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Formation or Deformation: Modern Technology and the Cultural Mandate



by Charles C. Adams

Introduction

The purpose of these articles on technology and society is to identify questions of normativity related to information and communication technology, and to frame a Reformed-Biblical basis for creating and using information and communication technology. In this paper I first review briefly the nature of technology as seen from our Reformational perspective. Then I attempt, without going into extensive detail, to overview some of the issues associated with information technology. Finally, I present a brief analysis of

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one expression of information technology—*distance learning*—in order to begin constructing a framework for a Reformational critique of modern technology in general.

The Nature of Technology

The word “technology” does not lend itself to a quick and easy definition because it can refer to at least three different but related phenomena: technology as object, what I will refer to as technological artifacts; technology as knowledge, what might be called “technological know-how”; and technology as activity. The most basic of these is the last one, since it is technology as activity that is the origin of both technological know-how and technological artifacts. Accordingly, Monsma (1986) defines technology as

. . . a distinct human cultural activity in which human beings exercise freedom and responsibility in response to God by forming and transforming the creation with the aid of tools and procedures, for practical ends or purposes. (Monsma, 19)

Central to this definition is the idea that to engage in technology is to engage in a form of service. That service may be to one’s fellow human creature or to the non-human creation, and is always a way of responding in service to one’s Creator. It follows from such a definition that technological artifacts are things created out of human cultural activity for the purpose of service and that using technological artifacts is always a way of responding in service to one’s Creator. Even such a mundane activity as playing

a computer game is a response to God (in obedience or disobedience). It may be argued that a characteristic of obedient utilization of technological artifacts is a sensitivity to the fallenness and brokenness potentially manifest in such artifacts. Just as the broken relationship between humankind and the rest of creation leads us to beware the destructive potential of -70°F wind-chills and to be careful of crossing a highway on foot, so likewise, we ought to be alert to the properties of technological artifacts that enable us as servants, as well as to those that threaten to disrupt our attempts to live obediently before the face of the Lord.

When we say that technology is a “response to God” we imply that God calls us to do technology. Such an implication has not gone unchallenged, particularly by those Christians who are sensitive to the environmentally and spiritually destructive characteristics of many technological artifacts and a significant portion of modern technological activity. But I want to argue that the historic, Reformed, Christian notion of the “cultural mandate” is fundamentally sound. It is true that the biblical command to “fill the earth and subdue it” (Genesis 1:28) has been seriously misconstrued by many Christians to mean “selfishly dominate” rather than “stewardly care for,” but that does not abrogate God’s Word. Egbert Schuurman (1980) makes this clear when he writes regarding what he calls *the technological development idea*.

As God’s image-bearers, people received at their creation the command to be stewards of God’s completed work of creation and to disclose that work. Contained in this calling is the task of technology as the disclosure of the nature side of creation and as the realization of its technological side. The final purpose of all this activity is the service and honor of God: this is the path along which humanity must unfold and fulfill its life.

The fall into sin broke humanity’s power, and nature was cursed. Now people no longer live in harmony with God’s law, which obtains for the whole creation.

Restoration is given in Jesus Christ. He heals the brokenness of the entire creation and turns it again, in its fullness, toward God, the Origin. Jesus Christ came into a

world broken by sin to undergo the chastisement of death for sin. He also fulfills humanity’s task of having custody over creation and opening it up. Jesus Christ *saves* and *fulfills* creation.

In history, Jesus Christ has laid the foundation for the salvation and fulfillment of the creation. In Christ the meaning-disturbance resulting from the fall into sin is itself destroyed, and the meaning of all that is created is disclosed.

Through faith, humanity participates in the work of Jesus Christ. People are to acknowledge his leading in history and are to work with Him. It is given to humankind to know that in the groaning of the creation, a new perspective has opened up: the world is being propelled toward complete salvation and fulfillment, toward the consummation of the Kingdom of God. That Kingdom is forging a path right through the disturbances and dislocations of meaning occasioned by the technological development led by secularized motives and fraught, today, with far-reaching consequences. (Schuurman, 374-375)

In summary, technological development (even *progress*, if you use that word discerningly) is part of being human—both in the original sense of humankind’s call to *assist* the rest of creation in being what God calls it to be, and in the sense of healing and redirecting that which, due to the fall, is broken in creation.

