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## Technology: One Giant in the Land

There is nothing more pervasive in the modern world than technology. Ours is an age not just of highly complex machines—automobiles, stealth bombers and computers—but of machinelike organizations, machinelike therapies and machinelike thinking. So much does technology form the context of our daily lives that we no more take it into account than a fish does the water it swims in. Its ubiquity makes it invisible. But its ubiquity also makes it a major issue. For when we begin to reflect for a moment, we soon realize that many of the problems we face as a society have a high technological dimension.

As I write this, for example, Exxon has just spent millions of dollars on a technological solution to a technological accident—the clean-up of the oil spill from a tanker that went aground in Valdez Bay in Alaska. Oil prices have already responded by rising. The human error of a drunken ship captain has combined with the inevitability of crude oil chemistry, marine biology and ocean currents to give us one of the worst ecological disasters in this decade. But it may not be the worst. Rich oxygen-producing, tropical rain forests are being depleted each year by thousands of acres. Tons of toxic chemicals are spilling into the atmosphere as I write; these will rain back into our lakes and rivers, not only killing fish but putting harmful chemicals into the food chain.

Getting to know the good will require a response to this problem, for people make and employ the technology that sets the context for human life. Decisions about its development and deployment are not, therefore, just "technical" but include a clear ethical dimension. So how do we get started in understanding technology and getting to know the good in relation to it?

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## Getting Started

For a Christian the first step in getting to know the good is to have a firm grasp on the basic ethical teachings of Scripture. The Scripture forms the central core of our understanding of how we should live. As we grow as Christians we should be so exposing ourselves to God's Word, and so obeying it when we understand it, that God's perspective becomes ours. For that, nothing more special than concentration on the Bible in groups and as individuals under the leadership of the Holy Spirit is required. This is basic discipleship. There is no magic to how this is done, no short cut to ethical and spiritual maturity. It is a long, hard process that will not end till we see Jesus in all his glory and know him as we are known.

From the beginning of our study in the discipleship of the mind, we have constantly used the Bible as our authority. It is from Scripture that we learn that the fear of the Lord is the beginning of wisdom, that humility is a basic virtue, that God is the prime reality. For books on how to understand the Bible check the footnote and the bibliography (pp. 230-31) for my recommendations.[6]

One thing we learn fairly quickly when we read the Bible: it often does not answer our specific questions specifically, especially those having to do with modern life. Should we continue to build gasoline-burning engines when we now know how badly the products of its combustion pollute our environment? Should we develop high-tech systems for preserving the lives of octogenarians? or babies born without their own life-support systems? What is the best way to plan for a transportation system that will serve our world in the next century? Should I work in the field of technology? If so, what could I best be doing? The questions could be multiplied endlessly. It is obvious that we will need to understand the context of our lives by reference to sources other than the Bible.

## Understanding the Issues

So how do we get a grasp on our context? Investigate, research, read, study, think, discuss: There is no substitute for concentrated effort.

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But where do you start?

It depends. Where are you? What do you already know? or think you know? Move out from there.

When I became interested in the nature of technology and its problems, I knew through conversation with friends and general exposure to the media—The *New York Times Book Review,* the daily papers, books I had read before—about a few books that had been written on the topic. I started there.

Specifically, I started by reading and scanning what I already knew to be a classic study of technology—Jacques Ellul's *The Technological Society.* But what if I hadn't known about Ellul? Simple. Any major book or article on the nature of technology will eventually refer to Ellul's work. It will become obvious that he is considered a formidable figure in the field; he is either hated or admired, depending on the critic, and obviously a person whose work you will want to investigate for yourself. When you find out that he is not only a sociologist but a Christian whose position is explicitly undergirded by Scripture and theology, it becomes doubly obvious that you should check out his work

As I read Ellul, it became clear to me that technology as he understood it is not just the accumulation of highly engineered products but an entire mindset, a way of thinking he calls *technique:* "the *totality of methods rationally arrived at and having absolute efficiency* (for a given stage of development) in *every* field of human activity."

