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Foundations of Responsible Technology

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As followers of Jesus Christ,
living in this world,
which some think they can control,
but which others view with despair,
we declare with joy and trust:
Our world belongs to God!

Thus begins the preamble of *A Contemporary Testimony*; a new confession, formulated by the Christian Reformed Church and approved by the 1983 Synod for provisional "use in worship, education, and outreach." Its basic theme expresses the biblical basis on which we can begin to approach the problems of contemporary life. And that includes technological problems.

In this brief paper I would like to outline a biblical framework which will enable us to

answer the question, "What is science and technology?"; and then use that framework to look more closely at technology. Let us begin with a few verses from the book of Colossians. In these verses, Paul is describing Christ. What is unique is the detailed emphasis Paul places on the relationship between Christ and his creation.

He is the image of the invisible God, the firstborn over all creation. For by him all things were created: things in heaven and on earth, visible and invisible, whether thrones or powers or authorities; all things were created by him and for him. He is before all things, and in him all things hold together. And he is the head of the

body, the church; he is the beginning and the firstborn from among the dead, so that in everything he might have the supremacy. For God was pleased to have all his fullness dwell in him, and through him to reconcile to himself all things, whether things on earth or things in heaven, by making peace through his blood, shed on the cross.

(Colossians 1:15-20)

What strikes us first in reading this passage is how dependent creation is. God is the origin of everything that exists; he created it by his Word, the Lord Jesus Christ; and he sustains it by that same Word. There is nothing in all of creation that does not owe its existence to the Word of God. There is nothing that exists *on its own*, apart from God's calling it into existence by his Word, in order to serve him. We can get a better understanding of this service that creation renders its Creator if we utilize the concept of *meaning character* as defined in the Philosophy of the Law Idea.¹ Creaturely existence *is* meaning. It is non-self-sufficient, in that for its very existence it must refer back to its Creator. And this referring-back to the Creator is the service which the Psalmist describes in Psalm 19 when he writes, "The heavens declare the glory of God; the skies proclaim the work of his hands"; or in Psalm 119 where we read:

Your word, O Lord, is eternal; it stands firm in the heavens. Your faithfulness continues through all generations; you established the earth, and it endures. Your laws endure to this day, for all things serve you.

(Psalm 119:89-91)

All of what is said about the creation applies as well to human life. First and foremost, life is service. That service ought to be loving when it is done for God and for our fellow humans, and stewardly when it

applies to the rest of creation. The nature of humankind as the creature who bears God's image, and who has been placed in the positions of vicegerent and steward over the creation, is perhaps best expressed in Psalm 8, where we read:

When I consider your heavens, the work of your fingers, the moon and the stars, which you have set in place, what is man that you are mindful of him, the son of man that you care for him? You made him a little lower than the heavenly beings and crowned him with glory and honor. You made him ruler over the works of your hands; you put everything under his feet: all flocks and herds, and the beasts of the field, the birds of the air, and the fish of the sea, all that swim the paths of the sea.

(Psalm 8:3-8)

The significance for technology of what has been said thus far is simply this: technology cannot be a power or force that exists apart from God or apart from humans who are image bearers of God. If technology exists, then it exists because it has been called into being by the Word of God, and its purpose in existing is to serve him. Technology is not, however, a *thing* in the same sense that a rock or a tree is a thing; rather, technology is an activity, a human activity, characterized as service, and directed by norms. Secondly, since technology is non-self-sufficient, and since it, like all other human activities, exists to serve the Lord, it can never be seen in total isolation from the rest of creation. It must be seen as one thread among many in the great tapestry of creation, carefully interwoven with such other threads as physics, music, sociology, mathematics, and poetry.

Since every human activity is a normed activity, characterized as service to the Lord, the fall of humankind into sin is all-pervasive. It is our turning away from God,

seeking meaning in ourselves or in creation, and so bringing down on ourselves and on all of creation the curse of God. Because the fall affects all of life and all of creation, it manifests itself in our technological activity just as it does in our economic activity, our ethical activity, or any other area of life. The Reformed notion of the antithesis is helpful here. While we have the Holy Spirit to guide

manifestation of the antithesis, is that it divides the human race into two parts, the body of Christ, and those outside of that body to whom Christians are called to bring the gospel. In Augustinian terms (which are helpful in avoiding the pitfalls of individualism) we might speak of the City of God and the City of Man. What are the implications of this expression of the antithesis

