneous abundance (Gen. 3) and the ground refused to give her strength to the sinner Cain (Gen. 4). Sin always involves a loss of 'earth' in some sense or another, for alienation from God and alienation from the creation go hand in hand.

Since the time of the fall, history has no longer been the unfolding of the creation through the fulfilment of man's cultural task. On the contrary, history since that time has been running ever more aground. The flood, the building of a Babel culture, and the biblical history of Israel are clear manifestations of this. Fallen man, incapable of restoring history, only succeeds in causing increasing dislocation and destruction. Skills and techniques of all kinds may be admirable, but the tyrannical and greedy use of nature is a failure deriving from human sin, not from God's intention for His creation.

3. Redemption

A third biblical given is the promise of Genesis 3:15 as fulfilled in Jesus Christ. God himself provides redemption. Jesus Christ is the second Adam. He has done what the first Adam was supposed to do and in addition has provided for the reconciliation of all things. In Him the redemption and the fulfilment of the creation are assured. He has all power over history to bring about the Kingdom of God (see Heb. 2:14b; Gal. 4:4; I Cor. 15:20-28). The destructive power of Satan is broken; that power is still manifest, of course, but destruction is no longer the final word. Although we continue to see and experience dislocation, destruction and death, we know by faith that behind all things is the working, saving power of Jesus Christ. Through Him history is placed under the sign of a total re-creation. In Him the Kingdom of God has come and is coming. The full disclosure of the creation and the redemption of the creature have been provided for by Christ. He gathers together all things in heaven and on earth (see Eph. 1:10; Col. 1:15-23).

The Gospel of Jesus Christ opens up history's dead-end roads, its ways of death. The last enemy that shall be destroyed is death. There is, and there will be, eternal life in the Kingdom of God. We are on the way from creation and the fall to re-creation, from the garden via the wilderness (and its sometimes monstrous cultural achievements) to a new and holy city. At last, creation will be completed in a new heaven and a new earth. Then alienation, not only between man and God and man and man, but also between man and animal, between man and nature, and between man and technology, will come to an end (see Isa. 11 and Rev. 21).

This perspective of history places people in expectation and gives them hope. In this light man can once again carry out his cultural mandate, in obedience to Jesus Christ, as His follower and under the guidance of His Spirit. He is on the way of the Kingdom of God. Signs of that Kingdom are already manifest, if but darkly, here and now.

4. Disobedience and Secularization

The first basic given I mentioned, the cultural mandate, is expanded in the third, that is, in redemption. The second, the fall, is expanded in the fourth, which is disobedience and secularization. For it is clear that not everyone seeks to live in the light of the Kingdom of God; even many actions of Christians are not in line with that Kingdom. Nevertheless, people cannot escape its living power. It is true that instead of seeking it, they seek themselves. It is true that they take God's Kingdom and secularize it again and again in seeking the kingdom of man. Yet even when people do not accept the way of escape and salvation in Jesus Christ, they cannot loose themselves from the predominant force of history; rather, they parasitize this force. Especially in the western culture people want to go their own way. As they attempt to do so, the fourth feature intensifies (especially through the possibilities of modern technology) the characteristics of the second feature, heightening history's chaotic, destructive, and demonic powers. Modern secularization is a particularly destructive expression of the fall.

We would be mistaken, however--and it seems to me that Ellul makes this mistake--if we were to conclude that the fourth given is the decisive force of history. Actually it is only a perversion of history's meaning, a perversion which, because of the power of modern technology and its destructive effects, seems quite over-whelming in our time. The kingdom of man, even in its most monstrous manifestations, is but a perverse imitation of the Kingdom of God. It is a constant consolation to know that man on his own cannot negate the meaning of creation, the Kingdom of God. On the contrary, that Kingdom is already on the way and at any time people can be converted and led to seek it--even people in a technological society.

It is very difficult to see the interrelation between the third and fourth givens, redemption and secularization. For while all is related to the Kingdom of God, all is not related to it in a positive way. We can even say that the fourth given will be judged by the third given: redemption wil triumph over disobedience; salvation over secularization. The divine mystery of history is manifest in this interrelation.

