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Love Your Enemies

The Life Sciences in the Ecclesially Based University

M. Therese Lysaught

Jesus said to his disciples: "You have heard that it was said, You shall love your neighbor and hate your enemy. But I say to you, love your enemies and pray for those who persecute you, that you may be children of your heavenly Father, for he makes his sun rise on the bad and the good, and causes rain to fall on the just and the unjust. (Matt. 5:43–45)

■ Introduction

In 1989 one of the premier journals of the life sciences, *Nature*, ran an editorial cartoon of James Watson. With a typical mix of British wit and critique of the U.S., the cartoon pictured Watson—codiscoverer of the double helical structure of DNA, a Nobel-prize winning biologist, and then-director of the National Institutes of Health Center for Genome Research, the NIH branch of the U.S. Human Genome Project (HGP)—wrapped in an American flag.¹ Alice Domurat Dreger, a historian of science, describes the cartoon as follows:

... in it, the dark (usually red) stripes of the American flag were not sketched solid; instead they were drawn to be imitative of the banding of chromosomes or of an electrophoresis analysis of DNA. The result was that, in this picture, not only was a "statesman of science" wrapped in the flag of the U.S., genetics and the genome *literally formed part of the fabric of America*.²

Dreger uses this cartoon as a starting point from which to describe how the rhetoric and practice of science in the U.S. locates research as intrinsically aligned with and in service of American values and national goals. As she notes:

Scientists often find themselves having to explicitly justify their public funding to nonscientists . . . [they have to show that] . . . their scientific projects are good not just for scientists, but good for the nation as a whole . . . In practice this means demonstrating that the goals of the research at issue are in some way parallel with—or at least not opposed to—national goals. Today, the more a large scientific project looks like it supports the values and goals of the nation (or at least the values and goals of the powers that be), the more likely it is to get funded. . . . Early proponents of the U.S. HGP won moral and financial support from Congress largely by aligning their professional values and goals with dominant American values and goals. . . . Project advocates garnered backing chiefly by employing metaphors which portrayed the HGP as a natural and necessary part of the American way, as an extension—indeed, as an admirable manifestation—of the traditional American value system. (pp. 157–158)

For *Nature* and Dreger, then, the field of genetics and the rhetoric of the life sciences generally tell a story in which they not only promote the ends of the nation; they are indeed an inextricable part of U.S. identity and what it means to be an American.

In an analogous way, as John Wright argues at the outset of this volume, universities in the U.S. have likewise understood their mission as serving the ends of liberal democratic culture. Universities aim to "contribute to the end of liberal society at large—the production of students to serve as 'good' leaders within the élite of the liberal democratic state and its compatriot, the capitalistic economy."³ The stories that institutions of higher education tell about themselves—whether to prospective students and parents, at first-year convocations and commencements, or to funding and accrediting agencies—tell of students formed to serve society and to succeed within the global market.

This dynamic not only belies the myth of universities as the space of free intellectual inquiry; as Wright argues, it renders the mission of church-related universities doubly conflicted, undercutting their viability by denying their

proper telos and directing their work toward alien ends. Given Dreger's analysis of the relationship between the sciences and liberal democratic polity, the practice of the life sciences within church-related or ecclesially based universities cannot but exacerbate this conflict.

In the following, I will examine the role of the life sciences within an ecclesially based university.⁴ This is a multi-faceted and highly complex relationship, a thorough examination of which is well beyond the scope of this chapter. Therefore, I will not spell out specific prescriptions for how such an institution might structure its life-sciences curriculum. Rather, I would hope that this essay would serve as a starting point for reflection and discussion among administrators and faculty—especially faculty in the life sciences—who are interested in how we negotiate our professional identities in light of our call to Christian discipleship. To spur such discussion, I will focus on one main point of concern and, along the way, raise related points for consideration and discussion.

My reflections on the life sciences will focus primarily on the field of genetics, drawing supporting evidence from debates about human embryonic stem cell research and medicine generally. Genetics provides a useful entrée into these considerations for a number of reasons. As historian of science Garland Allen has argued, the development of genetics, first in the 1920s and then again under the aegis of molecular biology in the 1950s, brought together areas apparently as diverse as cytology, cell physiology, development, evolution, embryology, biochemistry, biometrics, and field natural history into a unified theory of living systems—i.e., what we could properly term “the life sciences.”⁵ Moreover, genetics brings together not only the varied biological and medical disciplines; it provides a window into the practice of science itself. As historian of science Phillip Sloan notes: “Intellectuals concerned with ‘science studies’ in the broadest sense—history, philosophy, sociology, and ethical dimensions of the sciences—can find in the HGP a dynamic field of scientific development that displays all of the issues involved in understanding of contemporary science and technology.”⁶

Genetics, then, provides the main context for considering the primary concern I will address in this paper: namely, how the life sciences, as currently configured, are embedded within a context of violence. Political and military metaphors shape contemporary discourse about biomedicine and biotechnology. For many, and certainly for the media, clinical medicine through the auspices of biotechnology is engaged in a war against disease, disability, suffering, and death.⁷ Drawing on the history of the field of genetics and the Human Genome Project, as well as on the rhetoric surrounding medicine and biotechnology more generally, I will first seek to show how the current practice of the life sciences cannot help but to entangle us with war and the violence of the liberal democratic state.