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and empower us, the power of sin is still present in the world, cutting through every area of life. This gives life an *either/or* character. Either we are serving the Lord obediently in our words, thoughts, and actions, or we are serving some idol. Either we are seeking the Kingdom of God and righteousness, or we are battling against it. Technology is therefore carried out either in obedience to the Word of the Lord for technology or in disobedience to that Word. Obedient, or normative, technology discloses the full meaning of the developing creation by enabling it to function in all its complexity according to God's will. Disobedient, or antinormative technology, results in disruption of the meaning of creation. Some obvious examples would be a bridge that fails catastrophically due to shoddy design, an automobile that continually damages the environment, or computer game software which is designed to sell rather than serve, and by its addictive power proliferates ignorance.

An important result of the fall, a

for technology? To help answer that, let's look carefully at what the Word of God has to say to his people engaged in technological, or any other kind of communal activity. In I Peter 2 we read as follows:

You are a chosen people, a royal priesthood, a holy nation, a people belonging to God, that you may declare the praises of him who called you out of darkness into his wonderful light. Once you were not a people, but now you are the people of God; once you had not received mercy, but now you have received mercy. Dear friends, I urge you, as aliens and strangers in the world, to abstain from sinful desires, which war against your soul. Live such good lives among the pagans that, though they accuse you of doing wrong, they may see your good deeds and glorify God on the day he visits us.

(I Peter 2:9-12)

What does it mean to be a "chosen people," living "as aliens and strangers," in the area of technology? A few specific suggestions may be helpful here. If a colleague of mine has reservations about doing his doctoral work in theology at any but a Reformed, biblically-based institution, then I should likewise have equal unease at the prospect of pursuing a doctoral degree in engineering at a secular university. If that same colleague cannot rightfully envision himself teaching at a non-Reformed seminary, then ought I not have similar problems at the thought of teaching at a large, secular university? And if there is truly a need for Reformed theological seminaries, then should there not also be a need for Reformed engineering graduate schools?

To show that this is not merely an academic concern, consider what it might be like if Christian technologists, businessmen, and workers practiced what in their hearts they believe. Anyone who has lived a winter in Northwest Iowa knows that energy is needed to heat buildings, and that its cost is steadily rising. Such a need, assuming the need is genuine, ought to be sufficient to warrant the organization of servants who have both the ability to help meet that need and the interest in doing so. In our culture such an organization is usually referred to as a business or a corporation. Let's imagine that such an organization is formed and let's imagine it's called *Sioux Solar Technology*.

In 1955 a group of Christians recognized a need in the Northwest Iowa area for a college. These servants organized and the result was Dordt College. At the risk of being accused of reductionism, I would like to urge that there are strong parallels between the setting up and running of a Christian business enterprise and the setting up and running of a Christian college like Dordt.

First, both institutions, Dordt and Sioux Solar, exist for the purpose of serving, of meeting a need, not for the purpose of making a profit. Certainly they must be financially responsible. But their goals are to meet a need; therefore the financial side of the in-

stitution exists to meet the overall goal: service, not profit.

Second, the wages paid to the workers, whether they be engineers, administrators or laborers, ought to be such that they are enabled to better fulfill their calling in the organization and in their families. \$900,000 bonuses or large salaries will be seen as detrimental to the purpose of the organization, as will minimum wages that barely allow the worker to survive.

Third, there ought to exist a board of directors chosen from the community of Christians who are especially interested in the work of the organization and who support it with their donations.

And last, while the products of the organization such as solar collector systems, electric powered vehicles, or simply energy services, ought to be sold at a reasonable and just price, there ought to be funding available to present grants to those in need who cannot completely afford the price of the product or service.

These are only some rough suggestions, but I think they might stimulate some thinking about what it might mean to be a called-out people in the area of technological industry.

Let's return to those verses from Colossians and focus on just the last two:

For God was pleased to have all his fullness dwell in him, and through him to reconcile to himself all things, whether things on earth or things in heaven, by making peace through his blood shed on the cross.

