

Technological Futures and God's Sovereignty: How Far Will We (Be Allowed to) Go?

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Introduction

The historical impetus for the practice of classical Christian faith has always been *fides quarens intellectum*—faith seeking understanding. Few scholars in evangelical circles would contest this as a given. The arrival of the “age of biotechnology,” however, has thrown in a number of biotech twists and turns against the forging of an evangelical path guided by such a tried and true maxim. To navigate this course, Evangelicals need not only a healthy dose of cultural awareness but also a willingness to engage in logical analysis. On the one hand, there is the “What has God wrought?” spirit of sci-fi wonderment when looking at technology’s accomplishments. On the other hand, there is the “How far, God, will you allow this to go?” inquiry at the other end of the spectrum.

Loosely defined, *biotechnology* is a term referring to the host of biological/genetic techniques utilized for purposes of alleged human beneficence. Biotechnology as a contemporary discipline, then, is replete with complexity and rapid advance, making it difficult to become acquainted with, much less plumb the depths of, each new technological innovation that inevitably comes along. The word *genethics* is also used frequently and serves as a clever synonym for biotechnology, but due to its very etymology (gene + ethics) the word itself seems to give more credence to whatever ethical considerations are involved.

Years ago one writer related, “It is now becoming possible to insert, recombine, rearrange, edit, program, and produce human and other biological materials just as our ancestors were able to heat, burn, melt, and solder together various inert materials.”¹ Today such a description is *passé* when juxtaposed against present-day genethics programs and their plans for additional research.

Purpose of the Essay

The purpose of this essay, above all else, is to inform and raise questions for further study. Christian faith should always seek to understand the technocultural scene of which it is a part, whether on the order of bioethics, biomedicine or biotechnology *per se*, or at the level of more commercially creative, profit-making technologies meant (with the best of intentions perhaps) to make our lives easier, more productive and more fulfilled. But since there is great value in open-mindedness when pursuing God’s truth at any level, Christians, on the one hand, should avoid walking along the well-worn path of naïve obeisance to tradition, if that tradition should become blind to truth. The pages of Mary Shelley’s macabre story *Frankenstein* captures the provincial essence of this epistemic/ethical ease: “Learn from me, if not by my precepts, at least by my example, how dangerous is the acquirement of knowledge and how much happier that man is

who believes his native town to be the world, than he who aspires to become greater than his nature will allow.”² On the other hand, if too much open-mindedness should lead individuals to accept uncritically outrageous claims made in the name of science—or better, technology—then this is an equally misguided path for Christians to follow. For example, it is doubtful whether thinking Christians would ever adopt the presumptuous position held by Kevin Warwick, cybernetics professor at the University of Reading, United Kingdom, that cyborg/human mergers—the building of “metahumans”—is the only sure way to preserve the future.³

Are Christians ready, then, for the biotech future, however it may actually play out historically? To ask the question is to elicit even more inquiries, but we should pursue a balance between a numbing fear of the biotech future’s potential for evil, on the one hand, and whether a sufficiently Christian philosophy of science and technology is actually in the offing on the other.⁴ The development and proliferation of Christian concerns along these lines is thought by some to be falling woefully behind schedule, a schedule apparently dictated by the calendar of what some also perceive as a soon-to-be, globally-extant technocratic society.

A Question of Balance

While adhering tenaciously to an “All truth is God’s truth” *modus operandi* as a subset of the *fides quarens intellectum* approach to faith, Christians need to avoid the two extremes of the Shelleyesque “I don’t need to know about anything else” provincialism and the Warwickian “Let me show you how to improve the human race” hubris. To take either position rather

than an explicitly Christian middle ground only reflects how *not* to engage the cultural milieu with respect to the various biotech explorations in question. Neither ignorance nor arrogance is bliss. To interact Christianly with a ubiquitous technoculture is to explore not only its assumptions and applied techniques for the sake of better understanding its framework but also to provide a set of deeply probing questions for the sake of finding a balanced Christian position. Hence, questions should arise spontaneously at this stage.

For example, when, where, how often, and to what degree should Christians serve as co-workers with God for technological advance, especially in light of the initial “Subdue the earth!” mandate of Gen. 1:28? When, where, how often, and to what degree are we actually refashioning or perhaps unknowingly manipulating God’s created order wrongly through various technological discoveries? Why are biotech and commercial tech innovations seemingly without visionary limits? Will the research programs and profit-making ventures they push ever become economically affordable for the masses?⁵ Has society as a whole and Christian society in particular been fattened for the techno-slaughter, so to speak? What will be the impact of biotechnology, communications technology, etc., on the Christian concept of humans as primarily spiritual beings? Must the techno-future lapse into insidious and pernicious threats to human dignity? Just how close to 1997’s genetic-flick “Gattaca” might we get?⁶ How did the biotech milieu happen upon us so quickly and so unawares? Posing questions like these gives us pause, clearly demonstrating the need for a balanced Christian perspective regarding what the

specific bio/commercial tech issues of the new millennium will prove to be at the end of the day.

Ellulian Insight

Taking his cue from the biblical parable of pouring new wine into old wineskins, Jacques Ellul exhorted us a half-century ago to pay close attention to the newly emerging techno-worldview, if only for the sake of discerning what cautionary measures should be taken when it appears as if one cultural worldview is on the verge of preempting another. Ellul states: "Technical invasion does not involve the simple addition of new values to old ones. It does not put new wine into old bottles; it does not introduce new content into old forms. The old bottles are all being broken. The old civilizations collapse on contact with the new. And the same phenomenon appears under every possible cultural form."⁷

Challenging dialogue, then, about such matters must be pursued. If we do not grapple constructively with the potential of a biotech takeover, we will be poorly informed and ill-prepared to cope with what we may find. Ready or not, Christian faith and its practitioners are being thrust headlong into the vortex of an exponentially changing technosociety in which the concept of technological stasis was seemingly cast aside decades ago.⁸ Will metro headlines one day read: "TECHNOLOGY PREEMPTS THE GOSPEL!" It behooves us as heralds of the greatest message to prevent or at least forestall this from ever occurring, barring the soon return of Christ to earth.