Moreover, the violence allied with science signals its underlying cause: a religious commitment to science as salvific. For Christians and institutions who are committed to nonviolence as a central component of discipleship and who locate salvation not in the hands of the scientific community but in the death and resurrection of Jesus Christ, these twin facets of contemporary science cannot but give pause. How then do we situate the life sciences in the ecclesially based university such that the disciplining that is part of their practice is consistent with our call to witness the Good News through lives of peaceableness? The beginning of the answer to this question lies, I will argue, in Christian attitudes toward death, attitudes necessarily formed by communal practices of the Christian life. Only within such a context might researchers and institutions find resources for resisting the paradigm of violence that informs the practice of the life sciences and hope to resituate them within a paradigm of peace.

Before turning to this main question, however, I would like to begin by raising one additional point for reflection, one concerning what many see as the inherent conflict between science and theology. One cannot get far in a conversation about religion and science without hearing the names of Copernicus, Galileo, and Darwin invoked as icons of the classic contest. While many have deconstructed this overdrawn narrative, it may be the case that contemporary universities have to deal with a different problem, namely, science as a culture of its own. Sloan, for example, believes that our contemporary situation differs from the classic battles between science and religion mentioned above. "In our present context," he notes, "a new level of conflict between theology and science is being generated not by any single issue or theory—but by the convergence of a wide range of inquiries—in a totalizing naturalistic world view that claims to give a comprehensive explanation of all aspects of existence" (p. 25). Dreger, in her analysis with which this paper opened, takes the issue beyond simply one of a worldview. She observes that scientists who try to realign their self-understanding to serve the goals of the nation (and therefore get funded) walk a tightrope:

... scientists as a group have their own peculiar tradition of values and goals, a tradition which does not necessarily easily mesh with those of any other ethnicity or nation. . . . scientists form something of a sub-culture, a sort of ethnic group. . . . Like its ethnic counterparts, the scientific culture is comprised of a set of ideals, values, imperatives, a system of rewards and punishments, a hierarchy, a canonical history full of superhuman heroes and great struggles, and even an origin myth. (p. 158)

Dreger observes this dynamic from the perspective of a historian and finds a tensive fit at best between the scientist and society. If her claims about

scientific culture are correct *vis à vis* the liberal democratic state, will scientists find it equally if not more difficult to mesh their own subculture with the polity of the church and the kingdom of God? Which worldview, and which identity, becomes more determinative? Will either culture allow itself to be subordinated to the other? The totalizing worldview of science, which seeks epistemological hegemony, likewise seeks total allegiance from its practitioners.

■ I. The Life Sciences and the Violence of the State

My first task, then, is to demonstrate the relationship between the contemporary practice of the life sciences and the infrastructure of violence of the liberal democratic state. Three angles may shed light on this relationship: the genesis of the Human Genome Project and related areas in medicine; the current social location of the life sciences *vis à vis* public funding; and, most broadly, the metaphors and rhetoric surrounding new developments in the life sciences. I will begin with the story of the Human Genome Project.

The Human Genome Project (HGP) has frequently been referred to as “the Manhattan Project for biology.” Even a cursory reading of the history of the HGP reveals the multiple levels on which this analogy functions. The most superficial uses of the phrase point to its character as “big science” or as working analogously at the molecular/atomic level to “unleash the awesome powers of nature.” But a closer reading of that same history suggests that perhaps this is not an analogy at all, but that in fact there is a close relationship between the two projects. I will simply identify three points of contact—genealogical, conceptual, and ideological.

The HGP is in many ways rightly understood as in fact the great-grandchild of the Manhattan Project. Launched in 1989, the Human Genome Project was jointly sponsored by the National Institutes of Health and the U.S. Department of Energy. A simple genealogy notes that the Department of Energy was the successor of the Atomic Energy Commission (AEC), the postwar incarnation of the Manhattan Project.

But the relationship is more than just one of ancestry; the link is almost (dare I say?) “genetic.” In other words, that the Department of Energy sponsored the HGP was not accidental, insofar as an interest in genetics traces back to the beginning. After the war (1947), the AEC created the Atomic Bomb Casualty Commission (ABCC). The ABCC had a large genetics component; it was charged with the task of evaluating the effects of radiation on the populations of Hiroshima and Nagasaki as well as on the U.S. citizens who worked in the research and development arms of

weapons production. The ABCC was eventually succeeded by the Radiation Effects Research Foundation (part of the Health Effects Research Division of the DOE). It was through the RERF that the DOE sponsored the so-called "Alta Summit," a conference of geneticists and molecular biologists held in Alta, Utah, in December 1984, to review the results of the ABCC's long-term study of the effects of radiation on the Japanese population. The Alta Summit is generally marked as the place where conversations led to the genesis of the idea for the HGP.⁸

Thus, the historic roots of the Human Genome Project lie embedded within the U.S. World War II war machine. Similar sorts of genealogies can be traced for other areas in the life sciences. An equally fascinating account of the intersections between the Manhattan Project, industry, and the emerging practice of university-based research in the life sciences is the story of the development of the field of nuclear medicine. Timothy Lenoir and Marguerite Hays in their essay "The Manhattan Project for Biomedicine" demonstrate how those working for the Medical Division of the Manhattan Project began planning well before the end of the war for how they might adapt their work to the postwar world and in doing so transform contemporary medicine.⁹ In this story, the AEC is again a central figure. More interestingly for our purposes, they note that a key element of the leadership's vision for attracting and retaining appropriately trained scientific personnel to the endeavor was to create faculty and research appointments at universities with provisions for tenure, an innovation that fundamentally changed the practice of scientific research at universities (p. 36).