How do we normally attack a problem? Do we not carefully divide up the issues and attack them with a set procedure: (1) we do this, (2) we do that, (3) we do the next thing? Do we not aim at efficiency (in terms of time, energy and money) in all of our efforts? When we do, we are employing *technique.* But isn't this the way to solve all problems? How else would we do it? Our inability to think of any alternative is an indication of how much *technique* governs our thinking.

From Ellul I went on to other books and articles that I found by

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using the computer catalog of the library at the University of Delaware where I was teaching for a brief period. I also contacted a friend who sent me the textbooks used at Michigan Technological University in a course in the nature of technology, and I spoke with the professor who teaches ethics in engineering at the University of Texas. Somewhere along the way I spoke and later corresponded with a Christian professor at the University of Illinois who was himself developing an approach to the ethics of technology. He led me to the work of five other Christian scholars at the Calvin Center for Christian Scholarship. I will give the details below. Suffice it say here that this proved to be my most helpful contact.

I was able to conduct much of my search for material, therefore, by personal interviews. This is not possible for everyone. But excellent substitutes are. University libraries are widely available to both students and their surrounding communities. And public libraries are often equipped to handle interlibrary loans. I could easily have acquired access to all the material I eventually used for my own study (which by the way is not finished) without personal contact.

In a field like technology, however, little has been written from a Christian perspective. In some ways it was fortuitous that I learned about the work of the Christian professor at the University of Illinois. But bibliographies do exist that list the work of Christians in various fields. One of the best of these was prepared by Brian Walsh and Richard Middleton and appeared first in *The Transforming Vision.*[8] They have revised and updated that bibliography, and it now appears as appendix to this book. It would be an excellent place to start your search for a Christian approach, not just to technology, but to most other major issues facing our society.

To illustrate what arises when one attempts to grapple with a complex issue I will take the remainder of the chapter to describe what I learned about technology. To begin let us look at three examples of problems fostered by technology. I was not long in learning about

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the celebrated case of rubber tomatoes.

## Case 1: Rubber Tomatoes

In the late 1940s the University of California—Davis developed a tomato harvester. This machine can "harvest tomatoes in a single pass through a row, cutting the plants from the ground, shaking the fruit loose, and (in the newest models) sorting the tomatoes electronically into large plastic gondolas that hold up to twenty-five tons of produce headed for canning factories."[9] This sounds like a good idea. The goal of efficiency is realized. But the matter does not end here.

Three unhappy effects resulted. First, in order to accommodate the harvester, the tomatoes were bred to be "hardier, sturdier and less tasty" than before. Second, thousands of farm workers were put out of a job because the pickers were more cost effective. And third, the smaller farmers could not afford the machines, and so some of them went out of business. Langdon Winner estimates that

> the number of tomato growers declined from approximately 4,000 in the early 1960s to about 600 in 1973, and yet there was a substantial increase in tons of tomatoes produced. By the late 1970s an estimated 32,000 jobs in the tomato industry had been eliminated as a direct consequence of the mechanization. Thus a jump in productivity to the benefit of very large growers has occurred at the sacrifice of other rural agricultural communities.[10]

A number of implications can be drawn from the case of the rubber tomatoes. But we will hold them until all three cases are before us.

## Case 2: Chlorofluorocarbons and the Ozone Layer

Since 1972, a multinational group of scientists working for manufacturers of chlorofluorocarbons (CFCs) have been studying their effect on the ozone layer. Their work is by no means over, but at least some of the results have caused these scientists and others monitoring their work considerable concern. It appears that the ozone layer is in fact

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being depleted and that that will increase the level of ultraviolet radiation reaching the earth's surface. This in turn affects human health by increasing the incidence of cataracts and skin cancer (the latter especially among the white population).

One of these scientists, Dr. Linsley (Jim) Gray, a personal friend of mine, spends 25-30% of his time on the project and has flown over Greenland in a research plane with others who have been developing ways to measure the ozone depletion over the Arctic.

Gray insists that this is an honest effort by manufacturers to assess the situation, and that already there is enough evidence of the harmful effect of CFCs to put curbs on their production. The manufacturer he represents and many others are and have been working to provide substitutes for the CFCs now employed in refrigeration and numerous other industrial uses. So far this looks like a straightforward problem. Stop producing and using these chemicals and find substitutes. But the issues are not so simple.