Items for Sale in the "Catalog of Biotech Advances"⁹

Probing questions and speculations

about technology's possible future direction aside, we now turn to a number of biotech ventures already underway for decades. Most of these have achieved familiarity within society, but for information purposes four "items for sale" will be sketched out briefly: reproductive technologies, human genetic engineering/recombinant DNA, human cloning, and transgenic hybrids.

Reproductive Technologies

Breakthrough reproductive technologies abound, but many are inevitably accompanied by troubling moral questions and sticky legal matters. Treatments for infertility since the 1970s include *artificial insemination by the husband* (AIH); *artificial insemination by a donor* (AID); *egg donation*, whether anonymous or not; *gamete intrafallopian transfer* (GIFT), where eggs are removed surgically and placed back in the fallopian tubes along with a copious amount of fertilizing sperm; *in vitro fertilization* (IVF),¹⁰ the famed test-tube or petri dish procedure; *embryo transfer*, when a donated egg is artificially inseminated inside the donor's body and then transferred to the uterus of an infertile wife; *zygote intrafallopian transfer* (ZIFT), similar to IVF but with the embryos being reinserted into the woman's fallopian tubes, creating better odds for implantation; *surrogate motherhood*, sometimes labeled as the "rent-a-womb" procedure; and *micromanipulation*, when an opening is made in the woman's egg for the sake of easier sperm penetration.¹¹

***Human Genetic Engineering/ Recombinant DNA*¹²**

Recombinant DNA is a field of genetic engineering involving the transfer of DNA (a gene or genes) from one organism to

another. This type of research is designed to develop means of permanently altering the genetic traits of plants, animals, or human beings. Hence, the subject or patient in question assumes new biological functions not previously realized.¹³

With genetic diseases afflicting literally millions of Americans, the medical call for genetic screening is not immoral or illegal *per se*. Screening for genetic disorders is meant to either reveal the presence of human genetic diseases in a population, or it can sometimes lead to establishing therapeutic programs to assist the same population. The dominant ethical question here is whether genetic screening should be made voluntary or mandatory. Two further components of human genetic engineering involve *somatic-cell therapy* and *germ-line therapy*, each touted by some as constructive medical venues for therapeutic advance or by others as likely medical outlets for the more questionable discipline of eugenics.¹⁴

By way of definition, genetically altering troublesome cells for the sake of a single individual's treatment is the substance of somatic or body cell therapy, whereas the more complex germ-line therapy involves altering cells in a way that passes on beneficial changes to succeeding generations. If germ-line therapy is effective on a widespread basis, then medical resources, it is believed, will be preserved and suffering on the part of future patients will be reduced or eliminated altogether because the disorders would have been corrected. The dominant ethical question focuses on what long-term consequences via unknown side effects there might be for coming generations. An aura of mystery still surrounds the use of germ-line therapy. Some oppose such tampering with genetic structures as

transgression into sole prerogatives of God.¹⁵ Others are content to ask profound ethical questions.¹⁶

Even now, however, gene therapies are being used to treat, if only experimentally, familiar diseases such as hypercholesterolemia, cystic fibrosis, and muscular dystrophy. If genetic links are clearly mapped out for those individuals susceptible to Huntington's disease, sickle-cell anemia, Alzheimer's, phenylketonuria, Parkinson's, diabetes, Tay-Sachs disease, or, say, colon cancer or obesity, the claim that humans are doomed to repeat the mistakes of previous eugenic eras is suspect. Rather, this approach to genetic therapy is surely a boon. In contrast, an overriding concern for the ethical consequences of utilizing *designer genes*—genes purposely manufactured for the sake of removing so-called "undesirable" traits and adding "beneficial" traits—is quite legitimate.¹⁷ Even *in-utero* designer gene therapy is a talked-about possibility, with defective DNA being replaced even before a baby is born.¹⁸ Manipulating genetic ingredients along these latter lines is surely a matter for urgent discussion among theologians, ethicists and scientists alike.¹⁹

Human Cloning²⁰

Human cloning is classified as either one more variety of reproductive technologies or as a subset of genetic engineering, but it seems to deserve its own category due to both its mass popular appeal and the rippling effect of its widespread ethical implications. Early on, a well-known biotech critic worried that human cloning would fuel the fires of a dystopian future, stating: "Genetic engineering has the potential to create a vast army of identical clones, each produced

to some preset specification. Cannon fodder, scientists, opera singers, all could be manufactured to order if the effort that went into putting men on the moon were directed to this new form of exploration."²¹ So has a human being been cloned yet? According to one account, yes, although the experiment never progressed beyond a low-level embryo stage.²²

Interestingly, some scientists are seriously suggesting that human cloning be made into a commercial reality, advocating at least five different ways to accomplish this goal, corporate control issues notwithstanding. First of all, in conjunction with advances in genetics, the growing field of human embryology could potentially usher in large numbers of identically cloned embryos to be used for medical projects involving disease research, gene-splicing techniques, and gene patenting.²³ Second, organ transplantation becomes a factor for cloning inasmuch as wealthy individuals could pay to have themselves cloned in order to have an "extra body" close at hand as the best possible source for non-tissue-rejecting spare parts. Third, single men and women seeking nontraditional methods for having genetically related children could "copy themselves" without risking another person's genetic input. Fourth, in a very qualified sense, the incipient field of "necrogenetics" could perhaps raise people from the dead! Known as the "Abraham Lincoln Redux," the cloning of significant historical figures is (legalities aside!) simply a matter of appropriating entombed tissues from the individual of choice. Finally, eugenic cloning could focus on the reproduction of geniuses and other exceptional persons, with an emphasis on scientists and mathematicians as opposed to social critics,

reformers and revolutionaries.²⁴ Kimbrell further states, "The ultimate consequences of transforming human procreation into mechanical reproduction are unknown, but correctly feared."²⁵

Transgenic Hybrids

Transgenics research, according to B. Julie Johnson, is the province of numerous genetic engineers, men and women researchers who insert, for example, human DNA into pigs, cattle DNA into fish, and firefly DNA into tobacco plants (yes, causing the leaves and stems to emit light!). At times, Johnson maintains, such experiments produce monstrous and deformed animals subject to great suffering. She also maintains that some researchers perform this kind of research more for the sake of a certain Promethean pride in having created combinations of genes never existing before than for any other reason. Johnson believes these experiments to be inhumane, dangerous and devaluing to life.²⁶ Andrew Kimbrell concurs, believing it unethical to produce such horribly deformed creatures.²⁷ He catalogs numerous genetic combinations resulting in: super-pigs, super-cows, super-chickens, and super-salmon; sheep whose wool grows 30% faster; rodents and livestock playing host to human genes; carp, catfish, and trout engineered with genes from either humans, cattle, or rats to increase growth size; and even "geeps," a goat-sheep combo with the faces and horns of goats but the bodies of sheep. Some researchers are even predicting five-ton cows and pigs twelve feet long and five feet tall in the not-so-distant future.²⁸