They conclude their analysis with the observation that these efforts were successful beyond anyone's wildest imaginings. Testimony given in 1976 records the extraordinary impact of the Manhattan Project on contemporary medicine:

The effect that nuclear medicine has had on the practice of medicine can be demonstrated in at least two ways. The first relates to the use of nuclear medicine procedures and the clinical practice of medicine. For example, in 1973, some 7.5 million Americans received in vivo nuclear medicine procedures. This represents approximately one procedure for every 4.4 hospital admissions. . . . The second area of major impact relates to the effect of nuclear medicine as a scientific discipline with regard to careers in health care. The Society of Nuclear Medicine now has some 8000 members and the American Board of Nuclear Medicine has certified 2,070 physicians as specialists in nuclear medicine since its inception on July 28, 1971. . . . That this field is well recognized as a medical discipline is shown by the establishment of the American Board of Nuclear Medicine and the recent formation of a Section on Nuclear Medicine in the American Medical Association.¹⁰

Some thirty years later, these figures have increased exponentially.

Thus, if one looks into the genealogy of the Human Genome Project and other areas of the life sciences, one finds an ancestry and ongoing parentage rooted in the interests and infrastructure of the U.S. military. A second link between the Manhattan Project and the HGP is conceptual. The Manhattan Project, and the military context of the 1940s and 1950s more generally, radically reshaped fundamental concepts and language of genetics. Lily Kay, in her essay "A Book of Life? How a Genetic Code Became a Language," masterfully demonstrates how, in the 1950s, the narrative of genetics was rewritten due in no small part to the influx into the field of individuals involved with World War II and the Cold War. Kay argues that the very notion of genetics as a "code" gained currency in part because of the importance of cryptology in the postwar era. As she notes: "Eminent physicists, biophysicists, chemists, mathematicians, communication engineers, and computer analysts—whose own projects situated them at the hub of weapons design, operations research, and computerized cryptology—joined in the effort to 'crack the code of life.'"¹¹ Information and computer metaphors now so common in genetics rhetoric came from outside the realm of molecular biology via mathematicians like Norbert Wiener and John von Neumann who, with others, were key figures in strategic military planning; Henry Quastler, the architect of the new discipline of information-based biology, was "funded through military sources" (p. 107). Kay characterizes the genetic codes of the 1950s as "'boundary objects,' migrating along the two-way traffic between molecular genetics on the one hand and the militarized world of mathematics and communication engineering on the other" (p. 120).

Thus, we can find connections between the HGP and the Manhattan Project on both the genealogical and conceptual levels. A third set of connections is more ideological. As many historians, including John Beatty, have noted, "the Human Genome Project is a post-Cold War project; and I do not just mean chronologically speaking."¹² With the ending of the Cold War and the emergence of the U.S. as an unchallenged military power, national security concerns shifted from those of military threats to that of economic competitiveness. Especially in the 1980s, the decade in which the Human Genome Project was conceived, lobbied, and funded, the U.S.'s changing economic relationships, especially relative to Japan, "led many analysts to argue for a broader notion of national security—one that emphasized economic as well as military security." As one then-Senator argued, "Trade IS defense" (p. 141).

While the HGP was not conceived specifically as an instrument of national security, Beatty notes that it very soon became promoted as such, as the NIH and DOE vied for the rights to sponsor the project. Arguments

about U.S. technological competitiveness in favor of the HGP run through House and Senate authorization and appropriation hearings. Leroy Hood, a significant figure in the field of genetics, developed at length an argument that began: "As we all know, America is currently the world leader in biotechnology. This leadership is unequivocally being threatened by the Japanese. The human genome project, both through technology and the creation of a powerful infrastructure, is helping to insure this future world leadership" (p. 150). Similar arguments have been advanced with regard to many areas of science and technology, most recently by the lobby in favor of human embryonic stem cell research. Behind this threat is not simply concern about economics, however. Such rhetoric paints a specter of Americans at the mercy of others (Japanese, German, British), who, by controlling access to a valued, needed, desired technology, threaten our autonomy; more perniciously, by withholding access, they could potentially have power over our very lives.

Thus, it is clear that genetics and the Human Genome Project cannot be understood apart from their relationship with the U.S. military and notions of national security. Tracing the history of other fields in the life sciences would likely reveal similar sorts of linkages. But this is only half the story. If we turn to biotechnology and the life sciences more generally, we find rhetoric fundamentally shaped by images of war. Three examples highlight this dynamic.

First, new technologies—from genetics to regenerative medicine—are often described as "revolutionary." Although at times more benign, "revolution" is fundamentally a political word, one suggesting force, violence, and power. It traditionally refers to the overthrow of a regime, government, or social order. To locate the technologies of healing under the rubric of "revolution" suggests that they function as a means of power, that they seek to affect the social order, that they will ultimately govern the lives of individuals.¹³

Second, and more obviously, medical research is often cast in the language of war. Richard Nixon, in 1971, launched the "War on Cancer," a metaphor employed and developed extensively in a recent report on cancer research in the journal *Nature*.¹⁴ This metaphor is employed most often when a new technology needs to be sold to political and public audiences in the U.S. The most recent example of this trend would be that of human embryonic stem cell research.