First, there is a problem in controlling the production of CFCs. Not all the nations manufacturing the chemical have joined the already existing group of manufacturers and nations who are cutting back on the production. Some of these are Third World nations who in the short run could benefit by continuing or introducing their manufacture, filling a demand created by the curbs in production elsewhere. After all, it provides both needed jobs and potential for economic development to benefit ordinary people. Unfortunately, some projections show that even if 90% of the countries currently producing CFCs were to cease production, a dangerous increase in atmospheric concentration of CFCs would be delayed but not prevented.

Second, it is not clear just what is happening to the ozone layer and why. It is difficult to get reliable data from the instruments used to measure it, and the results of some experiments have been faulted for untrustworthy instrumentation, the difficulty of calibration, for example. While most scientists are convinced that CFCs do in fact contrib-

ute to the depletion of the ozone layer, especially in the Antarctic, some are not convinced that this is happening elsewhere. To say that if CFCs increase, then the ozone layer will certainly be depleted is to go further than science in its present state can say. But there is considerable likelihood that that will happen, and those same scientists believe that steps to control production of CFCs are wise.

Technology tends to have effects that are quite unknown and perhaps unknowable, if not in theory at least in fact.

**Case 3: Technology in Management**

**I** take my third case, with some trepidation, from personal experience as the director of the editorial department of InterVarsity Press for sixteen years. I remember telling my own supervisor soon after my employment that I would never take the psychological profile test that was usually required for advancement in the organization. I did not—and do not today—trust those tests to give much useful insight. I believed—and still do—that they are unreliable at best and misleading at worst. Moreover, if after working with me for a few months my supervisor did not know all he needed to know about my qualifications for promotion, he was not likely to use well the results of a test.

Nonetheless, some fifteen years later in an environment in which I thought the results would not be misused or unduly twisted, I and other colleagues in my office did take such a test, one that was supposed to identify our basic temperament as we related to our tasks and relationships with others in the office environment. The test required us to match sets of words (I like words), and it took only five to ten minutes to fill out. We were all doing it together. The goal was to help us better understand ourselves and our relationships in order to increase our ease with each other and the efficiency of our work. What could be the harm?

Much, I am afraid. We all now know what style each of us turned out to be. Sophie, for example, is a high D. So am I. We both like to

dominate. Frank is a high S; he is easygoing and likes stability. None of us learned anything we didn't already know about each other. Long ago my wife told me I have the "boss syndrome" (itself a term based on technology). But now we had scientific proof. And now there was every reason to harden our own self-identities and stereotypes of our colleagues. And we did.

The result of getting pigeonholed by others or of pigeonholing yourself is that it takes away the impetus to change, to grow, to learn to cope in wider situations. It is a detriment to improved relationships, because it is an excuse to keep them as they have been in the past. Once a high D, always a high D.

Do you see the technocratic mentality at work? Human contact, working side by side with our team, is not enough. So we use the techniques of psychological and sociological analysis to find out our coworkers' psychological profiles. No matter that many professional psychologists working with these techniques of analysis distrust their results." We end up treating our friends as stereotypical psychological types, not as people. *Technique* alters and sometimes destroys human relations.

Even problems of church growth are attacked this way. We take a survey. We do an all-member canvas. We prepare a mailing to all the residents who are unchurched. We find out what people want in a church so that we can give it to them.

Now there is merit in *technique.* But there is also danger. The ubiquitous use of *technique* to solve all problems has taken from us our heart and soul.

**Toward a Philosophy of Technology: Some Basic Principles**

What, then, is technology? Look again at the definition of *technique* given above: *"Technique* is the *totality of methods rationally arrived at and having absolute efficiency* (for a given stage of development) in *every* field of human activity."[12] If this is technique, then *technology* is the whole

field in which technique plays a decisive role. But isn't most of modern life permeated by technique? Indeed, yes, and that is why understanding its implications is so vital in developing a Christian mind. We will single out seven of them for special attention.

First, *technology as an embodiment of technique is value-laden."* That is, technology is not dependent only on how it is used. It reflects the primary value of efficiency. And efficiency is measured in terms of time, energy and money. Among the methods available for accomplishing any given task we tend to choose a method which ranks high in at least one of those three categories. Mechanical tomato pickers rank high in all three.