While it is highly unlikely to date that human/animal hybrids have been genetically created at the level of, say, Dr. Mor-

eau's sinister experiments,²⁹ a Christian consensus must ultimately be achieved on these important matters and others. Unfortunately, space constraints prohibit further discussion of topics like the Human Genome Project (which has now mapped out "Chromosome 22" in its entirety),³⁰ the gay gene, the crime chromosome, IQ genes,³¹ stem cell research, scientific limits to breeding, ecologically related matters, domestic/governmental policy issues,³² ethnic cleansing, embryo adoption, genetically-engineered virus plagues, biological weapons of warfare, and other biogenetic matters of particular interest. But these too are of cultural and global significance, items also for sale in the catalog.

A Tongue-in-Cheek Preview of 3rd Millennium Biotech/Commercial Tech Breakthroughs

So what does the biotech/commercial tech future hold in store for global society as a whole, much less Christian believers *per se*? According to futurologist literature, the 3rd millennium A.D. has no visionary limits or material/economic encumbrances in its way. Positivist scientism will rule!

The First Fifty Years

Many futurologists believe we have only just begun to scratch the surface of what is possible with respect to commercial technology's potential for societal beneficence. As a result, prognostications abound. With the extension of the Internet to virtually everyone on the planet, one thinker envisions a digital Gaia of sorts by 2010, a computing network so global and with such accelerated computing power that any object on earth, animate or inanimate, could be tracked.³³ By 2020,

cars will grant drivers the luxury of not having to watch the road (steering wheels optional!); be described more in terms of sentient machines than "cars"; and be empowered by AI (artificial intelligence) such that they continually communicate with other persons and vehicles en route.³⁴ By 2025, do-it-yourself "astropreneurs" will design and construct their own space vessels and successfully pave the way for astronaut wannabes from the private sector.³⁵ By 2030, zero-G sex playgrounds, set up within the confines of orbiting lunar cruisers, will periodically tempt the wealthy away from the humdrum home planet routine.³⁶ By 2045, children will have Roboplaymates—robotic best friends, robodogs and other robopets—that never die but could always be unplugged when necessary.³⁷ And by 2050, or perhaps sooner, the gaping holes and "threads" of the "Web" will have all but disappeared, and the more "fabric"-like Omninet will have grown into an all-pervasive information presence, powerful yet invisible.³⁸

The Second Fifty Years

By 2065, people will inhabit Mars, with the red planet supporting its own Mars.Net, which is obviously capable of communicating with the earth.³⁹ By 2075, life-extension technology will be harnessed, launching a new period in history on the same scale as that of the entire information age. Gerontologists, biologists, geneticists, and biotech entrepreneurs will cross the "almost forever" bridge into superlongevity.⁴⁰ By 2080, nano-assemblers serving as molecular MDs will stream through muscles and organs like intelligent engine-cleaners.⁴¹ By 2084, head transplants will become all the rage, with surgeons accomplishing the

attachment of new heads or bodies in roughly an hour's time.⁴² By 2092, people will upload/download their very selves via the risk-free tools of teleportation—quantum computers, atomic-scale body maps, and human-vaporizing lasers.⁴³ By 2096, weather modification techniques will manufacture made-to-order thunderstorms for the sake of battlespace dominance, if nothing else.⁴⁴ And finally, by the opening year of the 22nd century, physicist-priests will be the ones presiding over church worship, preaching a message to the effect that our progeny will soon manage to turn every last atom in the universe into computerized machinery even as their silicon souls disavow the need for physical bodies at all.⁴⁵

No sane person, of course, claims these 21st century predictions appearing on the technosecular scene will occur with anything near the 100% accuracy expected of biblical prophets. "Who is deciding what to do, when to do it, and why?" is a question that cannot be answered with confidence. Only hindsight will enable us to tell, again barring the soon return of Christ to earth.

Toward Principilizing the Biotech/Commercial Tech Milieu

Brave new worlds have already been founded, but they will inevitably continue to be dreamt and blueprinted by the fertile imaginations of 21st century gen-Z-ers and beyond. The simple but poignant response to visionary worlds of the order suggested above asks the same question: Where is God in all this, and how far will he allow human beings to go, ethically and technologically speaking? Numerous answers to the question are possible but they must surely be couched in terms of finding applicable principles—both scrip-

tural and philosophical—rather than biblical commands as such. Pauline didactic passages addressing biotech/commercial tech issues are wholly absent for some reason! Hence, we shall present three applicable principles in order to offer up a fledgling Christian position on such issues.

The "Postmodernism" Principle

The "postmodernism" principle is the easiest of the three principles to communicate.⁴⁶ Even operating solely from an ethical base (metaphysical and epistemological platforms notwithstanding) rendering a precise meaning for the amorphous term "postmodernism" is a difficult exercise. Nor will it be attempted here, except by way of illustration. After comparing the moral malaise permeating global culture to a catastrophe in the natural sciences in which the accumulated knowledge of the ages has been irretrievably lost, famed philosophy professor Alasdair MacIntyre writes:

The hypothesis which I wish to advance is that in the actual world which we inhabit the language of morality is in the same state of grave disorder as the language of natural science in the imaginary world which I described. What we possess . . . are fragments of a conceptual scheme, parts which now lack those contexts from which their significance derived. We possess indeed simulacra of morality, we continue to use many of the key expressions. But we have—very largely, if not entirely—lost our comprehension, both theoretical and practical, of morality.⁴⁷

In other words, the world is suffering at the hands of a morally barren, postmodern ethic, one without any real concern for or means to disseminate any-

thing even approximating ethical absolutes. It comes as no surprise, then, that technologies ultimately conceived and birthed within the postmodern womb, so to speak, will in turn reject critiques of itself patterned after the language of ethical norms. The postmodern ethos of technocracy will continue to see itself as a “multiplicity of languages used to describe right from wrong,”⁴⁸ never considering whether its projects reflect a singularly true ethic, much less a Christian one.