An article by Glenn McGee and Art Caplan, directors of the University of Pennsylvania Center for Bioethics and significant figures in the field of bioethics, exemplifies this dynamic.¹⁵ In "The Ethics and Politics of Small Sacrifices in Stem Cell Research" one finds at least seven war-related images in as many pages. For McGee and Caplan, those who seek to develop

therapies from human embryonic stem cells are characterized as fighting a “just war,” a “war against suffering” caused by the whole gamut of diseases from Parkinson’s to cancer to heart disease and more (p. 156). They compare the annual mortality of cancer, which might potentially be alleviated through human embryonic stem cell research, to the number of people killed “in both the Kosovo and Vietnam conflicts” (p. 154). They suggest that advocates of human embryonic stem cell research plan to “sacrifice embryos for a revolutionary new kind of research” (p. 152). They liken Parkinson’s disease to an evil “dictator” dreaming up the most nefarious “chemical war campaign” (pp. 156, 154). Resonating with wartime rhetoric, they note that “adults and even children are sometimes forced to give life, but only in the defense or at least interest of the community’s highest ideals and most pressing interests” (p. 153).

McGee and Caplan are far from alone in employing this sort of rhetoric to frame the discussion about human embryonic stem cell research. For many, and certainly for the media, clinical medicine through the auspices of biotechnology is engaged in a war against disease, disability, suffering, and death. The tools of research and the clinic are the “medical armamentarium.” Those who suffer from particular illnesses are “survivors.” Cures are hailed as “magic bullets.” Moreover, the hyperdrive politicization of this human embryonic stem cell research points to the familiar adage that politics is but war waged by other means. As Katharine Seelye notes, on August 9, 2001, when George Bush finally revealed his decision about federal funding of human embryonic stem cell research, “They chose to have Mr. Bush announce his decision in prime time on national television, a format that presidents traditionally reserve for explaining military actions or trying to extract themselves from difficult political binds.”¹⁶

This rhetoric of war is not accidental. A clue to its meaning comes from an article on what seems at first glance an unrelated topic—developments in American art and design in the 1940s–1960s. Commenting on the shift in American tastes from streamlined objects and architecture that celebrated the machine prior to World War II to more biomorphic images that celebrated nature, a museum curator observes that “the war didn’t make the machine look like such a salvation after all. The new salvation—and the new threat—was biology and the atom.”¹⁷ Similarly, in language ubiquitous in contemporary popular literature on science and technology, Michael West, founder of Geron, the company that funded the first successful efforts to create human embryonic stem cells, and now the head of the biotech concern Advanced Cell Technology, which has been at the forefront of efforts to clone human beings, sums it up: “We’re trying *to save* the lives of our fellow human beings who have *no hope* today.”¹⁸

Threat. Hope. Salvation. These are terms associated not traditionally with scientific discourse but with religious claims, specifically with doctrines of soteriology or salvation. Therefore, to unpack these claims and examine them in relationship to the practice of the life sciences, we must turn to the discourse of theology.

■ II. Nonviolent Science and the Enemy Death

The curator's remarks highlight an important characteristic of the soteriology of liberal democratic polity, namely, that the forces at issue are seen at one and the same time as both threat and salvation. William F. May, in an insightful reflection on the role of military metaphors in medicine, recognizes that these images are generated from the broader religious consciousness of contemporary culture and echo the duality of these powers. He notes: "The modern interpretation of disease as destructive power fits in with the religious preoccupations of our time. . . . However, the gods that enthrall modern men and women do not bless but threaten them."¹⁹ For May, the god above all gods is death. Death and the related god of suffering are those that we fear most, those that wield the most power over us (p. 34). Perceived as absolute evil, "the *summum malum* of violent death has replaced God as the effective center of religious consciousness in the modern world" (p. 67).

These dark forces threaten us; before them we stand helpless, innocent yet powerless. Without a champion to intervene on our behalf and defend us, we have no hope. Medicine, and the biotech machine upon which it depends, is just such a champion. Noting that it is only recently that the image of the physician as fighter replaced the image of physician as parent, May observes that "the goal of medicine defines itself negatively and adversarially as being either to prevent suffering or to prevent death" (p. 69). May describes the physician as "the titan who responds to the sacred by seizing power in his or her own right and doing battle with the enemy" (p. 33). The physician is the one that wields "the retaliatory powers that modern biomedical research places at his or her disposal" (p. 34). Medicine, thus, becomes our savior.

