Technology
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In the popular mind "technology" usually refers to things like machines. Technology is what engineers give us: telephones, fax machines, automobiles, electric lights, water purification plants, compact disc players, and so on.   We live in a "high-tech" world---a world of computers and complex, advanced technologies. While we might resist some aspects of modernity, it is very difficult to establish and live out a critical perspective on technology.

1. Defining Technology

Our word "technology" derives from the Greek roots *techne* and *logos*. As biology is the study of *bios* ("biological life" in Greek) and theology is the study of *theos* ("God" in Greek), so "technology" originally meant "the study of *techne*." *Techne* is the Greek word for an art, skill, or craft---for a technique of making or doing something. In this basic sense, of course, birds have techniques for building nests, beavers have techniques for building dams, and flies have techniques for irritating us. Human beings have always had techniques, various arts, skills, and methods, for meeting their needs and desires, for building houses, making clothing, raising and preparing food. We have had other techniques for making decisions, governing ourselves, communicating with others, raising children, and worshipping God.

Some of these techniques are handed on by our traditions. Others are imposed by authorities: "this is the way we do this; period!" But what distinguishes our human (from animal) techniques is our capacity to revise or replace our various techniques through the application of our <u>rationality</u>.. Human techniques are not just a product of our instincts or traditions but of our reason. We don't just submit to nature but create <u>artificial</u> means, we develop tools, to better, more <u>effectively</u> achieve our ends or goals. The difference between science and technology is that while <u>science aims to know</u> and understand things, <u>technology aims to change</u> things, to have a practical effect, to be useful.

Today, of course, we use the word "technology" not just for "the study of techniques" but for the tools and techniques themselves: "do we have the "technology" to do this or that?" This subtle change in language highlights the fact that our modern techniques are now virtually all linked with study (discourse, *logos*), with research and rational analysis. There remain, of course, some techniques handed on by long-standing tradition, socialization, religious faith, and even biological instinct. But such techniques are in retreat because of the demonstrable, measurable success, the efficiency, of our rational technologies.

2. Technology in the Modern World

For most of human history, <u>nature</u> has been the primary milieu, the experienced environment, in which human life, including human technical development, proceeded. Specific techniques assisted life in remarkable ways but choices were conditioned primarily by nature. For example, the length of one's work day was determined by when the sun rose and set. The range of one's movement was typically confined to the distance one could walk or ride a horse. Learning was passed on from one person to another and depended on the presence of a living teacher.

Human life has also been conditioned by <u>society and human culture</u>. Social traditions placed constraints on what people did. <u>Values</u>, embedded in customs and in beliefs, constrained the development and use of techniques. Thus, even if nature allowed the conditions for work, social or religious tradition might prevent you from working during certain times (e.g., the institution of the Sabbath day) or at certain places (e.g., sacred burial grounds or mountains) or in certain ways (e.g., cruelty to animals, dietary prohibitions against pork, etc.). So too, the way one worked or played might be defined by social roles assigned to men and women, to old and young, or to one social class or another.

But in the modern world of the 20th century, while neither nature nor human culture are negligible factors, <u>our primary milieu is technological defined</u>. We can work as long as our electrical power keeps the lights on and our computers running. We can travel as often and as far as our transportation technologies will

take us. Our entertainment is for the most part technologically constructed. Social taboos against shopping or working on Sunday have disappeared. Socially determined roles for men and women, for old and young, have largely (even if not entirely) disappeared. For the most part today, what we do, how we do it, where we do it, is determined by technology not by nature or social tradition. We live in a technological milieu.

3. How Technology Serves Us

For most of us, most of the time, this change to a technological milieu is a good thing. Who would want to return to a time when the whims and constraints of nature were so confining? And who would want to return to a situation where often irrational social traditions decided the possibilities of life for one's class or gender? In this sense technology has served us and even liberated us.