The “Demytho/Detechnosensitization” Principle

Admittedly, this second principle is a bit more difficult to grasp and carries with it certain speculative aspects. Simply put, it is Bultmann’s theological influence added to today’s pervasive technological familiarity. Serious students of the New Testament will probably recognize the “demytho” suffix above as part and parcel of the phrase first employed by New Testament scholar Rudolf Bultmann, specifically the phrase “de-mythologize.”⁴⁹ His *demythologization* agenda is, of course, well-known. Bultmann claimed that persons living in the mid-20th century must revise their religious strategy—they must rethink and recast the New Testament message about Christ in terms that are more religiously cogent and scientifically compatible to the modern mind.⁵⁰

As for the newly coined word “detechnosensitization,” it is simply meant to convey the notion that the contemporary technocultural milieu in which we live, move and have our being is perfectly suited for eventually distracting persons of every stripe away from the more important issues of life, including spiritual ones. The familiar phenomena of

acquiring the latest and trendiest communications/entertainment devices, one techno-toy after another, is itself enough evidence to demonstrate the drawing power of materialistic desire, of the need for becoming one of the “haves” rather than a “have not.” Before too much longer, the prevailing sales pitch will become, “Everything else is so 20th century!” And who will be able to resist that? In brief, technology desensitizes us to life’s ultimate issues by means of what we could call a “distraction” agenda.

Ted Howard and Jeremy Rifkin illustrate the writer’s concept of “detechnosensitization” with clarity and prescience along specific biotech lines:

Clones and hybrids will not suddenly be forced upon us by some form of biological *coup d’état*. No such dramatic conspiracy is in the offing. Instead, we can expect a much more mundane step-by-step introduction of new genetic technologies, each seemingly practical in the immediate benefits it can bestow, and collectively providing a seductive if not irresistible framework for the gradual reorientation of human values and the ultimate acceptance of mass genetic engineering.⁵¹

Their measured words ring true. We should not expect the biotech world to backtrack from its gains. Combining Bultmann with technological familiarity makes for the possibility of something on the order of a “demytho/detechnosensitization” principle. In other words, a supernaturally-stripped religious worldview, linked inseparably to a societal mindset in and through which individuals are no longer sensitive to either the instrumental how-tos or the ethical ramifications of the world’s newly emerging technologies, makes for a powerful combination. Such an ideational merger not only desensitizes

persons religiously to the classical “All truth is God’s truth” conception of truth, but it also gives rise to a cultural mindset susceptible to the mandates of a “Pied Piper”-like technowizardry, leading human beings away from the truth of the gospel message and the ethical norms stemming from it.

As a result, the majority of the populace begins to accept whatever gets thrown at it by way of societal forces, without any thoughtful analysis. In addition, any efforts along the lines of attempting to harmonize Christian doctrine with ongoing scientific discovery will be quickly anathematized. QED—a Bultmannian-like, truncated “gospel” message plus (+) a godless, evolutionary-based, sci-tech worldview equals (=) an ever-present techno-milieu characterized by wholesale apathy toward, if not outright rejection of, the existence of the supernatural and whatever spiritual truths might be discovered and made applicable within such an unlikely realm. What need is there for either the biblical God or his Son Jesus Christ if the New Testament miracles and their cultivating ethos are in fact myths? Since science has itself now become the very stuff of myth and legend, able even to perform “techno-miracles” practically on demand, what need is there for sources of truth apart from already accepted naturalistic ones? Bultmann, not to mention Charles Darwin, yet speaks from the grave.

The “Babel” Principle

The third principle is meant to be more explicitly biblical. In Genesis 11:1-9, the curious “City of Babel” account signifies many things to many people. Here the account will be summarily principlized by formulating a few instructive parallels

between a fascinating episode in early biblical/Babylonian history and the tremendous secular capacity for 21st century techno-hubris.

Beginning with v. 5, the text states: “The LORD came down to see the city and the tower which the sons of men had built.”⁵² One commentator uncovers the inherent irony here, saying the verse depicts God as having to get closer to earth just to see the “skyscraper” project that was undoubtedly so gigantic in form from a human perspective.⁵³ Verse 6 tells us: “The LORD said, ‘Behold, they are one people, and they all have the same language. And this is what they began to do, and now nothing which they purpose to do will be impossible for them.’” To interpret this verse in terms of God feeling threatened by the tower builders is faulty hermeneutics; rather, the idea is that human beings are capable of performing remarkable feats, a case in point being the city and its tower! To the extent, however, that the Babel builders’ motives for their massive and lengthy project were autonomously conceived and implemented—“Let us make for *ourselves* a name (v. 4, emphasis supplied)—to that same extent they were neither culturally wise enough, nor morally good enough, to serve as gods unto themselves.

Perhaps we can shed some light on God’s “Nothing . . . will be impossible for them” declaration, for it could also be conceived as a preventative act on God’s part, confusing their one common language in order to avert the threat they carried in themselves for potential evil. God’s introduction of new languages to the people broke apart whatever rebellious elements of unity existed, making their overall unification against him a practical impossibility. Perhaps, however, the Babel

dwellers also posed some unknown danger to themselves by centralizing all their human efforts at Babel only.⁵⁴ Just as Adam's and Eve's banishment from the Garden of Eden in Genesis 3:23-24 contained a mixture of judgment and grace, these were likely both operative on the plains of Shinar as well.⁵⁵

Therefore, God proceeds next with what vv. 7-8 record: "'Come, let Us go down and there confuse their language, so that they will not understand one another's speech.' So the LORD scattered them abroad from there over the face of the whole earth; and they stopped building the city." Now, with their unity destroyed, human beings were scattered from their cherished locale and divided out of necessity into a number of linguistic groups, and so the city and tower remained unfinished. The city's former residents had attempted to do more, by God's estimation, than what was good and appropriate for the human race to engage in as a whole. So God in his providence intervened, reminiscent of Eden, with coinciding measures both punitive and protective. Ironically enough, the very dispersing they feared—"otherwise we will be scattered abroad over the face of the whole earth" (v. 4)—came to pass.⁵⁶