The spiritual roots of modern western culture

To better understand the interrelation of secularization and redemption, we would do well to examine the historical development of western culture since the Renaissance, especially focussing on the spiritual roots of that development.

Generally speaking, in the Reformation people accepted their divine calling to develop the creation. For a long time the influence of the Reformation was strong, especially on daily praxis. But from its beginning, the Reformation was confronted with the influence of the Renaissance and humanism, especially among philosophers and scientists. Since the 18th century Enlightenment, the influence of humanism has been dominant. It is there that the secularization of western culture began. Man himself became the center of all reality. Christian eschatology was increasingly secularized and was reshaped into the expectation of a technological salvation, a technological futurology. More and more, man was convinced that he could create a new world, a paradise on earth. The promise of the Gospel would be realized by man himself, he believed, given especially the powerful aid and seemingly unlimited possibilities of science and modern technology. That is secularized faith. Moreover, issuing from western culture, this secularized faith in progress through science and technology, in combination with politics and economics, has flooded the whole world. Orthodox Marxism and American pragmatism are--notwithstanding differences in their political-economic systems--the most important expressions of this faith in progress. Through this faith man thinks he will find the way to life, but the actual situation of the western welfare state with its large-scale menace of destruction makes clear that this is a way leading to death. Never before were the cultural problems so huge and threatening as they are in our time; and never before has the influence of the secularized expectation been so deep-seated. Through technology man expects salvation, but its opposite, destruction, is what he achieves. Technological development was expected to be wholesome, but it has turned out to be pernicious. Modern technological society has turned out to be a monstrous, demonic society. And once again, in seeking solutions to their problems, men turn to science and technology for help. The spiritual roots of that direction do not change.

Many Christians--following Jacques Ellul--have concluded that the actual cultural situation is fully demonic and that they should therefore seek to transcend culture in order to rediscover their freedom. Their opinion is that there can be no Christian perspective for modern, secular culture.

I agree, but only to the extent of saying that it _seems_ as though there is no way out, that there is no perspective for culture. For even if man were to accept his responsibility, it would presently be difficult to change the massive, dynamic structures of the modern development. Their influence would be destructive for a long, long time to come even if people were converted this very day to seeking the Kingdom of God in science and technology.

Nevertheless, these sad facts do not have the last word; we must judge the present state of affairs in culture in the light of the given, biblical view of history. People cannot undo the power of Jesus Christ; they cannot undo the restored meaning of the creation. They may well deny this power and this meaning. And this denial may lead to dislocations and distress in our technological culture. Nevertheless, perhaps we can even say that the menancing problems of the secularized society provide us with signs of the second coming of Jesus Christ, with signs of the full re-creation. "We know that the whole creation has been groaning in travail until now." "For the creation waits with eager longing for the revealing of the sons of God" (Rom. 8:22, 19).

At this point, you may wonder what the immediate relevance of the Christian view of history is for technological development today. You may ask: Is it not necessary to know what people can do in a responsible way in modern technology itself? Before dealing with this question, we need to say a few words yet about the structure and history of technology and about its dominant religious thrust.

The structure and history of technology

Briefly, we may say that technology refers to people using tools to give form to nature for human purposes. These purposes should not be based on the pretense of human autonomy, of human power, but on the divine calling to develop the creation, in love, to the honor of God and for the well-being of our neighbor. In technology, too, man is called to be a responsible steward.

Man's present tools have become very refined and are taking over many of his own functions. In today's gigantic and dynamic technological development, the position of the tool has become one of increasing independence. Following a tool technology (e.g., the hammer) and an energy technology (e.g., the steam-engine) we are now in the stage of information technology (e.g., the computer).

The latest stage of technology is attended by many problems. We have a pollution problem as a result of the industrial application of technology. We face an unemployment problem. Furthermore, man often seems to be the slave rather than the master of technology; he seems to be a subservient part of the machine itself. Technological society is fragmented and abstracted: it is based spiritually on the predominant or absolutized influence of modern science, and the characteristics of science--abstractness, universality, logical rigor and durability--have therefore become the characteristicis of modern technological society. The complex of interrelated techniques, products of technology, and systems of technology has become a seemingly omnivorous, independent force which shapes and molds

human life. Because modern technology seems to obey its own laws, we are given the impression that it is now very difficult, if not impossible, to control it.