As John Wright has noted, this account of salvation is fundamentally a parody of the soteriology offered by the Christian tradition. On one level, the account is very similar, for suffering, death, and those other forces that threaten us, and fear of which dominates our lives, are nothing other than what traditional theological language has referred to as "the principalities and powers." Even within the Christian narrative, they are rightly under-

stood as enemies. St. Paul, in his impassioned exhortation on the essence of salvation, concludes:

Then comes the end, when [Christ] delivers the kingdom to God the Father after destroying every rule and every authority and power. For he must reign until he has put all his enemies under his feet. The last enemy to be destroyed is death. (1 Cor. 15:25–26)

But in the liberal revision of this vision, “Christ-the-physician” becomes physician-as-Christ, the one who (with the help of biotechnology) fights relentlessly against the last enemy, death. Science is, in the words of Michael West, hope for those who have no other hope. And when the battle is won, the kingdom will be delivered. But the kingdom will not be the kingdom of God, delivered to the Father. It will be the kingdom of liberal democratic polity, delivered into the hands of America. And medicine will sit at the right hand of power.

If indeed this account of the alternative soteriology of the life sciences is convincing, how then is an ecclesially based university to proceed in structuring its curriculum? How is a life scientist, who is also committed to her Christian identity, to negotiate the conflicting worldviews operative in her work and faith? Is it possible to practice the life sciences in such a way that they do not presuppose this worldview? Is it possible to practice the life sciences in such a way that they do not aim at producing the kingdom of god in America as much as they embody what it means to live in the Kingdom of God this side of the eschaton?

May explores the image of the physician as fighter in order to draw attention to the power of images and metaphor. They tell a story, he notes, a compressed, prototypical story, a narrative in which we locate ourselves, that defines our social role and how we understand our work and vocation.²⁰ As such, metaphors are “demiurgic in the sense that they do not simply describe the world, they partly create and re-create the world to conform to an image” (p. 20). Which world, therefore, ought the Christian practice of the life sciences create and recreate?

I do not pretend to have a complete answer to these questions. Instead, I would like to offer three starting points for the sort of reflection and discussion on these questions that must necessarily take place within institutions of higher education that take these issues seriously.

The first question concerns how we position ourselves vis à vis death and the attendant evils against which science and medicine fight (suffering, disability, and illness). Even St. Paul clearly regards death as the enemy. As such, is it not appropriate to resist it, to war against it, to respond to it even with violent means if necessary?

At issue here is the nonviolence of the gospel. For Christians, when confronted with an enemy, even an enemy as powerful as death, are exhorted in the Sermon on the Mount to love one's enemies, to pray for those who persecute us. What would Christian nonviolence look like in the face of illness and death? Are we simply to sit back and passively accept the scourges of sickness that afflict others, to be silent in the face of threats against life? Are we to rejoice when human life, a good that reflects the very image of God, is extinguished?

Such an attitude would seem in many ways to be at odds with the Christian tradition. Even Christ, we see in the passage from 1 Corinthians above, sees death as an enemy, has triumphed over it provisionally, and will ultimately destroy it. Here, and in the Apocalypse, we have language of a great war between Christ and the principalities and powers that rule the world, the last and greatest of which is death, an enemy that has been ultimately defeated by the Cross and Resurrection. The language here is violent, even militaristic.²¹ Moreover, Christian tradition has always held that part of the mandate of Christian discipleship is the call to follow Christ in his mission of healing—as we hear when Jesus, in the passage in Luke, commissions the seventy:

After this, the Lord appointed seventy others, and sent them on ahead of him, two by two, into every town and place where he himself was about to come. And he said to them . . . "Go your way; behold, I send you out as lambs in the midst of wolves. Carry no purse, no bag, no sandals; and salute no one on the road. Whatever house you enter, first say, "Peace be to this house!" . . . Whenever you enter a town and they receive you, eat what is set before you; heal the sick in it and say to them, "The kingdom of God has come near to you." (Luke 10: 1–9)²²

For Luke, healing is inextricably linked to the kingdom of God. It is a sign of its inbreaking, its coming near to us in Jesus. And it is a task specifically given to those sent by Jesus into the world to prepare the way for his coming.

Yet, not only does this passage from Luke point us in the direction of healing, it points us again in the direction of peace. Prior to healing, those sent are to proclaim "Peace be with you!" Like healing, the peacebearing nature of the Christian life derives squarely from the life of him who we follow. But rarely do we see those who heal—be it God, Jesus, or the disciples—locked in a violent struggle against the enemies, sickness and death. Sickness and death are clearly not adversaries to be fought at all costs. Instead, the healing witnessed in Scripture is a practice rooted in the identity and actions of the God, who is a God of peace.²³ The healing that we pursue, therefore, must be anchored in the broader context of God's work in the world and

our participation therein. The healing that is part of the Christian mandate, if abstracted from this narrative context, becomes a formal claim to which any and all means might be fitted.

I would suggest that to understand what it might mean to love death as one's enemy would require that we look to analogous contexts where it is clearer what it might mean to love one's enemies. It might mean that we are to forgive death the real injuries, pain, and suffering it causes us. It might mean that we are to be reconciled to its presence, forgoing the fantasy that we will defeat death with the tools of our technology. It might mean that we are to rightly resist it, but only with the tools of love.