Telescoping Babel's lessons into the future (ours included!) and using them as a parallel for evaluating the significance of human endeavor generally and biotech/futurist concerns specifically, it can be said that God still cares for his people and his world. In asking the question, "Where is God in all this, and how far will he allow human beings to go, ethically and technologically speaking?," the "Babel" principle provides something of a partial answer: God will allow us to go only as far as his providential measures

in history and sovereign decrees from on high prescribe. If God took the time to teach Job this same lesson by using an illustration taken from the tumultuous sea,⁵⁷ how much more is his sovereignty applicable to the mish-mash of biotech/futurist ways and means for applying new technologies? "Thus far you shall come, but no farther!" (Job 38:11a)

In other words, to the extent that the experimental worlds of biotechnicians and genius futurologists are autonomously conceived and implemented without recourse to the guiding influence of biblical morality (i.e., God's direction), their blueprints for the human race and for the future itself are neither culturally wise enough nor morally good enough to serve as a substitute god in Yahweh's (the real God's) stead. Technology will never in some final sense preempt the gospel! A healthy skepticism, then, about the extent to which biotechnology and its concomitant industries can go, ethically speaking, coupled with a consciousness of history and of God's providential arrangement of its particulars best reflects the timely application of the "Babel" principle. In brief, the Babel account is not speaking about placing limits on human technology *per se*; rather, it speaks to the issue of placing constraints on humanistically-driven plans characterized by a lack of biblical morality and varying degrees of anti-God sentiment. If the "Babel" principle has any real merit or biblical cogency, it demonstrates the fact that God will encapsulate, if not outright negate, immoral human efforts outside the range of his providential intentions.

Conclusion⁵⁸

Warnings about biotech/commercial tech futures are easy to find. Snippets of

ethical/moral advice from various quarters are plentiful as well. In light of this, Christians should advocate the circumspect rejection of any once and future techno-capacities, biotech or otherwise, deemed as biblically unethical. From a scientific vantage point, this writer's best guess is that God's curtailment of human techno-immorality will prove to involve actual scientific barriers that cannot be crossed, that is, physically instantiated limits with respect to misdirected genetic potentialities especially. Whether those God-ordained barriers have been reached yet is another question. Hence, a "return to the sacred" should become the Christian's motto.⁵⁹ Interestingly, even a few cultural analysts from the secular arena are concluding that a set of technological brakes will have to be applied at some point.⁶⁰ If technopaganism should ever attain cultural ascendancy, on the one hand, then the "postmodernist" and "demytho/detechnosensitization" principles will at least tell us in part how we arrived at such a sad state affairs. On the other hand, a deep-rooted faith in God's sovereignty and ability to put the "Babel" principle into historical operation will sustain us, if only for the sake of following *his* divine blueprint for the cosmos over against any humanly conceived and wrought biotech future. The world as it is will not end with a technological bang but rather with a divine measure of grace, justly administered.

In answer to the oft-repeated question—Where is God in all this, and how far will he allow human beings to go, ethically and technologically speaking?—it is theoretically possible that God could permit a biotech/futurist world to emerge so horrifically sinful and so distant from God relationally (akin to the antediluvian

world perhaps?) that every last vestige of biblical truth seems to vanish. Is it possible that God's providence could decree that half-human/half-animal monsters walk on this earth? A Gattaca-like world by 2020? Huxleyan Alphas, Betas, Gammas, Deltas, and Epsilons being hatched by the government? It is conceptually possible, yes, but for such scenarios to become historical reality, probably not. Yet there is mystery and comfort alike in the fact that God's sovereignty cradles our technological futures.

ENDNOTES

¹ Andrew Kimbrell, "Second Genesis: The Biotechnology Revolution," *The Intercollegiate Review* 28 (1992) 11.

² Mary Shelley, *Frankenstein* (London: Puffin Books, 1994) 64.

³ Warwick and others of like persuasion are exploring the depths of cyborg technology, taking a philosophical pride of sorts in their conceptual matrices born of becoming something more than human. In all seriousness, Warwick proclaims: "I was born human. But this was an accident of fate—a condition merely of time and place. I believe it's something we have the power to change. I will tell you why." Kevin Warwick, "Cyborg 1.0," *Wired*, February 2000, 145. A late-breaking addition into the foray attempting to redefine what it does means to be human *vis-à-vis* artificial intelligence is the thought-provoking volume by Ray Kurzweil, *The Age of Spiritual Machines: When Computers Exceed Human Intelligence* (New York: Viking Penguin, 1999).

⁴ An important work here is Frederick B. Rudolph and Larry V. McIntire, eds., *Biotechnology: Science, Engineering, and Ethical Challenges for the Twenty-First Century* (Washington, D.C.: National Acad-

emy Press, 1996). Joseph C. Pitt's volume, *Thinking About Technology: Foundations of the Philosophy of Technology* (New York: Seven Bridges Press, 2000), may also prove helpful at this point.

⁵ These are by no means superficial questions. The upcoming international "Bioethics in the New Millennium" conference scheduled for July 2000, Deerfield, Illinois, is certainly one indication of the need for formulating such questions. The well-attended "Genes, Genesis, and God" symposium, sponsored by the Philadelphia Center for Religion and Science, met last April 1999 in Philadelphia, Pennsylvania, pushing the interface of faith and technology a step further.

⁶ Cf. Gene Edward Veith, "Beauty and the Breed," *World*, November 13, 1999, 31.

⁷ Jacques Ellul, *The Technological Society* (New York: Vintage Books, 1964) 121. Interestingly, Ellul's section entitled "A Look at the Year 2000," 432-436, demonstrates both how right and how wrong his mid-20th century predictions about a future technological society actually were.

⁸ One writer, nevertheless, discusses a number of sociological factors contributing to the rising feelings of helplessness and fear that often accompany advances in technology. See Paul A. Alcorn, *Social Issues in Technology: A Format for Investigation*, 2nd ed. (New Jersey: Prentice Hall, 1997) 22-32.

⁹ A fictitious catalog.

¹⁰ *In vitro* fertilization often involves a process known as *selective reduction*, which takes place when clinics use

techniques allowing for the successful implantation of several embryos in a mother's womb; however, the couple in question may then face a number of agonizing decisions—how many and which embryos will be terminated to create a "safe" environment in the womb for the growth of one or two remaining embryos? Cf. Denyse O'Leary, "No Room in the Womb?" *Christianity Today*, December 6, 1999, 60-65.