In this situation many anti-technologists and many Christians think that we have to escape from technology. The anti-technologists say that we must return to the past. Their position is an unrealistic and counter-culture romanticism that does not see the continuity of history. Many Christians, on the other hand, think that their job in this technological culture is only to witness to the coming Kingdom of Jesus Christ. But in my opinion this valid and essential witness may not be made to compete with the work to be done in technology itself. Otherwise, the Christian will find himself having to work on two levels at once. On the first level he will be working in technology itself, but on the second level (and only on the second) he will be witnessing. With such an approach, there is no integration of Christian faith and technology, and any opportunity to re-direct and to reform modern culture and modern technology in combination with science, politics and economics is precluded from the outset.

Yet Christians do not see how to achieve this integration, this redirection and reformation. I am often asked, "Is technology not in itself bad? Does the Bible not teach that technology is an evil human power?" The building of the tower of Babel is a commonly used example. In Genesis 11 God says: "...and this they began to do and now nothing will be restrained from them, which they have imagined to do." As we know, God put a stop to that aspiration for limitless power and mastery. The fact that technology was first developed in the line of Cain easily leads to the conclusion that technology is in itself sinful. However, we should not overlook some other very important revelations in the Bible. For example, it is forgotten that technology in the Bible, as in the building of Noah's ark, is a sign of salvation. And the Bible teaches that God himself gives wisdom and insight to man for technology. In Exodus 35:30ff. we read that Bezalel and Oholiab could not ply their technical craft except the Spirit of God inspire them.

Technology is not evil in itself. The question of whether technology is for us a blessing or a curse will always depend on man's motivation in his use of it.

So the first major question confronting us today is: What is the force, the purpose that drives modern man in his technological quest? If we can identify that driving force, and can come to the root of its misdirection, then we will also be nearer to identifying a proper direction and purpose for technological development, as well as the consequences of such a redirection.

Motives in the development of technology

The driving force in today's western culture is man's determination to gain control. Man is motivated by his desire for power, especially through applied science. Religiously, what drives him is his faith in science and, deeper than that, his faith in man and in human possibilities in science and technology, his faith in progress. The predominant character of science can be seen most clearly in its manifestation in modern technology. In other words, in man's present technological endeavors he attributes absolute power to science and to the technologico-scientific method. Technological development accordingly mirrors scientific knowledge. This leads to an extremely scientific technology (particularly on the level of designing) and, as a result, to diminution if not elimination of human creativity and responsiblity in modern technology. Creativity seeks expression in invention, and responsibility implies possibilities for re-direction and reformation. So modern technology's absolutized scientific base restricts man's liberty in shaping technology. The bent of scientific knowledge towards continuity (since it is knowledge of a fixed and determinate subject-matter) is projected, as it were, into technology, which in turn becomes fixed and determinate as well.

Rationalist dominance in technology has led to a dynamic technological development of immense proportions, but that development has at the same time displayed constricting tendencies. New inventions are made with greater difficulty, and old technologies are less rapidly changed, because with logical relentlessness rationalism puts its stamp on modern technology and renders it a stifling and rigid development.

The tremendous restriction entailed in this development is not generally recognized because people are obsessed and fascinated by technology's accomplishments. For although rationalism is a major driving force, it is not the only one. On the contrary, it is intertwined with several others which are sometimes quite proper but which more often serve to buttress the dominant trend.

First of all, there is the drive for technology for technology's sake. Let us call it the imperative of technological perfection. Many engineers are so stimulated by this that they believe that whatever can be made and perfected must be made and perfected. Things must be made always bigger. This ambition leads to unchecked and aimless technological power, which engineers pretend to control and master but which in fact victimizes them. They are under the spell of their own works. The results are the opposite of what they intend, and technology gains absolute dominance over man. Even nature and culture are threatened by this absolutized technology.