What are those tools? We find them highlighted in Ephesians, in the jarring military metaphors that Paul uses to describe the Christian life:

Finally, be strong in the Lord and in the strength of his might. Put on the whole armor of God, that you may be able to stand against the wiles of the devil. For we are not contending against flesh and blood, but against the principalities, against the powers, against the world rulers of this present darkness, against the spiritual hosts of wickedness in the heavenly places. Therefore take the whole armor of God, that you may be able to withstand in the evil day, and having done all, to stand. Stand therefore, having girded your loins with truth, and having put on the breastplate of righteousness, and having shod your feet with the equipment of the gospel of peace; besides all these, taking the shield of faith, with which you can quench all the flaming darts of the evil one. And take the helmet of salvation, and the sword of the Spirit, which is the word of God. (Eph. 6:10–17)

Truth, righteousness, peace, faith, salvation, Spirit, and the word of God. These—including peace—are the weapons of the spirit. Facing death so equipped, we do not so much annihilate it but rather evaporate its power over us, its power to govern our lives with fear, to determine our actions. These tools do not eliminate its reality—we all will still die—but they can liberate us from having our lives be controlled by death (and suffering and illness).

Likewise, we need to take care in reading passages like 1 Corinthians 15 too literally. For while Christ may well consider death an enemy, it would be out of character for the risen Christ to act violently, even toward this greatest of enemies. Christ, we believe, has triumphed over death. But as his initial victory was nonviolent, so also will be his final defeat of death.

A Christ-centered understanding of discipleship sets the context for the understanding of our work, our vocations, and our very lives. One additional aspect of this reimagining relevant to the work of the life sciences concerns our relationship with nature. All too often, training in the life sciences under an overarching bellicose metaphor presumes a Baconian-cum-Manichean

understanding of nature. Not only is nature understood as raw material to be exploited to ease the human condition (domination rather than dominion), certain elements of nature become cast as evil. From "bad" or "defective" or "mutant" genes to body parts that "fail," nature within this metaphor is overlaid with moral valence. It is the evil nature that must be overcome if the soteriology offered by liberal polity is to be achieved.

As Augustine reminds us, however, for Christians no aspect of nature can be deemed evil insofar as everything that exists is part of God's creation.²⁴ "And God saw everything that He had made, and behold, it was very good" (Gen. 1:31). In fact, Augustine acknowledges how certain aspects of creation (under which he might have included pathogens had they been known to him) might be perceived as evil in and of themselves:

... [T]here are many things, such as fire, cold, wild beasts, and so forth, which are not compatible with, and which injure, the needy and frail mortality of our flesh. ... [Those who hold them to be evil] do not notice how splendid such things are in their places and natures, and with what beautiful order they are disposed, and how much they contribute, in proportion to their own share of beauty, to the universe as a whole, as to a commonwealth. Nor do they see how these things contribute to our own wellbeing when we employ them with a knowledge of their proper uses. Thus, even poisons, which are harmful if used ill, become wholesome and curative when proper use is made of them; whereas, on the other hand, those things which delight us, such as food and drink and the sun's light, are known to be harmful if used immoderately or inopportunistically. ... For there is nothing at all which is evil by nature, and "evil" is a name for nothing other than the absence of good.²⁵

For Augustine, nature in itself cannot be evil, though nature disordered as an effect of the fall will certainly be experienced as such.²⁶

For it is that which pleases us in their natures that we are displeased to see taken away by some fault. This may not be so in cases where even the natures themselves displease men, as often happens when such natures become harmful to men. For then men consider them not in themselves, but only with reference to their utility, as with those creatures whose swarms smote the pride of the Egyptians. ... It is not with respect to our comfort or discomfort, then, but with respect to their own nature, that created things give glory to their Maker. ... We find, then, that the same thing is hurtful when applied in one way, but most beneficial when proper use is made of it. ... All natures, then, simply because they exist and therefore have a species of their own, a kind of their own, and a certain peace of their own, are certainly good. And when they are where they should be according to the order of their nature,

they preserve their own being according to the measure in which they have received it.²⁷

In instances of illness, created things are clearly not where they should be. The result of this disordering—a consequence of the fall—is morbidity and death. But Augustine reminds us that a Christ-centered understanding of the biological world knows that all of creation is the work of God through the Word. With such an attitude, researchers in the life sciences can learn to love our common enemies, approaching viruses and mutant genes as good, simply because they exist, while joining their efforts to God's redemptive purposes by righting the order of creation.

■ III. Christian Practices and the Gift of Peace

In learning to love our enemies, do they necessarily remain such, namely *enemies*? The gospel does not promise that if we love our enemies, such enmity will disappear. In fact, it seems to promise that habits of loving one's enemies will most likely bring more on and may well lead to crucifixion or martyrdom.

The late Joseph Cardinal Bernardin in *The Gift of Peace*, his autobiographical account of his struggle with terminal pancreatic cancer, provides a compelling response to this question. In his narrative, we watch as he uses the tools of medicine to resist the growth of cancer in his body. We watch as he wins a short-lived remission, and then how the cancer returns with renewed virulence. The experience of his own illness leads him into a new world of ministry, being present to and praying for hundreds of others who struggle with cancer. At the end of his own journey, he comes to regard "death not as an enemy but as a friend."²⁸

This transformation in his attitude toward death is clearly the fruit of the practices of the Christian life. The reorientation is first suggested to him by his friend Henri Nouwen, who learned it during his last ministry among persons with disabilities when he lived in the Daybreak Community of L'Arche. Nouwen's insight resonates with Bernardin's life, shaped as it is by practices of "letting go" and giving God Lordship over his life; of practicing forgiveness; of ministering to others who are sick and dying. Liberation from the tyranny of suffering and death, reconciliation with death, and learning to love the enemy death to the point of calling it "friend" are for Bernardin the fruits of a worshipful life lived amidst the community of the broken.