¹¹ Scott B. Rae, *Brave New Families: Biblical Ethics and Reproductive Technologies* (Grand Rapids: Baker Books, 1996) 13-16. Ethical issues aside, Aldous Huxley's fictional world of stratified human beings—categorized as Alphas, Betas, Gammas, Deltas and Epsilons, with each group meticulously birthed in governmental hatcheries—has yet to arrive on the scene! Huxley cleverly glamorized the process known as *bokanovskification*, a scientific pogrom of sorts: "A bokanovskified egg will bud, will proliferate, will divide. From eight to ninety-six buds, and every bud will grow into a perfectly formed embryo, and every embryo into a full-sized adult. Making ninety-six human beings grow where only one grew before. Progress. . . . ninety-six identical twins working ninety-six identical machines!" Aldous Huxley, *Brave New World* (New York: Harper & Row Publishers, 1969) 3-4. First published in 1932, Huxley's now famous volume is recognized as something of a 2nd quarter, 20th century precursor to the concept of designer genes, if not outright human cloning.

¹² Grappling with DNA concepts is difficult, but a good lay resource for beginning study is James Shreeve, "Secrets of the Gene," *National Geographic*, October 1999, 42-75.

¹³ Duane T. Gish and Clifford Wilson, *Manipulating Life: Where Does It Stop?* (San Diego: Master Books, 1981) xiv.

¹⁴ As a term coined in 1883 by Francis Galton (cousin to Charles Darwin), eugenics refers to the artificial selection of human traits by controlling human matings, thereby restricting the reproduction of individuals with undesirable traits. It usually carries a negative connotation because of its association with Adolf Hitler's failed "superior race" agenda. *Euphenics*, a more contemporary term, refers to medical and/or genetic intervention designed for the sole purpose of reducing the impact of defective genotypes on individuals. Cf. William S. Klug and Michael R. Cummings, *Concepts of Genetics*, 4th ed. (New York: Macmillan, 1994) 10.

Jeremy Rifkin, President of the Foundation on Economic Trends and leading opponent of human genetic engineering, warns that the effects of all these "brave new world" genetic technologies will be pervasive. "They reach far beyond the physical, deep into the human psyche and affect the well-being of all life on earth." Jeremy Rifkin, as quoted in Carol Grunewald, "Monsters of the Brave New World," *New Internationalist*, January 1991, as reprinted in Terry O'Neill, ed., *Biomedical Ethics: Opposing Viewpoints* (San Diego: Greenhaven Press,

1994) 247. Cf. Jeremy Rifkin, *The Biotech Century: Harnessing the Gene and Remaking the World* (Los Angeles: J. P. Tarcher Publishing, 1998).

¹⁵Cf. Ian G. Barbour, *Ethics in an Age of Technology* (San Francisco: HarperCollins Publishers, 1993) 194-198. Other emerging developments alongside the familiar Human Genome Project and under the overarching rubric of genetic engineering include work with agricultural animals and plants, pharmaceuticals, vaccines, genetic fingerprinting, and behavior genetics. Cf. Ronald Cole-Turner, *The New Genesis: Theology and the Genetic Revolution* (Louisville: Westminster/John Knox Press, 1993) 16-26.

¹⁶Liberal theologian Ted Peters takes this endless questioning approach, asking: "Is DNA sacred? Is the human genome hallowed by nature? Is the genetic code at work in each of our cells a product of divine creation? Are our genes put there by God? If so, do we have the permission of nature or the permission of God to engineer our genetic code? If we broke into our own DNA with wrenches and screwdrivers in order to redesign ourselves, would we be violating something sacred? Would we the creatures become our own creators? Would we be playing God? Is it a sin to play God when we in fact are not God?" Ted Peters, *Playing God? Genetic Determinism and Human Freedom* (New York: Routledge, 1997) 1.

¹⁷Also called *enhancement genetic engineering*, some ethicists point out that to bioengineer (someday?) a Michael Jordan for basketball or a

Cindy Crawford for modeling is one thing, but to find acceptable and normative uses for "designer genes" is quite another. For example, designing a gene that lowers LDL cholesterol counts, resulting in a collective decrease in mortality caused by arteriosclerosis, heart attacks and stroke, shows that the purpose of designer gene intervention in such cases is not simply for the sake of meeting some one individual's personal desire. Cf. W. French Anderson, "Human Gene Therapy: Scientific and Ethical Considerations," in Edward Erwin, Sidney Gendin, and Lowell Kleiman, eds., *Ethical Issues in Scientific Research: An Anthology* (New York: Garland Publishing, 1994) 337-349.

¹⁸Demonstrating a modicum of ethical wisdom, research scientists from the gene-therapy firm Novartis came to the conclusion in mid-1998, after the failure of various human gene-therapy trials, that better gene-delivery methods were needed before human testing had any real chance for success. Robert Langreth and Stephen D. Moore, "Researchers Get Dose of Reality as Logistics Strymle Gene Therapy," <http://dowjones.wsj.com/n/SB941023155722295187-d-main-cl.html>.

¹⁹"A remarkably free communication has developed between exponents of religious thought and genetic scientists (many of the latter, of course, being members of churches and synagogues). Theologians are now almost conventionally included in national conferences on genetics. . . . This unprecedented phenomenon represents a stark contrast to the

separation of religion and science which many people have either taken for granted or have desired. It is a new era." J. Robert Nelson, "The Role of Religions in the Analysis of the Ethical Issues of Human Gene Therapy," *Human Gene Therapy* 1 (Spring 1990) 43-48.

Some theologians wholeheartedly endorse the genetic revolution, seeing its advances as opportunities for co-creatorship with God. For example, Ronald Cole-Turner believes: "Our genetic engineering has the potential for being an extension of the work of God. If we agree that God works through the natural processes themselves, is God's activity pushed back simply because we humans have learned to use these processes? God does not cease to work through these biological processes simply because humans have begun to use them. Genetic engineering does not encroach upon the scope of divine activity. It expands the reach of God's action, placing a new mode of contact, through our technology, between the Creator and the creation. God now has more ways to create, to redeem, and to bring the creation to fulfillment and harmony. Human beings who seek to serve God through genetic engineering are placing new instruments, namely, their technical skill, into the hands of the Creator." *New Genesis*, 108. But this is not the direction evangelical identity needs to travel, if for no other reason than to avoid the uncomfortable theistic evolutionary tendencies such a co-creatorship stance generally acknowl-

edges.