Technology has served us by creating <u>tools</u> that vastly extend our human powers: <u>construction tools</u> like hammers instead of rocks, then jack hammers instead of sledge hammers, <u>medical tools</u> like x-ray machines, prostheses, and pharmaceuticals, <u>transportation tools</u> like planes, trains, and automobiles, <u>communication tools</u> such as television, compact disc players, computers and fax machines. The list of technological tools is awesome. The ways these tools have served us is spectacular.

Technology has also served us by its development of <u>methods</u>. Technology is not just tools, it is a method. The technological method is the way of rational analysis, of quantification and measurement, of empirical testing, of innovation of new ways of approaching problems. In the material world of things, technology is the method of rationally analyzing how to move things from one place to another, how to multiply, divide, simplify or combine various elements and factors. As such, technology helps us break down a production and distribution process into its constituent parts and then restructure it toward greater efficiency.

And the method that works with automobile assembly lines and other material processes also is applied to human relations as in the conduct of business meetings, the creation of effective advertising, and the development of psychotherapy. Technology is the creation of better <u>means</u>, in fact, of the "one best means," in every field of human activity. Modern bureaucracy, for example, operates under the rule of technological method---even if in practice it often is far less efficient than we would like.

4. How Technology Masters Us

Modern technology is not only our servant but our master in some important ways. It not only frees us in some ways, it constrains us and sets our agenda in other ways. This mastery can be summarized in four ways.

First, technology is <u>ambivalent.</u> This means that specific technologies always have <u>both positive and negative aspects</u>. Technology is not neutral, nor is it exclusively evil or good; it is both good and bad. It is common to say that technology is neutral and only its use or its users are good or bad. Certainly you can say that, for example, a gun in the hands of a crook will be put to bad use, and a gun in the hands of a good person can be put to good use. But it is the technology itself that makes possible these uses. One cannot simply invent guns without weighing these outcomes and deciding whether to proceed. So too, the development of automobiles not only results in freedom to travel but also in pollution, in serious injuries to people, and in the kind of anonymity that facilitates social breakdown. The possibilities of television are accompanied by the decline of human conversation and the capacity to entertain oneself in a spectator era.

Our lives and choices are mastered and determined to a growing extent by these positive and negative impacts of technology. Every benefit is accompanied by a cost. Often these positive and negative impacts of a technology are not fully seen by their inventors. Monks who invented the clock in the Middle Ages to add precision to their daily prayers in service of God did not realize that their invention would end up being a major instrument in the service of Mammon by regulating work. The inventor of the stethoscope did not foresee that physicians would lose their capacity to listen to patients as they increasingly relied on technical instruments interposed between them and human beings. Inventors of

computer networks did not foresee that pornography would be the major content traveling on their information superhighway.

Second, technology in the modern world displays the character of a necessary, almost deterministic force. Technological developments create technological problems which require further technological responses *ad infinitum*. There has been a qualitative shift from earlier eras in which specific tools and techniques were developed through the freely chosen creativity of human beings to meet specific, limited objectives. Technology now obeys its inner logic of development as rigorously as we used to think that nature obeyed its own laws. This necessity is especially visible in a larger view of the technological complex as a whole. "If it can be done, it will be done; indeed, it must be done." Technology carries its own imperative to further development. Who today can oppose technological expansion and development?

Third, technology is universalistic. It invades every area of the world and every aspect of human existence. This is what Neil Postman calls "Technopoly," technology as a monopoly over all human affairs. Part of what this means is the geographic universalization of technology. Every corner of the world is affected by technological intervention. Global development means technological development. Traditional ways of agriculture are replaced by technological ways. Traditional forms of governance must be replaced by bureaucracies. Those who resist are condemned to live at best as an underclass, at worst as the refuse dump of the globally dominant technological complex.