Doing technology is different than doing science. Science seeks knowledge about the created order, whereas technology gathers together scientific and other kinds of knowledge in order to solve practical problems. Likewise, technological knowledge is different than scientific knowledge. It is characterized by holism rather than abstraction and it corresponds to the “real world” as opposed to an “ideal world” (i.e., a world of numbers, geometrical shapes, frictionless mass points, “average” families, and other such abstractions). Therefore, one may conclude that the use of technological artifacts ought also be characterized by holism. The potential user should take pains to be aware of the variety of properties inherent to particular technological artifacts. By variety of

properties, I do not mean simply physical and economic properties. Aesthetic, ecological, social, ethical, and even faith properties are often latent in technological artifacts. This manifestation of properties other than the expected physical and economic is often referred to generally as the *value-ladenness* of technology and more specifically as the *value-ladenness* of technological artifacts.

There is an amusing story told about Thomas Edison (Postman, 84). Edison allegedly believed that technological artifacts are *intention* neutral, that is, they do not have inherent biases of the sort that tend to move people in one direction rather than another. Thus it is said that he could have invented the electric light bulb long before he did except for this stubborn belief in the neutrality of technology. It seems that every time Edison came close to a breakthrough in his quest for the electric light, he would spoil things by holding the light bulb to his face and mumbling, "Hello? Hello?"

So, technological artifacts are "value-laden," or, better said, using the language of Reformational philosophy, *there is direction embedded in the structure of technological artifacts*. Another way of saying the same thing is to argue that technology has a volitional character. This is how Carl Mitcham argues in his excellent book, *Thinking Through Technology*.

. . . much of the popular discussion about "technology and values" is vacuous . . . it assumes that technology as object, as knowledge, and as activity is value—or intention-neutral—that one can take any value or volition, attach it to an existing artifact or activity, and create new technology.

But is the object, knowledge, or activity really commensurate with the volition? Sometimes it is, sometimes it is not. The problem is obviously recognized on one level when people do not try to use guns as tooth-picks. Yet people do say things such as "Technology does not have a will of its own" or "The problem is not technology but what people want to do with it"—believing, apparently, that technologies can be magically transformed by differential volitions.

Consider, for instance, one extreme illustration of this kind of discussion, that regarding

the harnessing of nuclear explosives for peaceful purposes—to dig canals and such. (Mitcham, 252)

Mitcham goes on to argue that talk of using nuclear explosives for peaceful means is "unrealistic and misleading" because it overlooks the *inherently* (Mitcham's word) military characteristics of nuclear explosives, such as the need for extreme security.

There are other examples. Neil Postman argues that the properties of eyeglasses are such that they direct people to believe that our bodies and minds are improvable, a belief that was not so common before the twelfth century when

. . . properties of the television are such that they direct people to use it for entertainment . . . more readily than for academic purposes.

eyeglasses were invented (Postman, 14). Postman also argues that the properties of the television are such that they direct people to use it for entertainment purposes more readily than, shall we say, academic purposes. Lewis Mumford has written about the world-view shaping character of clocks. According to Mumford, clocks create in our minds the notion of dissociated time, an "independent world of mathematically measurable sequences." (Postman, 11)

To summarize, responsible (obedient) technology, will, therefore, mean insuring that doing technology or using technological artifacts is characterized as service, specifically by being aware of and dealing with technology's multi-dimensional character.

An Overview of the Issues

The issues raised by advancing modern information technology are wide-ranging. For purposes of organization, they are collected into five groups: (i) technological utopianism, (ii) justice and stewardship, (iii) social interaction, (iv) government, and (v) education.

Technological utopianism rests on the faith that technology will lead us to heaven on earth. Fundamental to that faith, therefore, is the idea

that the future will be “better” than the past. One of the more interesting expressions of this futurist, science-fiction-like faith, can be found in the writings of Benjamin Franklin:

... It is impossible to imagine the Height to which may be carried, in a thousand years, the Power of Man over Matter. We may perhaps learn to deprive large Masses of their Gravity and give them absolute levity, for the sake of easy Transport. Agriculture may diminish its Labour and double its produce; all Diseases may by sure means be prevented if not cured, not excepting Old Age, and our Lives lengthened at pleasure even beyond the antediluvian Standard. (Curti, 166-167)

Another form of expression of technological utopianism views the computer as the perfecter of democracy. This is also an example of how the reductionism that is common to modern technology is carried over into other areas of life. Note (though De Koster is likely facetious) how the idea of democracy is reduced to its numerical aspect in the following quote by Lester DeKoster, writing as Editor of *The Banner*.

I . . . look forward to the time when a central computer will be so attuned to our television sets that no longer will the pollsters have to tell us what we, collectively, think. We can, like our Congressmen, put in a card, or push a button, and we will all know in a flash what, in percentages and totals, we all believe. Decent way to conduct primary campaigns, too; and cheap. Nice way to have a national referendum on the issues. Could, maybe, even send the Congress home? That is, sent by the people, not by some Fascist dictator.