²⁰Today's ethical discussions about cloning need to focus more on human cloning as opposed to animal cloning, if for no other reason than the now commonplace occurrence of animal cloning seems to merit little attention. Up-to-date reports about animal cloning, however, are now centered on cloning dogs as pets. Texas A&M University's research in this particular arena may open the door to a *clone-on-demand* future, with cloned puppies especially being in high demand. As of now, however, costs remain extremely prohibitive: "If Missyplicity succeeds, all you'll need to clone a pet is a tissue sample and \$250,000." Charles Graeber, "How Much is that Doggy in the Vitro?" *Wired*, March 2000, 222.

²¹Jeremy Cherfas, *Man Made Life* (Oxford: Blackwell Publishers, 1982) 231.

²²" 'Someday,' goes the popular prediction, 'scientists will clone a human.' As it turns out, 'someday' was November 1998. According to the British Broadcasting Corporation, the private U.S. biotechnology firm American Cell Technology last fall cloned the first human embryo, then let it develop for 12 days before killing it." Findlay Kember, "Human Farms?" *World*, July 17, 1999, 11.

²³This includes the use of aborted fetuses as well. It is reported that a group of women in Scotland have already deep-frozen their aborted fetuses. Hence, when the hostility toward human cloning fades, researchers will be able to clone

genetically identical embryos by having cells from the fetuses in cold storage implanted either in their genetic mothers or possibly other women. Lois Rogers, "Aborted Fetuses Saved for Cloning," *The London Times*, December 14, 1997.

²⁴Andrew Kimbrell, *The Human Body Shop: The Engineering and Marketing of Life* (San Francisco: HarperCollins Publishers, 1994) 223-226.

²⁵*Ibid.*, 226.

²⁶B. Julie Johnson, "Genetic Engineering Is Dangerous," in Carol Wekeser, ed., *Genetic Engineering: Opposing Viewpoints* (San Diego: Greenhaven Press, 1996) 17-18.

²⁷In an effort to block the impending creation of human/animal chimeras, cell biologist Stuart A. Newman and Jeremy Rifkin applied in May 1998 for a broad patent on the creation of such creatures. It was rejected by the U.S. Patent and Trademark Office on the grounds that a chimera "includes within its scope a human being," and persons are not patentable. John Travis, "Patently Unpatentable," *Science News*, August 21, 1999, 127.

²⁸Andrew Kimbrell, "Genetically Altering Animals Is Dangerous and Inhumane," in *Genetic Engineering*, 102-104.

²⁹In the words of the Wellsian sailor, the courageous Edward Prendick: "The two most formidable animal-men were my Leopard Man and a creature made of Hyena and Swine. Larger than these were the three bull creatures who pulled in the boat. Then came the Silvery Hairy Man . . . and a satyr-like creature of Ape and Goat. There were three Swine

Men and a Swine Woman, a Mare-Rhinoceros creature, and several other females whose sources I did not ascertain. There were several Wolf creatures, a Bear-Bull, and a Saint Bernard Dog Man. I have already described the Ape Man, and there was a particularly hateful (and evil-smelling) old woman made of Vixen and Bear, whom I hated from the beginning. . . . But enough of this catalogue!" H. G. Wells, *The Island of Dr. Moreau* (New York: Berkley Highland Books, 1970) 80.

³⁰Rachel Smyly, "First Part of the Human Genome Published," <http://helix.nature.com/nsu/991202/991202-10.html>.

³¹Cf. Michael D. Lemonick, "Smart Genes?" *Time*, September 13, 1999, 54-58.

³²"Bioethical controversies are often cast into forms of public discourse which avoid specific ideas of morality and ethics, and instead recast the issue in the familiar terms of maximizing freedoms and minimizing harms." Mark J. Hanson, "The Depths of Reason: Biotechnology's Challenge to Public Policy," *Science & Spirit* 10 (January/February 2000) 22.

³³Vernor Vinge, "The Digital Gaia," *Wired*, January 2000, 74-78.

³⁴Mark Christensen, "Ground Xeno," *ibid.*, 106-112.

³⁵Dan Brekke, "Who Needs NASA?" *ibid.*, 118-128.

³⁶Julie Wakefield, "Book Me a Double—With a View of Venus," *ibid.*, 132-134.

³⁷Mark Frauenfelder, "Snips and Snails and Ribosome Tails," *ibid.*, 140-142.