But technological universalism also refers to the invasion of technology into every aspect of our lives. Politics and campaigning is technicized; sport and entertainment; public relations and fund-raising obey technological laws; churches employ public relations techniques to build their memberships; even prayer and spirituality is analyzed and taught as a set of rational techniques for manipulating God and the self; even sexuality, the last domain of the truly mysterious, has never been so technicized---not just in terms of reproductive or prophylactic technologies but in the technical analysis of the sex act itself. Our physical space is dominated by technological instruments; our psychic space is dominated by the method and values of technology: rationality, effectiveness, measurable success.

Fourth, technology now acts as the sacred in modern life. The sacred, the divine, the god, is whatever occupies the very center of our existence, giving our lives unity, direction, and meaning. The traditional gods have been toppled and replaced by technology. Traditional gods may receive lip service in church or in private conversation but in practice, on Monday morning if not before, it is Technology that is served. It is in Technology that we hope for our future and even for our present day salvation. When something is omnipresent, omnipotent, and not subject to criticism, when it inspires and compels our sacrifices and praise, it is serving as a god. But is Technology an adequate god? or is it a bogus pretender to divinity that needs to be demythologized and desacralized? Is the Technogod ultimately a liberating, redeeming god or an enslaving one?

Another way to express this is by saying we have moved from technology to technologism. Adding that "ism" is a way of saying that technological thinking and values have become the foundation, the worldview, the criterion of all judgment. The potential goodness of technology is radically in question when it develops into technologism as an all-embracing intellectual, moral, cultural and spiritual identity.

The question is "who or what is in control of our lives?" Have we become mere "tools of our tools?" Have we in effect made Technology the god of our civilization? Gods always demand some kind of worship in return for the salvation, meaning and direction they offer. The worship demanded by Technology has meant lives of frantic absorption into the latest technological thing---lives dominated by the products and the problems of technology, learning dominated by the acquisition of technological literacy and competence.
We should evaluate this covenant with technology by asking what has been necessarily excluded? What has been lost is the value of the inefficient, the nonrational, the aesthetic, the spiritual, the traditional. Love and beauty, for example, are prostituted and lost when they are made to serve a technological calculus. Relationships with family members and colleagues are seriously distorted when rationality and efficiency are the criteria of value.

5. Four Basic Responses to Technology

Our response to this kind of critical questioning of modern technology will usually take one of four forms. First, some will <u>deny</u> that there is a problem and protest that modern technology is more or less desirable and under control. This response is partly a product of <u>exhaustion</u>. We simply don't have the time or energy to stop and take a critical look at the broader dimensions of what is happening to our human life. We are too busy. It is also true that our technological society provides innumerable distractions and opiates to its members. Denial is also a product of <u>a lack of perspective</u>. Most of our technologically trained population at large have little significant background in history, not much more in philosophy or theology, and little significant non-western cultural exposure. Yet these are precisely what we need for a critical perspective. We have much knowledge of a certain type, but little <u>wisdom</u>. Hence we tend to take our western technological perspective for the only one, though it is by no means the only perspective in the western tradition, to say nothing of the rest of the world.

A second response allows that, while we have some serious dysfunctionality in our technological civilization, we only need more and better technology to resolve these problems. This is the <u>technophile</u> response, the reaction of lovers of technology, of <u>true believers</u> in technology. The priests and evangelists of technology want to get everyone on the information superhighway---with an integrated office system, linked to our home entertainment and work centers, and to our portable cellular phone and laptop computer. Thus the technological environment becomes essentially airtight and everyone is technologically linked to everything at every moment. But <u>where is this super highway going</u>? We have started off at a vast and accelerating pace, but where are we headed?

Opposite the technophiles are a third group, the <u>technophobes</u>. In the Industrial Revolution these were the Luddites, the band of protesters who wished to smash the machine and return to a more pastoral existence. The Hippies of the Sixties made a somewhat similar call to stop the machine and get back to the garden. But romanticism and adolescent anger make a flimsy foundation for resistance, as the subsequent absorption of the Sixties generation into the Yuppies has demonstrated. Technological reactionaries are doomed to be the colorful feather in the cap of the technological giant: a dash of color on a giant who moves forward unimpeded.