But again, product or program technology does not ask what will be its personal impact on you, your friends or your society. The ready availability of an efficient solution to our problem adds technological pressure to social pressure. Whenever anything is readily available and attractive, there is always the temptation to use it. The lure of technology in an affluent society is hard to resist.

If as a reader you doubt this, I ask you simply to reflect on these questions: What have you wanted to buy in the past week? What have you wanted to do that is out of the ordinary this past month? What connection do each of these have with technology? What values are implicit in the decisions you have already made with regard to these desires?

Those are questions relating to individual, private values. What implications do our decisions have for the larger community? If you were an engineer designing a tomato harvester, what questions should you ask about (1) the character of the machine you were designing, (2) the potential impact its use will have on the total farming community, (3) the impact on the environment, (4) the impact on the consumer of tomatoes, (5) the impact on the economy?

The fact is that technology reflects human character. As the fellows of the Calvin Center for Christian Scholarship put it, "Technology

proceeds out of whole human experience and is affected by the confessional, religious commitments unique to human beings." [14]

Second, *technology shapes society*. We saw this in the case of the tomato harvester. We will see it if the depletion of the ozone layer is in fact being caused by the increased presence of CFCs in our atmosphere. Technological objects do reshape society. If we do not pay attention to the probable implications of a piece of technology, we are simply doomed to having our society blindly molded by the material force of technology. Machines themselves will more and more come to dominate us, dictating what food we will eat, what clothes we will wear, how we will be housed, what games we will play, how we will express our love and wage our wars.

As Langdon Winner puts it, "Technologies are not merely aids to human activity, but also powerful forces acting to reshape that activity and its meaning."" Those of us like myself, who grew up on a small ranch surrounded by small family farms in the 1940s, have clear historical evidence of cultural change. Where are these small farms today? Vanishing rapidly. Why? Because it takes more and more land to support fewer and fewer families. Why? Because the farm equipment required to grow crops is today (1) much larger and more expensive, (2) capable of replacing many farm workers and (3) efficient only when it does so. So farms have become much larger and the farm population has fallen. Farm communities produce many more children than the community can support, and so they move to the cities.

What then has happened in the cities at the same time? Alan Jiggins summarizes it well:

The drift to the suburbs has been a feature of life in Western society for the last fifty years. It is a logical development of a mass industrial and mass media society. The car, television, automatic washing machine, telephone and credit card seem to reduce the need for dependent social contact.

We can now live unprecedentedly private lives with the aid of our socially isolating appliances[16]

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Technology has thus had a large shaping force on all our lives—rural and urban.

Third, *"technological objects . . . impose on the user the way in which they are to be used."[17]* Huge tractors cannot be used in small fields congenial to the terrain. The natural contours of land are thus disturbed to accommodate machinery. Erosion is the consequence. Computers require vision at a specific distance from the display. So users have to adjust the way they sit. New chairs are designed to accommodate them. Semi-trucks require expensive roads.

Thus emerges what Winner calls the "technological imperative" (the environment must be adapted to the machine) and "reverse adaption" (human ends are adjusted to match the technology).[18] If our machine can't do it for you, you can't have it. But you can and should have what our machine can do for you. In short, technological societies are a complex interweaving of technological objects with their support systems: TV, automobile transportation, food distribution. They require a vast network of other technological objects and the system to keep them going. These support structures are not neutral.

Fourth, *the effects of technology are not fully known.* This we saw in the case of the chlorofluorocarbons we are releasing into the atmosphere. Are they what is depleting the ozone layer? Will the radiation let in by this depletion be a serious threat to human health? We cannot, at least now, be sure. Even if we do our best to act responsibly on the knowledge we have, we may make serious mistakes.

One of the few discouraging words that engineer Samuel C. Flor-man has to say about technology is that its ill consequences do not result so much from deliberate human evil or even seemingly benign human error. "Even if engineering mistakes could have been eliminated entirely, the environmental crisis would have occurred just the same! The environmental crisis is upon us not for any single error, but because of an accumulation of apparently error-free decisions."t[9] Nature, he says could respond to a few errors, even big ones like the

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construction of the Aswan Dam in Egypt or, we might add now, the oil spill off Alaska. But the accumulated decisions of many engineers, city planners, economists, business managers, politicians are too complex to control. People are too greedy. We will face crises as long as we are human.