Man is also motivated by his desire to make technology serve economic powers. These powers dominate the development of technology and, in the process, the profit-principle is absolutized. The goal is economic and material growth, with its concomitment emphasis on the acquisition and consumption of material goods. The content of the western idea of progress is very narrowly conceived, with the result that the pattern of life in western society exhibits severe distortions. There is wild growth in the scale of enterprises and technologies, and there is a devaluation of human work.

Furthermore, the absolutization of the profit principle and of technical and economic growth results in a technology developed without any regard for the norms which ought to apply in the management of the environment. Under the influence of such economism, technology ceases to answer to its essential meaning. It no longer serves existing human needs, but instead creates artificial needs. The result is a one-sided technological development, a rapacious force that leaves squandering, pollution and destruction in its wake and which, in addition, yields technological products that are redundant, superfluous, and even priced too low--for not all damage to man, environment and nature is economically priced. In a certain sense we can say that under the guidance of this ambition we are neither technical nor economical enough. For we typically find a tremendous overdevelopment of the technical and economical aspects of social institutions--everything must be done on a large scale--but at the same time we find a corresponding underdevelopment of other aspects. Among these other aspects are the quality of worklife; a variety in the patterns of economic and technological development; stability; the aesthetic relation between technology and nature; social justice; fair relations with the third world; and so on. Those factors which might require sacrifices in our standard of living are ignored. For a long time, it seemed that the neglect of these aspects could go unpunished; but in the last decade we are discovering that such neglect has grave repercussions.

Particularly those who are actively involved in managing the development and social direction of technology are driven by these three motives. Those who themselves are not active in technology may have different aspirations. Some of them may think that technology is neutral or autonomous and they frequently close their eyes to the dangers of the technological development. Popular hopes frequently assign to technology a messianic role in the conquest of human problems. Blinded by an insatiable quest for welfare, people are eager and willing to adapt to the prevailing development in order to derive private benefit from it. So people outside economic and technical management are also responsible--in fact we are all responsible--for the huge problems of our technological society.

Having observed the distressing situation in modern culture, we come now to the question concerning the roots of this misdirection. Is it possible that the large-scale problems and threats issuing from modern large-scale technology have arisen because the motives I have mentioned are based on man's large-scale pretensions? In other words, is technology not always directed to and concentrated on man himself, and does that not testify to man's aspiration to be the centre of reality?

To answer these questions we must look briefly again at the spiritual history of the western world. What is the most fundamental inspiration for man's scientific and technological activities? In fact, that inspiration originates in the idea of autonomy, which means simply that man is his own measure. The prevailing philosophy in western culture originates from and strives to confirm this idea of autonomy. In this way philosophy serves a religious function. Following the Enlightenment, philosophy oriented itself to science, especially to the natural sciences, and to their methodology. In this way scientism, as faith in science, as absolutizing instrumental reason, increasingly assumed the role of religion in western culture. Thus philosophy is the stepping stone whereby the idea of autonomy has been linked up with science and its methodology. Philosophy is used to provide assurance and confidence--in a religious, generally tacit devotion to the scientific method as it is used in gaining mastery over practical affairs, particularly those of modern technology and its technologico-scientific method, but also in relation to economic and political power.

The nodal point, however, is science. Science, as I mentioned earlier, is characterized by abstractness. Now, given the religious function of science and scientific method as I have just described it, this abstractness--and the reduction of reality it implies--is lost from view. It is suggested instead that science produces concrete knowledge of all reality. In fact, however, instrumentalized reason reduces reality to that which can be measured, weighed and reconstructed according to rational rules. Needless to say, this reconstruction distorts reality and dislocates culture. An uncritical appeal to science for the solution of cultural problems can therefore only mean that we will be confronted in the future by even bigger problems. Technology-as-curse, with its monstrous and demonic tendencies, can only deepen if its basic thrust is not redirected. At the same time, this pernicious development of technology reinforces the tendency towards a technocratic political dictatorship of planetary dimensions. In such a political situation there no longer will be a place for human freedom and creativity. In that case Ellul is right: man becomes the prisoner in a universal concentration camp.