As such, Bernardin's re-reading of death is clearly Christopathic—shaped by Christ's willed self-emptying, death, and resurrection. His story strongly suggests, however, that such a rereading is only possible in a life deeply

shaped by Christian practices. This is instructive for questions of pedagogy, especially for the life sciences. For unlike just about any other discipline in the university curriculum, science pedagogy is practice-based (which accounts in part for its power) and engages students in formative disciplinary activities. Science students have "lab." In most institutions, science students (and perhaps even general education students) spend more time in lab each week than in worship. How do these very embodied practices form students? In what narrative do they situate them? How to they shape the way that they see the world?

Considerations of the life sciences in the curriculum of an ecclesially based university must engage these questions. It must reflect on the spectrum of practices that complement the students' lives, giving special attention to ways in which alternative practices may be more especially necessary for students in the sciences to help them learn to resist the power that it seeks to have over their lives. To effectively help students and professors renarrate the "story" that underlies their practice of the life sciences in an ecclesial university will require not only a redescription of the world, but will also require a set of practices by which those convictions become habitually embodied. Among these practices would certainly be daily prayer and worship; service—especially with the sick and disabled; and reconciliation, insofar as these work to inculcate a habit of seeing God in all things, the virtue of compassion (suffering with), and the virtue of peaceableness. Learning to lead lives that are christologically determined may make it easier for students and practitioners of the life sciences to learn to reread the practice of their disciplines in a way that is informed by the one we follow and that, like him, points beyond ourselves, and our work, to God.

For students to be so formed, however, will require a faculty equally open to having their lives reshaped by practices of resistance. This, in many ways, is the greater challenge for an ecclesially based university. As Dreger noted at the outset, those scientists who follow the ethos of the nation may find their loyalty to the culture of science called into question. If that is the case, how much more difficult will be the challenges that face those scientists who follow the ethos of the church? As with all academics, teachers of the "life sciences" are formed by the norms and practices of their disciplines. They come to teaching positions with identities as "geneticists" or "developmental biologists." How does one maintain one's professional identity if the practice of the life sciences in an ecclesially based university requires a radical revisioning? Furthermore, funding for university research in the life sciences comes almost exclusively from two sources: the government (NIH, NSF, etc.) or private industry. Neither can help but enmesh the researcher in the aims and violence of liberal society. How ought university professors negotiate this problematic? How, if they decide to seek funding

from alternative sources, do they maintain professional credibility and the academic reputation of the department and university?

Answers to these questions must be worked out within the community of those who practice the life sciences in conversation with their colleagues across the university. But in order to address the practical incorporation of the life sciences within an ecclesially based university, those who strategize must ask whether such sciences can be disentangled from the violence of the state and the idolatrous soteriology that currently hold them in thrall.

■ Notes

1. *Nature* 341 (1989): 679.
2. Alice Domurat Dreger, "Metaphors of Morality in the Human Genome Project," in Phillip R. Sloan, ed., *Controlling Our Destinies: Historical, Philosophical, Ethical, and Theological Perspectives on the Human Genome Project* (Notre Dame, Ind.: University of Notre Dame Press, 2000), p. 155. Emphasis added.
3. See John Wright's chapter in this volume.
4. What are "the life sciences" within a college or university context? This term might encompass such diverse educational programs as undergraduate courses in biology, wherein one's aim is basic literacy, or preprofessional education; M.A. or doctoral programs in biological subdisciplines, wherein the aim is to produce a disciplinary professional; or professional schools in health care (medical, nursing, or allied health professions). Each of these different institutional locations for "the life sciences" raises different questions for those interested in creating a university that would be ecclesially based. For our purposes, rather than specifically examining the practical issues raised by these different sorts of programs, I will raise a more global issue that is common to all.
5. Garland Allen, *Life Science in the Twentieth Century* (New York: John Wiley and Sons, 1975), p. 114.
6. Phillip R. Sloan, "Completing the Tree of Descartes," in Sloan, ed., *Controlling Our Destinies*, p. xxvi.
7. William F. May, in his book *The Physician's Covenant: Images of the Healer in Medical Ethics* (Philadelphia: Westminster, 1983), outlines how "The Fighter" serves as one of the primary images for understanding physicians and how military rhetoric shapes the practice of medicine. My comments below will focus more on how this functions within the research community, recognizing that the life sciences are not easily separated from their relationship to clinical medicine.
8. For more on this history see John Beatty, "Origins of the U.S. Human Genome Project: Changing Relationships between Genetics and National Security," in Sloan, ed., *Controlling Our Destinies*, p. 132; Robert Cook-Deegan, *The Gene Wars: Science, Politics, and the Human Genome* (New York: Norton, 1994); and Diana B. Dutton, *Worse than the Disease: Pitfalls of Medical Progress* (New York: Cambridge University Press, 1988).
9. Timothy Lenoir and Marguerite Hays, "The Manhattan Project for Biomedicine," in Sloan, ed., *Controlling Our Destinies*, p. 30.
10. Lenoir and Hays, p. 62, citing James Potchen, *Report to the Energy Research Development Agency of the Atomic Energy Commission* (1976), p. 10. Interestingly, this testimony

gives no information on how nuclear medicine has affected patient health outcomes. The interest is in usage, which one might translate as revenue, and professionalization.