Florman's response is to enjoy the "existential pleasures" that come from contemplating the beauty of the work of our hands. His solution echoes the once popular song "Don't worry! Be happy!" It is not one Christians can find appropriate. But his point should be well taken: solely as human beings we do not and cannot know enough to control technology.

Fifth, *technology changes the way we think about ourselves.* Long ago the ever-increasing complexity of computers gave rise to this question: Do computers think? Or, more poignantly, Are they persons? A similar question, for example, was posed on one episode of *Star Trek: The Next Generation:* Does Data (an android who acts very much like a human being) have the "right" to decide whether he/it will be taken apart and analyzed on the hope of building an even better android? On the program, the answer was Yes. But this is science fiction. Well, maybe.

What is not science fiction is the effect the computer has had on how we think about ourselves. The computer, for instance, tends to shift our definition of who we are from Aristotle's *rational animal* (in which we distinguish ourselves from animals) to *feeling machines* (in which we distinguish ourselves from other machines, like computers)." Sherry Turkle has learned from her studies "that people who try to think of themselves as computers have trouble with the notion of the self."[21] Who are we? we ask in the computer age. The answer: "information processors."[22] What is really at stake, then, is not whether computers are persons, but whether persons are anything more than machines and, if so, what.

Sixth, *technology tends towards technicism—the religion of technology.* Technology's success in getting us to the moon, eradicating small pox,

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pacifying our physical desires and entertaining us endlessly entices us to see it as the final reality in our lives. It has become a god. Every time we have a problem we turn to it for a solution. The Calvin Center scholars say it well:

> Technicism reduces all things to the technological; it sees technology as the solution to all human problems and needs. Technology is a savior, the means to make progress and gain mastery over modern secularized cultural desires. Technology thus becomes its own reason for existing.[23]

There is even a feeling of the sacred that comes from technology, says Ellul. And this is substantiated by Samuel C. Florman's ecstatic response to whirring dynamos.

> The engineer's first instinctive feeling about the machine is likely to be a flush of pride. For all the mistakes that have been made in its use, the machine still stands as one of mankind's most notable achievements. Man is weak, and yet the machine is incredibly strong."

After showing why engineers and scientists cannot be held responsible for the agonies caused by their products, Florman turns to poetry to express his own existential pleasure in contemplating the technical work of human hands. "Look long on an engine. It is sweet to the eyes," he quotes from poet McKnight Black."[25] And from a Mr. Ebeneser Elliott:

> Engine of Watt! unrivall'd is thy sway.
> Compared with thine, what is the tyrant's power?
> His might destroys, while thine creates and saves.
> Thy triumphs live and grow, like fruit and flower.[26]

If technicism is a religion, Florman is its liturgist. And General Electric with its television ad campaign that claims "We bring good things to life" is its evangelist.

> The prophecy of technicism is simple: *If it can be done, it will be done.* And, of course, much can be done. There is *in vitro* fertilization of

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a woman's ova with a man's sperm—any man's. There follows research on "waste" zygotes (fertilized ova) that would otherwise have to be thrown away after a choice of zygotes had made the remainder "useless." There are massively expensive weapons systems that promise to keep pace with those of the "enemy." All possible. All inevitable. And all ethical. So says technicism.

> For the ethics of technicism follows immediately: *If it can be done, it should be done.* In fact, doing it constitutes progress. And we mustn't get in the way of progress.

> Technicism says that humankind can use its hands and minds—its technology—to build a kingdom of plenty, ease and peace. Thus if something can be done, it should be done—no questions asked. "You can't stop progress."[27]

If our developing technology causes problems, dislocations in society, pollution of our environment, dysfunctional families, anxious people, no problem. Further, more advanced technology will solve these problems.