The kind of dualistic world-and-life view which divides reality into sacred and secular is deaf to the Word of the Lord as presented in these two verses of Colossians, and completely misses the cosmic implications of Easter as well as the calling we have as agents for the reconciliation, the redemption of creation. This doctrine of *cosmic redemption* implies much regarding our understanding of the fall. While the fall has affected

every area of human life and of creation, it has not been able in any way to change God's Word for his creation. His sending his Son is the evidence of his love and continued faithfulness to his creation. He has not given his creation up totally to death and decay. He still calls his creation (of which humankind is still head) to serve him. He continues to call us to live in obedience to him according to his Word. He continues to call plants and animals to exist according to his Word for those creatures. He continues to call inanimate matter to exist according to his Word for inanimate matter. In other words, while the fall has affected all of creation's ability to respond in obedience to the Word of the Lord, redemption through Jesus Christ assures us that the Lord is nonetheless faithful to his Word, and will uphold the creation until that day when Christ returns, the judgment will occur, the New Jerusalem will be ushered in, and the curse will be removed.

What this means for technology is that we can have confidence in our work of studying and unfolding the creation; confidence that what we design and build today, in obedience, will function as well tomorrow. We can have confidence that if we send men into space today, based on our knowledge of physical laws, that they will return safely tomorrow, not because the physical laws are autonomous—*facts*, but because the Lord is faithful to his creation. It also means that the scientific and technological work of non-Christians will have a certain validity despite the apostate heart direction which drives it. Unbelievers, in spite of themselves, must in many ways conform to the Word of the Lord for science and technology if they are to succeed; for our world does, indeed, belong to God.

Paul expresses the doctrine of cosmic redemption very clearly in Romans chapter 8:

The creation waits in eager expectation for the sons of God to be revealed. For the creation was sub-

jected to frustration, not by its own choice, but by the will of the one who subjected it in hope that the creation itself will be liberated from its bondage to decay and brought into the glorious freedom of the children of God. We know that the whole creation has been groaning as in the pains of childbirth right up to the present time. Not only so, but we ourselves, who have the first-fruits of the Spirit, groan inwardly as we wait eagerly for our adoption as sons, the redemption of our bodies.

(Romans 8:19-23)

It should be clear from this passage and from the one in Colossians that we have an important role to play in the redemption of the creation. As members of Christ's body, we are called to be agents of *reconciliation*, working against the powers of darkness, enabling the creation to be what God calls it to be. A Christian technologist is then a representative of Christ, making concrete his redemptive work in the creation. This means developing the creation according to God's Word, and disclosing the meaning in creation.

Because of the fall, the work of the Christian will not only include caring for creation, developing it, and disclosing its meaning; it must also include *healing*. The words of the prophet Isaiah, read by Jesus when he opened the Scriptures in the temple, have obvious contemporary application when we think of the inequity in resources and the accompanying suffering that prevails in so many parts of the world today. However, those words ought equally be seen as relevant to our contemporary calling in the area of technology. From Isaiah chapter 61 we hear the prophet say:

The Spirit of the Sovereign Lord is on me, because the Lord has anointed me to preach good news to the poor. He sent me to bind up the brokenhearted, to proclaim freedom for the

captives and release for the prisoners, to proclaim the year of the Lord's favor and the day of vengeance of our God, to comfort all who mourn, and provide for those who grieve in Zion—to bestow on them a crown of beauty instead of ashes, the oil of gladness instead of despair. They will be called oaks of righteousness, a planting of the Lord for the display of his splendor. They will rebuild the ancient ruins and ruined cities that have been devastated for generations.

(Isaiah 61:1-4)

And lastly, our work in technology must include *redirection*. When Jesus told us to “go and make disciples of all nations, . . . teaching them to obey everything. . . ,” he meant more than just the “saving of souls.” We must be *signposts of the Kingdom* in the area of technology as in every other area of life, pointing the way of obedient, normative development of the creation.

It is important to distinguish between technology and science. Specifically, it is important to see that the common notion of technology as *applied science* is a serious error which accounts in part for many of our modern technological difficulties.

Science is characterized by abstraction. Science is properly carried on when a part of reality is abstracted from the whole, and studied in isolation. For example, when studying gravity, Newton had to isolate the physical aspects of, let us say, the apple and the moon, whose respective motions he was trying to understand in terms of one underlying principle. He had to ignore the biotic or economic aspects of the apple, as well as the aesthetic aspect of the moon. Science uses the process of abstraction in an attempt to discover (or formulate) laws for reality.

Technology, on the other hand, is more characterized by integration. On the basis of scientific laws, technology tries to pull together (integrate) all that is understood about a total situation in order to solve a

problem. This results in the design, which when fleshed out has the effect of giving very concrete form to creation.