11. Lily E. Kay, "A Book of Life? How a Genetic Code Became a Language," in Sloan, ed., *Controlling Our Destinies*, p. 103.

12. Beatty, "Origins," p. 132.

13. Of course, the relationship between modes of healing and social orders is not necessarily something new. As St. Luke reports:

Jesus was driving out a demon that was mute, and when the demon had gone out, the mute man spoke and the crowds were amazed. Some of them said, "By the power of Beelzebul, the prince of demons, he drives out demons." Others, to test him, asked him for a sign from heaven. But he knew their thoughts and said to them, "Every kingdom divided against itself will be laid waste and house will fall against house. And if Satan is divided against himself, how will his kingdom stand? For you say that it is by Beelzebul that I drive out demons. If I, then, drive out demons by Beelzebul, by whom do your own people drive them out? Therefore they will be your judges. But if it is by the finger of God that I drive out demons, then the Kingdom of God has come upon you. When a strong man fully armed guards his palace, his possessions are safe. But when one stronger than he attacks and overcomes him, he takes away the armor on which he relied and distributes the spoils. Whoever is not with me is against me, and whoever does not gather with me scatters. (Luke 11:14–23)

William F. May, in fact, notes the military images used here to support his claim that military images for medicine are not entirely inappropriate from a Christian perspective.

14. Alison Abbott, "On the Offensive," *Nature* 416 (2002): 470–474.

15. Glenn McGee and Arthur Caplan, "The Ethics and Politics of Small Sacrifices in Stem Cell Research," *Kennedy Institute of Ethics Journal* 9.2 (1999): 151–157.

16. Katharine Q. Seelye, "Bush Gives His Backing for Limited Research on Existing Stem Cells," *New York Times*, August 10, 2001.

17. Doug Stewart, "Cheese Holes, Blobs, and Woggles," *Smithsonian* 32.11 (February 2002): 42. This observation reflects the cultural recognition that the tools that showed themselves most stunning and powerful in turning the tide of the war were, in different ways, the bomb and penicillin.

18. Faith Keenan, "Cloning: Huckster or Hero?" *Business Week* (July 1, 2002): 86–87. Emphasis added.

19. May, *Physician's Covenant*, p. 31.

20. *Ibid.*, pp. 17–18.

21. For this point I am greatly indebted to Stephen Fowl.

22. This passage alone points to a number of key points. While I will develop two, others would be equally fruitful for reflection. Jesus sends the disciples out "two by two." How might this challenge the standard image of the scientist—or the academic more generally—as a solitary researcher, working alone to discover the truth? While certainly the practice of science has become increasingly collaborative over the past decades, the image of the researcher-as-individual persists. What might a more collaborative model of research mean for pedagogy, for developing alternative routes of research funding, for the process of discovery more generally, for the university community? Jesus also says "Go your way." Does this indicate a sort of freedom for the life of discipleship and likewise for the realm of intellectual inquiry? Jesus' instructions also convey a sense of the giftedness

of life—take nothing, eat whatever is put before you. How different might our work look if we understood all that comes our way—from funding to discovery, knowledge, and insight—as gifts of a gratuitous and gracious God, rather than as possessions to be translated into biotech start-up companies from which we can greatly profit?

23. A fuller account of what healing looks like in Scripture would be very helpful at this point but is beyond the scope of this essay. A first task of those engaged in conversations around the role of the life sciences in the ecclesially based university would do well to begin with a study of this question.

24. Some might observe that Augustine is an unlikely ally to invoke in an account of science as pacifist. In fact, William May supports a “just war” approach to the practice of medicine. Whether just war can rightly be construed as a form of pacifism that is appropriate for the context of healing, I will leave as a question for intrainstitutional conversations.

25. Augustine, *City of God*, trans. Gerald G. Walsh, Demetrius B. Zema, Grace Mo-nahan, and Daniel J. Honan (New York: Doubleday, 1958), XI.22.

26. In a similar way, Augustine considers the claim that “the flesh” is to be considered evil to be fought and conquered. Insofar as the flesh is created, it is good; moreover, the very act of making an enemy, especially of part of God’s creation, is an act of sin: “If a man entertains enmity, does he not entertain it in his mind? . . . so no one doubts that sins of animosity belong to the mind” (*City of God*, XIV.2), arguing in characteristic fashion that vices reside in the mind/will, not in the flesh.

27. Ibid., XXII.4–5.

27. Joseph Cardinal Bernardin, *The Gift of Peace* (Chicago: Loyola, 1997). Bernardin is not making a novel claim insofar that one finds a similar sentiment in Augustine. Augustine acknowledges the pain of death, recognizing that “there is something harsh and unnatural in the violent sundering of what, in a living person were so closely linked and interwoven,” namely the soul and the body (*City of God*, XIII.6). Nonetheless, for Augustine, “Death is not to be deemed an evil when a good life precedes it; nor is death made an evil except by what follows death” (*City of God*, I.11). What is to be feared and fought is not biological death itself but spiritual death. In the Christian tradition, death is not an enemy to be feared, unless we are not prepared for it.