> Seventh, *technology fosters a natural human urge toward the acquisition of power and control, the extension of the human sphere beyond its current bounds.* Bacon's "knowledge is power" has set the tone for the development of the modern world. Hans Jonas sums it up this way: "To become ever more masters of the world, to advance from power to power, even if only collectively and perhaps no longer by choice, can now be seen to be the chief vocation of manldnd."[29]

> This theme is central in *Star Trek* whose epigraph is "to boldly go where no man has gone before." Yet even this merely updates Mary Shelley's *Frankenstein.* There the narrator sets out on a journey to "satiate [his] ardent curiosity . . . and [to] tread a land never before imprinted by the foot of man."[29] Shelley's narrator goes on to indicate the price he is willing to pay for such an increase in knowledge and the power he thinks it will bring: "One man's life or death were but a small price to pay for the

acquirement of the knowledge which I

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sought, for the dominion I should acquire and transmit over the elemental foes of our race."[30] Granted, it's his own life he has in mind. But it is but a small step from being willing to sacrifice one's own life to being willing to sacrifice the lives of others. This insatiable curiosity, reminiscent of Prometheus and Faust, always lurks in the shadows of the technological mind.

**Responsible Technology: A Christian Approach**

Technology poses tremendous problems for culture today. It has been with us, of course, since Adam was given the task of cultivating the garden. Noah could not have built the ark without it. But what makes technology so troublesome today is the availability and focus of massive power in small compass. With steam power came the industrial revolution; with electricity came the instant distribution of power all over; with the transistor came the miniaturization of data transfer. Now in our shirt pocket we can carry access to instant power.

But this newly acquired power has not been accompanied by a growth in social responsibility. We are no wiser in our use of a DC-10 jetliner than we were with the stagecoach of a century ago. Then we wore ruts in the prairie and shot all the buffalo. Today we pollute the atmosphere and send acid rain into our lakes. We write no better with a computer than we did with a quill. And we are likely to be no better at wielding the atomic bomb than we have been the hand grenade.

And there indeed is the rub. What does a Christian mind have to offer in response? In the matter of technology, how can we tell the difference between right and wrong? How do we get to know the good?

We cannot hope to answer such questions without knowing what the problem is. That has been the purpose of the preceding section. We have seen that a problem with technology is *technique,* a mindset that runs counter to the wholistic way in which we are made. It assumes values before it reflects on what they are. So *technique* must be

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subjected to severe criticism.

But being negative is not enough. Something positive is required. If we are not to live by technique, what are we to live by?

In one sense the answer is simple: "Seek first [God's] kingdom and his righteousness and all these things [food and clothing] will be given to you as well" (Mt 6:33). All we need to do is live by God's values. But what are they? That's when our task gets complicated, though not as complicated as we might think.

If we immerse ourselves in Scripture, especially if we examine the Gospels for "kingdom values" (the Sermon on the Mount from which the above quotation comes will make a good start), we will find lots to live up to. Primary, of course, is the positive virtue of seeking the good of others—first God's glory and then his reflected glory in other people made in his image. The two commandments summarizing the Ten Commandments put it in a nutshell: We are to love God with all of who we are, and we are to love others as ourselves. The Golden Rule is key here.

None of this is specific, however. We need to get a handle on just what role technology is to play in our lives and how we are to respond to its presence in our culture. Here is where my discovery of *Responsible Technology,* the result of work done at the Calvin Center for Christian Scholarship, became so valuable to me. What follows is largely based on the analysis of these six Calvin Center scholars: political scientist Stephen V. Monsma, communications professor Clifford Christians, economist Eugene R. Dykema, chemist Arie Leegwater, philosopher Egbert Schuurman and engineer Lambert J Van Poolen.

First, it is necessary to reassess the definition of technology given at the outset, that is, technology

as merely the application of *technique.* Since it loads the dice against seeing technology in any positive light at all, it is well to ask if there is not a way to see the products and tools we make as an aspect of God's creation. The Calvin Center scholars do just that. They believe the cultural mandate (which we discussed

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in chapter four) allows a positive role for technology. Adam and Eve were commanded not only to fill the earth but to "subdue" it (Gen 1:28). The word *subdue* does not justify exploitation but stewardship over the environments' The job of the first human pair was indeed to "work it and take care of the [garden]" (Gen 2:15). This, the Calvin Center scholars argue, makes us "cultural agents" whose task, at least in part, is "to bring the creation into its full development""

Seen in this light technology itself gets a new definition:

In essence we can define technology as a distinct human cultural activity in which human beings exercise freedom and responsibility to God by forming and transforming the natural creation, with the aid of tools and procedures, for practical ends or purposes."