Oh yes, the town-meeting democracy enjoyed by at least the elite in Athens, and, after a fashion, sometime in Rome—still more, the town-meeting democracy which everybody shared in the colonial USA, can come back! Why not? Who cares how large that “meeting” is—if everybody can vote, and the votes can instantly be counted? Instead of President or Prime Minister we might simply elect a “Custodian of the Computer.” (DeKoster)

These examples evidence technicism, the technocratic faith. That faith is perhaps nowhere so blatantly expressed as in an advertisement by Gould, Inc., that was run in a number of major magazines in the early 1970s. That advertisement was directed at the technophobia that characterized the period in American history shortly after the Vietnam War and in the midst of what was called “the energy crisis.” It reads like a confession of faith. Consider the following excerpts from the ad:

“Technology in transportation overcame the problems of territorial size.”

“Technology in agriculture turned our vastness to advantage.”

“When the Civil War began, the prediction of Frederick the Great [that the US would fail because it was too large] met its ultimate test. And it was technology that saved the Union.”

“Technology helped turn the United States from a wilderness into a great nation. Technology will continue being our best hope for the future.”

“Science and technology can solve many problems. If they don’t, what else will?”

“We believe in the promise of technology.”

Justice and stewardship issues are often raised in discussions regarding communication technology. Among the more important of those are the following, identified by students in a senior level Dordt College course titled, *Technology and Society*.

Will advanced communication technology be a key to ushering in a “global community”? If so, will this new “community” support all of its members and reach out to those in need?

Who will control the flow of information as communication technologies advance? Will that advancement accelerate us toward a world comprised of two separate “classes” of people, one that can access and control vast amounts of information, and the other that cannot?

What if breakthroughs in communication technology threaten to result in the elimination of vast numbers and kinds of jobs? Do we go ahead anyhow, or do we declare a moratorium on technological breakthroughs, or is there a better response?

How do we balance the desire/need for having the latest hardware and software with obedience to stewardship norms?

Does the nature of modern communications technology challenge the validity of sacrosanct American civic faith tenets such as “freedom of speech” and “individual rights”? Does that nature indicate its own distorted character or the distortions of the American civic faith?

Social interaction issues arise when a communication technology replaces the direct interaction of two or more persons with the interaction between an individual person and a technological artifact. The following questions focus on concerns that have already arisen.

The Internet appears to be accelerating the move to “cottage industries” (work at home). What are the advantages and disadvantages of such a move, particularly with respect to computer interaction replacing human interaction?

What are the social consequences of simply increasing communication potential via technology (e.g., e-mail, cell-phones, etc.)?

What is the fundamental distinction between face-to-face and other forms of communication?

What is “true communication,” (“true” in the sense of faithful to what the Lord intends for that area of our humanness)? Do modern communication technologies (FAX, e-mail) move us closer or further away from that ideal? Are they, perhaps, merely a crude step toward something more normative? In this regard it is instructive to consider one recent experience of viewing a promotional video produced by AT&T. The video tried to describe the communication life of a typical American family twenty-five years into the future. That communication life was centered on what AT&T would like to see as the telephone of the future—the *videophone*. As I watched the video I was impressed with the seemingly natural way in which people could “talk” to each other using the videophone. Facial expressions and even body language seemed to play a role akin to that in face-to-face communication. It was very impressive. However, after rewinding the video I could not help but reflect on the fact that I was being impressed by a *video of a videophone*. The problem with current communication technology such as the telephone is that important aspects of

a face-to-face conversation are abstracted out of the telephone conversation. But then, that same problem is entailed by “watching a video” instead of observing firsthand a whole sequence of events. I came away with the wariness that my positive impression of the videophone ought to be qualified by whatever abstractions the video presentation may have created, thereby masking abstractions inherent in the videophone technology.

Government will be involved in communication technology when questions of regulation, privacy, and safety arise. Examples of related (and intertwined) questions are:

*. . . after rewinding the video
I could not help but reflect
on the fact that I was being
impressed by a video of a
videophone.*

Should communication technology be regulated by the government? If so, why and how? How does a community balance free speech rights with a desire to halt the purveyance of what some refer to as “abomination” programming? Does modern communication technology like the Internet force us to deal with the possible weakness of our traditional Reformed position against the “legislation of morality”?