A fourth response counsels <u>resistance and revolution</u>. This response calls first for a profound <u>awareness and critical analysis of our reality</u>: the <u>reality of the technological maincurrents</u> under the surface of the ocean of our existence, and the <u>reality of our flesh-and-blood neighbors</u>. For such awareness we must stop relying on *USA Today* and *CNN*-type newsbytes---and invest our time in broader, deeper works of cultural criticism, including biblical, historical, and multicultural perspectives which will give depth and breadth to our analyses of social and cultural reality. Along with this we will need to turn off the distractions and carve out time for human relationships with a few people in our living and working areas. We must learn how to listen, how to be quiet, how to reflect deeply, how to care.

With this growing awareness, then, we need to <u>resist</u>, indeed, to <u>refuse</u> the necessity, universality, and divinity of Technology in our life and work, "just saying no" to technology at decisive points. But gods don't easily vacate their thrones. To dethrone the old we need to install a more appropriate one. Some would call for resistance in the name of Humanity. Our thinking, living, working and playing can revolve around the <u>sacredness of human life</u> and of the earth and universe in which, and with which, we flourish or come to grief. Concretely this means that people are not reduced to statistics, that intelligence is not reduced to IQ numbers, degrees held, or genetic maps, that this living student or friend before me is sacred, and is more important in his or her living wholeness and mystery than any rational calculation could ever account for. We need to <u>replace technologism with a robust humanism</u>.
Christians, of course, would argue that the strongest foundation on which to base such a humanism, and from which to resist Technologism or any other false gods, is a <u>theological</u> one in which the transcendent God who created the universe and humanity within it is invited back into our sacred space. We would say that humanism is true and good because God has created humans in his own image. Technological civilization tends to promote uniformity and reduce individuals to faceless atoms in a mass society. Biblical people would say that to mistreat or undervalue a person is to mistreat an irreplaceable child of God. To exploit and abuse the earth and the universe is not merely a technological dysfunction but a serious sin against God and his creation.

   Resisting technology as a Master and a pretender to the god place in our lives can thus proceed from resistance to a revolution in values that rebuilds authentic individuality and community life---a life in which we do not smash the machine but we do question it, appraise it in reference to our human and spiritual values, and then sometimes say "yes" to its deployment as servant in our life and work, and sometimes we say "no."

6. The Impact of Technology on Theology and Religion

Without any doubt the development of certain technologies has served theology and the religious life in impressive ways. Communication techniques, most notably translation techniques and the printing press, have made possible a relatively inexpensive, massive diffusion of the Bible into the hands of the people, bringing new spiritual life to multitudes. It has also tended to move authority into the hands of literate, popular masses, away from hierarchies and elites who alone previously had access to Holy Scripture. Better transportation has facilitated possibilities for gathering together for worship, witness, learning, and service. Radio, television and other media have multiplied the potential exposure of masses of people to things theological and religious. Organizational, public relations, and therapeutic techniques have contributed to the effectiveness of some aspects of religious life. Political techniques are now being used by various religious groups (e.g., the "religious right") to increase their social impact, for better or worse.

While noting the benefits, though, how do we respond to the lies, half-truths, manipulation, and corruption which is also technologically foisted on a gullible audience? Technology has vastly increased the potential impact of religious hucksterism and charlatanism. This must not go unanswered. And how should we evaluate the impact of the technological medium on the life and message it is intended to serve. What is lost when the dynamic, personal character of the Christian Gospel is replaced by the passive, depersonalized character of religious television watching? What is lost when pastoral searches, evangelistic campaigns, fund-raising campaigns, and pastoral care are primarily structured by technobusiness models and methods?

Technology as a worldview and intellectual paradigm tends progressively to put in question and then marginalize or exclude the traditional, the inefficient, the unquantifiable, the nonrational, and the transcendent. Individual techniques and technologies need not necessarily have this exclusionary impact. But we live in the era of technologism, of the global technological ensemble, of technology as infrastructure and intellectual/spiritual paradigm. We must be aware and vigilant.