Notice that the concept of *technique* as defined by Ellul and operative in my original definition of technology has dropped out. Rational analysis may well go into the fashioning of tools and the mapping out of procedures, but it has disappeared as a ruling principle. Efficiency likewise disappears as a measuring rod of its success.

Still we are dealing in abstractions. More specifically how should technology be employed "to bring creation to its full development"? These scholars write:

Human beings are to subdue and rule God's creation, but in such a way that they bring out the beauty and excellence God has placed in his creation; they are to allow creation's potential to flower. In the process they become—paradoxically—ruling servants. They rule the creation in such a way that they also serve it"

This they expand as follows:

Technology is to be done as a form of service to our fellow human beings and to the natural creation. This means we are to develop technology in such a way that the blessings, riches, and potentials God has put in creation are allowed to flower. We are called to do technology in such a way that the creativity and joy for which God created men and women can exist in abundance, the riches of the

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physical world can be uncovered and utilized, and the plant and animal worlds can be perceived and used for what they are and for what God intends them to be."

Eight normative principles apply to technology, they argue. These are (1) cultural appropriateness, the fittingness of a product or procedure into the patterns of each culture; (2) openness of information about the procedures to all peoples involved; (3) stewardship of a bountiful creation; (4) the aesthetic norm of delightful harmony; (5) justice for all_ people affected; (6) loving care for them; (7) reliability or trustworthiness of the product or procedure; and (8) an attitude of trust toward God by whose care and bounty has come our technical abil-ity.[56] The goal toward which the whole technological enterprise should strive is peace, *shalom—resulting* from the perfected relationships between God and humans, people with each other, and humanity with nature."

General Electric may claim that they, with the vast diversity of their technological research, are bringing good things to life. But they are wrong. God alone does that. Without God even GE would not exist. But GE does exist and so do we. Surely many of GE's employees at every level are Christians. Is it not, then, part of our task—the task of GE's employees and customers—to help make "responsible technology" the heart and core of GE?

**Bringing Good Things to Life**

What can we learn about getting to know the good from the above attempt to take a Christian approach to technology? Perhaps it can be summarized in four general principles.

First, we need to know what the Scriptures say about how we should act toward one another and what kind of character we should be developing.

Second, we need to realize that our problems will not be solved solely by technique—whether it is a method of Bible study, prayer,

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worship or group dynamics, or a method of politics, science or technology. First comes not a method but an attitude—humility before God and silence before both God and others. Then comes prayer and worship and fellowship—the actions, not the method; the reality, not the theory.

Third, we need to understand the context of the issues we are concerned with. If we are to live a discipled life, we must probe deeply into the background. What is happening in medical technology must be known if one is to develop a Christian medical ethic or promote public legislation appropriate for our pluralist society. Not every Christian can do the tough work necessary in every area. But some Christians should be engaged in each. Every Christian should know a little bit about almost everything; some Christians should also know a lot about many things; others should strive to know all there is to know about a very few things.

Fourth, we need to know what Christians interested in the same issues are thinking. And we need to come into dialog with them at every level available to us—local Christian group, church, professional organization, international congress. It is good to be reminded that there are Christians like Dr. Linsley Gray, mentioned above, who work on the solution to problems of technology. We should seek them out in our own corner of the marketplace.

Fifth, we need to be humble searchers before we become teachers or activists. Because the implications of any technological device, program or process are rarely fully known, we are always in the position of making judgments on the basis of incomplete information. An open mind is necessary, though action is often required before we know all we would like to.

Sixth, as we do become activists, attempting to put into action the lifestyle and principles that emerge from our search, we need to respect all others as made in the image of God. No moral program, no spiritual principle, takes precedence over the dignity of any person—

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believer or not, intellectual friend or enemy.

Getting to know the good in a pluralistic world is not easy. Doing the good is harder. But both are the logical implications of the discipleship of the mind.