With ever-increasing availability of information, the question of whether something *can* be communicated is being replaced by the question of whether something *should* be communicated. What are some principles that can help us to be discerning as we address the tension between people’s “right to know” and people’s “right to privacy,” assuming such rights exist? What communication of technological secrets are allowable? What is the correct place of patents, copyrights, and so-called “intellectual property”?

How much knowledge about the building of explosives should be available to the public and how can this be regulated on the Internet?

Education is an area where the potential of modern communication technology is often trumpeted as being revolutionary. However, it can be argued that, thus far, the computer has

not had more than a cosmetic or peripheral influence on education. Will the effect of advanced communications technology be greater? How? Consider the effects of the word processor replacing the typewriter, of the calculator, spreadsheet, or math software replacing the slide rule; of computers and “presentation” software replacing the chalk board; of multimedia software replacing (or greatly supplementing) textbooks; of the Internet replacing the local library card catalog; the World Wide Web replacing the local library; and of the distant learner “site” replacing the traditional classroom. Of all of these, the one that is currently being given the most hype and also generating the greatest apprehension is the last mentioned.

An Analysis of a Technological Artifact: *Distance-Learning*

The idea of distance-learning is simple: to use modern communication technology to overcome the limits of space and distance in traditional education. This idea is not new. Thirty-three years ago, when I walked into my first college class at Rensselaer Polytechnic Institute—chemistry lecture session—I walked into a huge auditorium with 900 other freshmen. The professor, on the stage in the front of the auditorium, could hardly be seen. But bolted to side walls of the auditorium—four on each side—were television monitors. In addition, a PA system insured that everyone could hear the professor. Thus every student in the auditorium had at least some opportunity to see and hear what was going on. The professor lectured and sketched notes using an overhead projector, the image of which was transferred to each of the monitors in the auditorium.

Today “distance learning” is much improved. Instead of simply overcoming the distance in a large lecture hall, modern communication technology makes it possible to overcome distances like that between Washington, DC, and Sioux Center, Iowa. The monitors are now at least thirty-two inches instead of twenty-one, the pictures are relatively sharp, and they are in color. The rooms in which the distance learners sit are usually small and comfortable, handling no more than thirty or forty people. And most importantly, the potential exists for back-and-forth communication. That is,

there are facilities in the rooms so that the image and voice of the distance learner can be transmitted back to the central site, enabling the distance learners to interact with the “professor” by asking questions and getting an immediate response.

The question that I wish to ask is the following: “Is distance learning an appropriate use of technology that advances education by enabling students to more effectively fulfill the tasks that the Lord calls them to”? Rather than trying to offer a definitive answer, however, I want to suggest three steps in an approach that we may take to that answer. First, it is important to view distance-learning in the context of the multifaceted *creational structure* as the Lord allows us to perceive it. Second, we must realize that there is a multifaceted normative character to all human activities, of which distance-learning is one. And third, we need to adopt some framework that will help us take a structured approach to the analysis.

Almost 30 years ago, as an engineering student, I was blessed by being introduced to such a structural approach, and I have found it useful ever since, not only when needed to make a systematic critique, but—perhaps more importantly—in resisting the narrowing and specializing tendency in modern technology so that I can attempt to live holistically before the Lord, enjoying literature as well as electronics, philosophy as well as solar energy technology. That structural approach is Dooyeweerd’s modal law theory. It is the backbone to the approach to distance-learning that I offer here.

At the outset, we ought to recognize that education is a human activity and as such it is *multifaceted*. That is to say, it is not merely a matter of information transfer, of socialization, or of culture formation, although those are three important aspects of education. To get an appreciation for the problem that ensues when one does not consider education or communication holistically, consider this quote from the Danish philosopher, Søren Kierkegaard:

... in our age, which reckons as wisdom that which is truly the mystery of unrighteousness, viz. that one need not inquire about the communicator, but only about the communication, the objective only—in our age what is

an author? An author is often merely an x, even when his name is signed, something quite impersonal, which addresses itself abstractly, by the aid of printing, to thousands and thousands, while remaining itself unseen and unknown, living a life as hidden, as anonymous, as it is possible for a life to be, in order, presumably, not to reveal the too obvious and striking contradiction between the prodigious means of communication employed and the fact that the author is only a single individual—perhaps also for fear of the control which in practical life must always be exercised over every one who wishes to teach others, to see whether his personal existence comports with his communication. (Kierkegaard, 45-45)

The problem that Kierkegaard saw with the technology of his day, the printing press, was its tendency to foster author anonymity by abstracting the author from the written work. Anonymity, in Kierkegaard's view, was synonymous with lack of authenticity. A problem with distance-learning (or any technological artifact) is its tendency to abstract various aspects of the educational process from the whole of that process. Thus it is critical to take a proactive, holistic stance when assessing distance-learning's potential.