This distinction may not seem terribly important on the surface. However, the practical consequences of reducing technology to science are quite serious. A technology that is reduced to applied science is an *abstract* technology. It is a technology that views only part of the creation. It ends up solving only abstract problems or creating products for abstract worlds. It is an abstract, scientized, and hence antinormative technology which designs chemical fertilizers to increase crop yields, but ignores the poisoning of ground water by those same fertilizers; or which designs game software to have the maximum psychic appeal to 12-year-olds so that the sales and profit are maximized, but which ignores the pedagogical and ethical implications of such psychic manipulation.

Before trying to formulate a definition of technology, let us examine very briefly the phrase “good engineering” or “competent technology.” We are in danger of becoming guilty of a form of dualism if we take the commonly held view that people with the necessary technical skills can do competent technology, regardless of their faith commitment. Certainly a humanist or a pagan can design a structure that can be described as economically normative (in the sense that it is not overpriced or wasteful of materials), or physically safe (in the sense that it will not fail under stress). And any technologist with some aesthetic sensitivity can design a structure that looks good and is compatible with its aesthetic environment. But here we have merely been abstracting aspects of the overall quality of the product. What about the quality of the work as a whole? May we not suggest that “good technology” to be truly good must bear something of the quality that we read about in Exodus 35 where Moses said to the people of Israel,

See, the Lord has called by name Bezalel the son of Uri. . . and he has filled him with the Spirit of God,

with the ability, with intelligence, with knowledge, and with all craftsmanship, to devise artistic designs, to work in gold and silver and bronze, and for carving wood, for work in every skilled craft. And he has inspired him to teach. . . He has filled [him] with ability to do every sort of work done by a craftsman. . . .

(Exodus 35:30-35)

Good technology must be an appropriate response to God's work in Christ, and anticipatory of the New Jerusalem. It should be both good in the narrow sense (e.g. an economically well-designed structure) and in the cosmic sense, i.e. it honors and serves the Lord.

In summary, it should be clear that technology is first of all a human activity. It is not something that exists apart from man. It is not an independent power or force which is capable of enslaving man. (In fact, the only slavery that exists in connection with modern technology, arises as a result of man enslaving himself.) As with all activities, technology is normed. There is obedient technology and there is disobedient technology.

Technology is an activity where man is called to unfold, develop, heal, and care for the creation. More specifically, it involves giving form to creation according to a plan and with the use of tools. The plan is a symbolic representation of the end product and the process by which that product is to be achieved. It is also referred to as the *design*. Tools are devices which allow humans to extend their physical and mental efforts beyond the capacity of their bodies or brains. A milling machine and a computer are two examples.

With this in mind, we might formulate the following definition: Modern technology is the human task of freely giving form to creation by means of creating a plan on the foundation of science and implementing that plan with the use of tools.

Finally, let us consider the role of

technology in preparing for the Lord's return. We need to develop a perspective that is not confined to the tiny time frame which we currently occupy. Humankind has been unfolding and developing creation for thousands of years. In the past there have been periods when God's people have made significant impact on culture (e.g. the period of classical music dominated by Bach and Handel). If the Lord does not return for another thousand or so years, there is every possibility that his people can influence technological culture. If that be the case, we ought to look upon ourselves as being called to begin that process.

On the other hand, if the Lord returns tomorrow, many good Christians will be in for a very pleasant surprise. For the New Jerusalem of the Scriptures is anything but a cloud on which we float all day while playing a harp and singing hymns. The New Jerusalem is a city into which, so we are told in the book of Revelation, the kings of the earth bring their treasures. And it is the people of God who will inherit that city and be called to responsible service in it. The New Jerusalem means the culmination of the Kingdom of Christ. While there is an obvious discontinuity because of the elimination of the curse and sin, there is clearly a continuity with our lives now. Our bodies will be raised, and we will spend eternity in being the creatures we have been called to be. We may legitimately expect that technology will be part of eternity. The unfolding of the Lord's new creation, to his glory, is the appropriate task of his image bearers.

So the work that we do now in technology ought to be a foreshadowing of the work we will do in eternity. For our work is an integral part of our present world and the world to come. And as the *Contemporary Testimony* so eloquently states: *Our World Belongs to God*.

Endnote

¹H. Dooyeweerd, *A New Critique of Theoretical Thought*, Vol. I, p. 4.