The old ethos as a new one

If the direction of culture is to be one of deliverance and unfolding, man's central thrust will have to be changed. The new approach that is required is really a very old one. In it man is not the center of reality; man is not autonomous. This new ethos requires a new awareness that man is created in the image of God. Such a redirection gives the context for man's responsibility. It expresses itself in love for God and love for one's neighbor. The consequence of this redirection for politics would be the abolition of the ambition for power, and the institution instead of the ambition to do justice and to bring righteousness; for economics the main principle would no longer be the absolutized profit-principle but responsible stewardship; for science the guiding principle would be not that knowledge is power, but rather that knowledge can serve wisdom. We must see clearly that science--as well as technology--can be a good servant. We must see clearly that it has been because of false and misdirected ambition that science and technology have been bad masters.

In relation to technology I have to say that we need not deny the scientific basis of modern technology. I am opposed only to the faith in autonomy that has been associated with science and technology. Science has been singled out by that apostate faith to appear as the highroad in the entire field of knowledge and action, while in fact it ought to be considered as neither more nor less than one of the pathways to be followed in the service of practical knowledge and action.

We will gain a better understanding of the proper service function of science in technology if we can identify the God-ordained purpose for human cultural development.

The Bible shows us that the driving force in human history ought to be the dressing and building, the keeping and preserving of creation. To limit man's task to "preservation" alone would imply a choice for nature and against culture, and that would be a choice for natural distress, a choice for fate. To confine this task to "building" alone would imply a presumptuousness on the part of man in which he would neglect to consider and weigh what is wise and essential and what is not. It would be to choose for cultural upheaval.

Along with this twofold harmonious calling, however, to build and to preserve, to dress and to keep, to progress and to conserve, man, the image-bearer of God, is called also to a twofold service of love. In building and at the same time preserving creation, he both confirms his love towards his Creator and Redeemer and lovingly represents all creation. That means, among other things, that man is responsible for the unfolding of the meaning of creation in dressing and keeping it,

and that he at the same time must resist every attempt to
disturb, disintegrate and destroy this meaning, including those
attempts which lead to the tremendous problems of the technologico-
scientific culture of our day. Guided by the right motive, man
in his cultural activity can be a blessing for nature (I Kings
4:33, 34) and at the same time enter an open way to the future.

We must stress again that this perspective is not easy to
achieve. First of all, there will always be many who maintain
that science and modern technology make religious faith and
commitment irrelevant. Although the present cultural situation
reveals again that science and technology make religious faith
and commitment more necessary than even, many people are still
following the old idol of progress, of the faith in science and
human power. But nothing less than the transcendent God who
lives and rules and who is active in our world can free us from
being imprisoned by a closed, self-contained universe. It is
high time for people to acknowledge that God is at the center
of reality and that He gives people hope. The horizon of that
hope is the horizon of the Kingdom of God as the fulfillment of
the disclosure and redemption of the creation. On the other
hand--and again this basic given sometimes makes it very
difficult to understand what is going on--the Kingdom of God
reminds us of a transcendent dimension. For the Kingdom is
both here and yet to come; it is very much a reality of this
world, and it is at the same time something which comes to us
from beyond. For that reason the people who acknowledge this
given are in the world but not of it; they are at home in the
Kingdom of God, and are at the same time pilgrims journeying
towards that Kingdom.

The meaning of technology

To seek both "cultivation" and "preservation" in technology
would require a major change in attitudes on the part of scientists
and engineers. For it means that they should no longer
arbitrarily follow their own will. Instead, they should eagerly
seek to be of service in the unfolding, deepening and enrichment
of the meaning of technology within the meaning of creation.
Technology, since it is but a part of man's activity, can be
properly evaluated only if it is set in the context of the
total reality and good of man and not judged as a self-sufficient
whole with its own inner laws and dynamics (See: W. Norris Clarke,
"Technology and Man -- A Christian Vision" in: *Science and
Religion*, New York, 1968, p. 284). So while engineers should
not strive to do all things possible, they should be able to do
all things necessary. The purposes, values and norms for
technology should be made explicit in an ethics of technology
developed on the basis of this new ethos.