Of course there are some basic aspects to the educational process that almost "go without saying"—there must be a physical space *in* which, and a time *during* which the learning can take place. That space must not only be conducive to human life, it needs to have at least a minimum of comfort and be distinguishable as a learning space so that the mind of the learner can remain focused on the task of learning. But beyond those basics, consider the following eight questions:

First, is the mode of learning culturally appropriate? In other words, is there a kind of historical continuity with previous modes of learning so that the student is enabled to make a smooth transition from previous learning experiences to the new learning experience? For example, attempting to use textbooks with a preliterate culture is clearly inappropriate.

On the surface we would probably say "yes" to this question, at least for North American culture. However, there may be, lurking beneath the

surface, subtle cultural discontinuities that can cause problems. For example, despite its dubious merit, we have inculturated our grade school and high school students to be dependent on the teacher for motivation. With distance-learning the student is much more dependent on self-initiative. (That may be good, but my point is that it creates a discontinuity with the past that must be dealt with.)

Second, does the communication technology engage the learner in a delightful and harmonious way? This is a question of user-friendliness, and it builds upon the question of cultural appropriateness and the physical space foundation previously

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mentioned. Another way of asking this question might be, "Does the communications technology result in a delightfully harmonious interaction, at the human-technical interface, whereby the technological artifacts dissolve into an extension of the user" (Adams, 1995)? With reference to distance learning, this is not yet the case, and I am not sure it ever can be. For the artifacts to dissolve into an extension of the user would require that the student perceive no difference between being in the teacher's classroom and being at a remote site.

Third, does the mode of learning facilitate open and unambiguous lines of communication. In other words, are all the human avenues for the conveyance of meaning open and unobstructed? This is another very critical question for distance learning. To put it somewhat hyperbolically, does the distance-learning experience—in any of its aspects—become like a ventriloquism performance . . . on radio?

Fourth, does the mode of learning promote social interaction and development both for the individual learner and for the society to which that learner belongs? For purely individualized modes of learning the answer to this question would have to be, largely no. For distance-learning I think we might want to say "yes" for certain kinds of social

interaction, and “no” for other kinds.

Fifth, does the mode of learning promote good stewardship of resources such as time, energy, and, needless to say, money? For some applications of distance-learning this will clearly be answered “yes.” But it may not always be the case.

Sixth, does the mode of learning promote justice? In other words, does it balance the opportunities that all people have to be the persons that the Lord calls them to be? A mode of learning that, for example, required a great deal of familiarity and ease with the latest technological artifacts would favor technophiles at the expense of, shall we say, the technologically challenged. Likewise, given our understanding of the role of individual learning styles, it may be easy for a particular mode of learning to favor persons comfortable with one learning style while alienating those comfortable with a different learning style.

Seventh, does the mode of learning promote love of one’s neighbor, care for the creation, and love of God? It may be argued, for example, that a mode of learning that eliminates all direct contact between the learner and the natural creation will fail to promote the kind of care for the created order that the Lord requires of us. Thus teaching a course in environmental ecology or in group dynamics may be virtually impossible using distance-learning technology.

Eighth and finally, we want to ask whether the mode of learning is trustworthy and promotes in the learner ultimate trust in God rather than in some created thing. This question covers a lot of ground. For example, it requires that the mode of learning be technically reliable, not subject to interruptions, outages, and down-time. It also requires, for example, that the mode of learning point to dependence of the learner on God rather than on her own rational abilities, or on the technological infrastructure.

Summary

There are four major points made in this paper.

First, technology as human activity is *multi-faceted service*.

Second, an obedient response to the cultural mandate results in technological *development*.

Third, there is always *direction* embedded in

the *structure* of technological artifacts.

And fourth, the responsibility of Christians is to subject all technological activities and artifacts to careful, holistic evaluation in terms of *all* identifiable, structural *norms* for technology as they live out the belief that their technological work is a participation in the work of the Lord Jesus Christ.

The consequences of that belief for living a full and meaningful life are described well by Egbert Schuurman when he writes,

When people live rooted in this conviction, they are able to accept their task in technology, freely and responsibly. A liberated technology . . . will create room for multifaceted work—for careful, creative, love-filled work. In all of this, humanity finds its share and portion of the *meaning of technology* in the disclosure of the meaning of the creation as a whole—a disclosure that must attain its final destination in the Kingdom of God, the re-created universe, and so come to rest in that Kingdom. (Schuurman, 375-376)

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