7. The Theological Critique of Technology

Any theological critique of technology must return to our biblical sources. There we find that technology is an expression of divinely created human creativity and imagination, of doing and making good and helpful life-enhancing things. Technology and engineering are the expression of our human imagination and creativity in forming and transforming nature for practical purposes and uses.   While there is plenty of biblical material emphasizing the spiritual and inward over the material and external, this is balanced by passages affirming the concrete, external world of things. For example, the Old Testament describes in detail the materials, dimensions and building techniques for Noah's ark, Moses' tabernacle and Solomon's temple. In a classic text, a master craftsman, Bezaleel, is sent to Moses by the Lord who says "I have filled him with the Spirit of God, in wisdom and understanding, and in knowledge, and in all manner of workmanship" (Ex. 35:30ff.).
A major problem arises for biblical theology, however, when we treat technology as sacred, when it moves to the center of our lives, receives our sacrifices, bestows meaning, direction and significance on what we do. If it is omnipotent, omniscient, omnipresent, and the producer of awe in our lives, it has displaced God and we are guilty of idolatry. We have begun to worship the work of our hands. We are guilty of pride and of exalting the creature over the Creator.

The root problems are idolatry and autonomy. What should be carried out in a living relationship to God, subordinate to the character and plans of God, is now autonomous, subject to nothing except its own internal imperatives. Such technology carries with it no respect for nature, social tradition, religious authority, the absurd or paradoxical, the weak and unproductive. And yet all of the foregoing are part of the world God has created and wishes to redeem.

8. Technology and Creativity

If we begin with biblical theology and attempt to sketch out a theology of technology, the original and true sources of the human technological imagination are described in the early chapters of Genesis. Recall the accounts in Genesis 1-2: God created; God made the heavens and the earth. God gave shape, order and design to what was "without form," he filled what was "void" or empty, and illuminated the darkness. What God made, he then described as "good," "useful," and "pleasing to the eye." What God made was diverse, complex, and awesome in scope. It was orderly and bounded but also set free.

We human beings are made in the image and likeness of precisely this creating God---and the first and basic source of our own creativity is this fact of our nature. But, human creativity and technology are not just an exhibition of our nature---they are also a response to the command and invitation of God. It is the freedom of obeying God's word that underlies technological activity in a biblical worldview. God commands us: "Be fruitful and multiply," "Fill the earth and subdue it," "Have dominion," "Till and keep the garden," "Name the animals." At its best then, our technological creativity continues to bear witness to God's creation, i.e., when it combines innovation harmoniously with what already exists as good, when it contributes both beauty and utility to the world, when it allows both individual uniqueness and partnership/community to flourish.

But a crucial additional consideration is that in a biblical worldview our technological and creative work is bounded in four ways: First, it is launched by the Word of God. Creation begins when God says "Let it be..." Human work begins when God says "Be fruitful ...fill...subdue... till...keep... name." It doesn't begin out of idle curiosity, boredom, greed, or lust for power. Second, it is bounded temporally by the sabbath: God rests on the seventh day and so do those made in his image. There is a time to cease from technology. Third, it is bounded spatially in that there is a tree at the center of the garden that is not to be harvested for food; a limit is respected; it was a tree that could be harvested but must not be. There are limits which technology should not transgress.

Finally, human creative work was bounded ethically in that the prohibited tree was the "ethics tree," the tree of the knowledge of good and evil. Humans were to live and work in relationship to the God who sees and names the good---they were not to try to take this ethical knowledge for themselves outside of this relationship with God. The world is marked by God's goodness as the fundamental category of our ethics. We must resist the urge to be the masters of our own goodness and righteousness. All technology must be subjected to the ethical judgment of God.