I realize that these observations represent a position contrary to prevailing attitudes and practice. Frequently engineers permit themselves to be lured into considering the advantages of a project. That is what they then call ethics. Today such an approach is no longer possible, for the scales continue to tip in favor of the disadvantages. Can it be of any use to map out the direction technological development ought to take when the actual course and process of development has been accepted as the norm, and when a technological ethic weighs the pros and cons exclusively in terms of that norm? More importantly, this new ethic remains tied with a thousand threads to the same scientialized culture that gave birth to modern technology.

An ethics based on continued abstraction is a reduced and restricted ethics that inevitably leads to the breakdown of the meaningful coherence of reality. Man may expect that he will be able to restore this coherence later, but his hope will inevitably remain unfulfilled because of his mistaken point of departure. In that case all man will ever be able to do is fight the symptoms. The cause of the problem will not be eradicated as long as its root is left intact. It is not science and technology that should determine ethics, but ethics that should precede science and technology, in order to decisively influence their development. In other words, the direction technological development takes should be determined by our responses to ethical issues rather than to technological ones.

Moreover, if the prospective engineer will only realize who--namely, a human being marked by short-sightedness, shortcomings, and a tendency to underestimate the unfavorable side-effects of his work--he will not be tempted to dominate technological development presumptuously, nor will he aspire to unlimited, megalomaniacal achievements. Instead, he will practise wisdom, level-headedness, carefulness, prudence, patience, modesty and scrupulousness. He will also be prepared to subject his work continually to critique and scepticism. He will desire to interact with his peers in order to define and accept communal repsonsibility.

By emphasizing the responsibility of the engineers in such a way, we will be able to slow down current technological development with its ironclad logic and gigantic dimensions and dangers, and we will be able to give attention to those areas of our cultural life which are now suffering from under-development. On the basis of a new system of values--such as rest for nature; rich variety rather than dull uniformity; balance between centralization and decentralization; social justice; harmony between man and technology and nature--we will be able not to promote the "quantity" of life (for instance, the enlargement of the standard of consumption) but rather will

be able to give more attention to the quality of life. We will
therefore be humanly able to penetrate technological development
and re-work it into a multi-faceted, richly varied, enduring,
stable development with less risk in time and space. The gap
between the large-scale technology of our present culture and
the small-scale technology of earlier times needs to be closed
in a creative way, by the engineer. This can be done if he
learns to discern and follow scientifically the voice of
creation. Such a reformed technology would create the conditions
for a stable political society in which man could live in
freedom and responsibility.

If the engineer will do his work coram Deo, "before the
face of God," he will be able to disclose the meaning and the
blessing of technology. Although no one could possibly supply
a statement of the full richness and manifoldness of technology,
we can nevertheless express it in part. Technology is able to
alleviate man's fate as forced on him "by nature." It can offer
greater opportunities for living. It can reduce the physical
burdens and strains inherent in labour and can diminish the
drudgery of routine duties. Technology can release the working
animal, avert natural catastrophes, conquer diseases, supply
homes and food, augment social security, expand possibilities
for communications, increase information, enhance responsibility,
advance material welfare in harmony with spiritual well-being,
and help unfold the abundant qualities of individuals and
nations. Moreover, technology makes room for more leisure time,
and it promotes the development of new possibilities in the
fields of science and of technology itself. Thus it clears
the way to a varied development of culture which is at the
same time in harmony with nature. Technology also makes room
for more meaningful work, allowing for the creative giving of
love and service. It provides time for rest and reflection.
I should like to conclude by stating that technology seems
to me to be a pilgrimage of obedience, a mandated way to
greater insight into the meaning of the creation as the
Kingdom of God. We are called upon to honor the Lord in
technology and in every sphere of life. Is it not time then,
that the proclamation of a Kingdom approach to technology be
made an integral component of our evangelical witness to today's
modern, technological society?