- ³⁸George Johnson, "Only Connect," *ibid.*, 148-160.
- ³⁹Jeffrey Davis, "Reserve Your .mars Address Now," *ibid.*, 166-168.
- ⁴⁰Brian Alexander, "Don't Die, Stay Pretty—Introducing the Ultrahuman Makeover," *ibid.*, 178-188.
- ⁴¹Niall McKay, "Honey, I Shrunk the HMO!" *ibid.*, 190-192.
- ⁴²Jonathan Vankin, "A Little Off the Top," *ibid.*, 194-196.
- ⁴³Charles Platt, "Clear the Line, I'm Teleporting Myself Right Now," *ibid.*, 204-210.
- ⁴⁴Tom Standage, "Activate Cloud Shield! Zap a Twister!" *ibid.*, 212-216.
- ⁴⁵Frank Tipler, "Deus ex Silico—A Physicist Explains Why God Is in the Chips," *ibid.*, 218. Tipler is renowned for his work *The Physics of Immortality: Modern Cosmology, God and the Resurrection of the Dead* (New York: Anchor Books, 1994), in which he further outlines his concept of a computer-God at time's end.
- ⁴⁶Even so postmodern perspectives are legion. For example, John J. Reilly is quick to define the adjective *postmodern* as "an unsatisfactory description of the last few decades of the twentieth century. . . . In both its popular and elite forms, the postmodern spirit is largely a matter of living off the achievements of the modern age by making fun of them." John J. Reilly, et al., "What Can We Reasonably Hope For? A Millennium Symposium," *First Things* 99 (January 2000) 31. From another angle, "Diversity is the name of the game; multiple perspectives are the bottom line; every person and cultural group has his, her or its particular perspective; and we rejoice—at least in theory—in the differences between them all." Philip D. Clayton, *God and Contemporary Science* (Edinburgh: Edinburgh University Press, 1997) 2. Cf. Robert C. Solomon and Kathleen M. Higgins, *A Short History of Philosophy* (New York: Oxford University Press, 1996) 303-304.
- ⁴⁷Alasdair McIntyre, *After Virtue*, 2nd ed. (Notre Dame: University of Notre Dame Press, 1984) 2.
- ⁴⁸James W. Sire, *The Universe Next Door: A Basic Worldview Catalog*, 3rd ed. (Downers Grove: InterVarsity Press, 1997) 183.
- ⁴⁹According to Bultmann, this method of New Testament interpretation tries to recover the deeper meaning behind the mythological conceptions. Its aim is not to eliminate the mythological statements but to interpret them. It is a method of hermeneutics." Rudolf Bultmann, *Jesus Christ and Mythology* (New York: Charles Scribner's Sons, 1958) 18.
- ⁵⁰Colin Brown interprets Bultmann's thinking similarly: "What is required is the demythologization of the Christian message, the removal and reinterpretation of the offending myths so that the gospel may be presented in its purity." Colin Brown, *Philosophy & the Christian Faith* (Downers Grove: InterVarsity Press, 1968) 187.
- ⁵¹Ted Howard and Jeremy Rifkin, *Who Should Play God?: The Artificial Creation of Life and What It Means for the Future of the Human Race* (New York: Dell Books, 1977) 163.
- ⁵²All quotations are taken from the latest version of the New American Standard Bible, published in 1995.
- ⁵³Donald E. Gowan, *From Eden to Babel: A Commentary on the Book of Genesis 1-11* (Grand Rapids: Eerdmans, 1988) 118-119.
- ⁵⁴*Ibid.*, 119.
- ⁵⁵The sin aspect of Babel's dealings with God is usually the focus of the passage, in particular the city's God-rejecting pride in its accomplishments and future plans. "[Babylon] regarded itself as the religious, intellectual and cultural capital of the ancient world, the showpiece of human civilization." G. J. Wenham, "Genesis" in *New Bible Commentary*, 4th ed. (Downers Grove: InterVarsity Press, 1994) 69. In contrast to the alleged pride of the people, however, there is a fear and anxiety factor apparently at work. "The unity of language and the tower construction, so far from being universal phenomena, are so localized that the tower builders look out upon their world with fear and are concerned for their security lest they be scattered through the whole earth." Dale S. DeWitt, "The Historical Background of Genesis 11:1-9: Babel or Ur?" *Journal of the Evangelical Theological Society* 22 (1979) 17. "God's action in halting this rebellious effort was not only a matter of punishment, but it was also an act of mercy. God prevented mankind from pursuing a self-destructive course of rebellion against their creator." G. Ch. Aalders, *Genesis, Volume I* (Grand Rapids: Zondervan, 1981) 249.
- ⁵⁶*Ibid.*, 119-120.
- ⁵⁷Job 38:8-12. Cf. Dan. 4:34-35.

⁵⁸Regarding the overall biotech picture, perceptive readers will immediately realize how much pertinent discussion this essay leaves out, making it virtually impossible to pen a categorical conclusion. For example, theologically speaking, anthropology's doctrine of the *imago dei* is a major consideration with respect to the use and abuse of reproductive technologies, genetic engineering, cloning (especially human clones and whether they have souls!), and the genetic potential for transgenic hybrids (if some Moreau-like experiment should ever really come to pass!). Juxtaposing the *imago dei* with various biotech concerns could also serve as the catalytic impetus for further doctrinal exploration into the realm of the soul/spirit—whether a traducianist or creationist position should be taken as to its origin or whether a trichotomist, dichotomist, or holistic view of the soul/spirit should be taken as to its components. Philosophically speaking, where do deontological and utilitarian roads lead when they come to an ethical fork in the road such as, for example, designing “perfect” babies? How will a Christian philosophy of mind perhaps be affected by the ongoing success of the Human Genome Project and its long-hoped-for mapping of IQ genes? Are the mind and body genetically related? How should we now view God's interaction with the world (divine agency meets human volition!) in light of either his direct arrangement of each individual's genetic code or the

more naturalistic, if you will, chance arrangement of the same? And historically speaking, Charles Darwin's theory of evolution always seems to enter the conversation at significant points, along with Harvard professor Edward O. Wilson's more contemporary yet influential theory of sociobiology. (Cf. Edward O. Wilson, *Consilience: The Unity of Knowledge* [New York: Vintage Books, 1999]). And finally, will *intelligent design theory* nullify society's evolutionary stranglehold on contemporary culture some day soon?

⁵⁹“Clearly, the major force behind reshaping our technological future and limiting biotechnology will have to be those whose religious and cultural beliefs respect the sacred over the efficient, those who see life not as a commodity but as divine gift. They must . . . have the vision to begin supporting technologies that reify their beliefs. . . . The task of remaking the technology of our culture in a sacred image is daunting but urgently required.” Kimbrell, “Second Genesis,” 18. John Haas, reflecting the Roman Catholic tradition, concurs: “The moral dilemmas arising from the mind-boggling advances in medicine and technology do not admit of easy, simplistic solutions. But they are not insoluble. We as a people have the cultural and moral resources to address these questions in a humane and reasonable manner because we draw on a tradition, a tradition of natural law, that has served human goods in vastly different cultural contexts successfully, precisely because it respects human-

ity as a divine creation.” John Haas, “Thinking Ethically about Technology,” *The Intercollegiate Review* 28 (1992) 10.

⁶⁰“Our only protection is to accept clear stopping points. And the only way to achieve those is to make sure that society is informed and can recognize the dangers and prevent misuses before it is too late. . . . We cannot dictate to the people of 100 years from now what they should do. They will care as little about our opinion as we care about the mandates of our 19th-century forebears. . . . But what they do is not our responsibility. Our duty is to go into the era of human genetic engineering as respectfully as possible. That means that we should not use human genetic engineering for any other purpose than the treatment of serious disease, no matter how tempting it might be.” W. French Anderson, “A Cure That May Cost Us Ourselves,” *Newsweek*, January 1, 2000, 76.