9. Redemptive & Eschatological Technology

The "fall" occurs when man and woman misuse their freedom, breech the boundaries, and grab for the fruit of the "ethics tree." The human situation changes dramatically. Out of fear and shame they run and hide from God. They bring a curse on themselves and on the earth. They are alienated from God, from the earth, from each other, from themselves. They are evicted from the garden and cannot go back. Technology is itself now fallen, sometimes perverse and violent. The boundaries are no longer easy to see; a Dachau is built next to a Munich by the same technology. Technology threatens to become idolatrous and autonomous.
Because of the Fall, the creativity motifs in a theology of technology must now be caught up within a theology of redemption. Redemption means that in a fallen, broken world we are not able to act naively. We must take account always of the potential for deception and destruction in our work. Redemption means that our work (our technology) must aim at healing what is hurting, repairing what is broken, liberating what is in bondage, preserving what is degenerating, conserving what is disappearing. Creativity, illuminating, ordering, filling, naming---these original motifs of creation continue, but the arena is no longer pure and innocent. Sacrifice, servanthood and humility will need to characterize a redemptive technology.

Our theological perspective will require an eschatological technology. Technology is a development and perfection of means. But in our civilization, the means have become ends in themselves and are developed without adequate attention to the proper ends of human life. Christian life is eschatological life: it is life lived in expectation of the coming End, the consummation of God's kingdom and purposes. The Holy Spirit is given as the pledge, the down payment, on our future inheritance. Christians lean

toward God's future. They live "in the night" but "as in the day," "putting aside the deeds of darkness and putting on the armor of the light" (Rom. 13:11-14). Thus, our technology requires a rigorous assessment of the true ends of human life. In the light of these ends, specific technologies can be assessed and evaluated. Our means must not be self-justifying. They must be justified by God's end, and then they must exhibit the character (not the contradiction) of that End.

10. Faithful Technology

Our challenge is to recover the notion of fidelity. Fidelity means faithfulness, loyalty, steadfast commitment, clinging and attaching yourself to something. The most important exercise of such fidelity is toward God and his Word. After the fall of Adam and Eve, God continues to speak to humankind even though there are barriers between them which make the process of hearing God more difficult. Often the word of God takes the form of a question: e.g., where are you? what have you done? where is your brother? who do you say that I am? Faithful technology will hear God's commands and his questions, inviting them, seeking them as not only the starting point of our technological activity but its boundary. It will seek to contribute to God's purposes for life in the world, trying to discern and respect appropriate limits and boundaries in space and time.

Fidelity to God means fidelity to the Good, trying to hear God's ethical judgment on our projects instead of pronouncing our own. It means overcoming evil with this good, contributing to this good. Fidelity to God means fidelity to the Creator but it also means fidelity to the Redeemer. Faithful technology will not just be fruitful, fill, subdue, create, name, till, and keep---it will go into all the world, love neighbors and enemies, heal the sick, set free the captives, comfort the lonely, and welcome the children."

Fidelity also must govern our relationships with others. We are created not to be isolated individuals but to be in relationship to others; "it is not good for one to dwell alone." Faithful technology will not subordinate people to technique. It will express faithfulness to partners, neighbors, friends, and fellow humans. It will promote technology on a human scale. It will not reduce people to technical categories, not try to adapt people to the requirements of technology. It will invite others, community, to help rebuild the boundaries and discern and support good technological work.

Our modern choices with respect to technology are symbolically represented by the Tower of Babel and Abraham's altars (Gen 11-12). The technology of Babel intends to make a name for the self, make security for the self, breech all limits, choose and occupy its own chosen place. But the technology of Abraham builds an altar for God, lets God care for our reputation, protect, and guide us to the place he chooses. As Christians we know we can't go back to Eden. We must go forward either to Babylon, where Babel's project is fulfilled, or to the New Jerusalem where Abraham's project is fulfilled. The afterlife is depicted in the form of a city, not a new garden of Eden, into which the nations bring their glory. We must pray and work that something of our own generation's technology might be worthy of a place in that city of God.

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