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Perspectives on Science and Christian Faith

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Clear

James C. Peterson

Whan dat Aprille vith its shoures soote, the droghte of Marche hath perced to the roote, and bathed every veyne in swich licour of which vertu engendred is the flour.

The previous sentence is English, granted it is the Middle English that begins *Canterbury Tales.* It is beautifully put for the thirteenth-century Londoner. Chaucer has much that is entertaining and insightful to say, but he is almost indecipherable to contemporary English readers. Our English is present in that quotation, but "the droghte of Marche hath perced to the roote," would be much more likely to be recognized today as "the drought of March has pierced to the roots."

An essay submitted to *PSCF* may be on task, new, and true (as described in the last few editorials), but there is no point in its publication if it is not also clear. It is not enough that an article may eventually be decipherable. Our readers are erudite, but they have to choose how to apportion their time, and they cannot be expert in the jargon of every specialty. Articles in *PSCF* can be demanding, but they need to be readable across a wide range of scientific and theological disciplines.

The point of each article is not just to present material. It is to evoke understanding. That requires authors to go out of their way to write in a way that eliminates as many byways and dead ends as possible. When the precise terminology of a discipline is useful, it is welcome, but it should be defined, not assumed. If an insider consensus is relevant, the not-yet-initiated reader will gain from that being noted. When knowledge of a field's context helps to reveal the importance or force of an argument, it warrants explanation. The author needs to think ahead and provide what the esteemed reader of *PSCF* might find helpful to recognize the article's contribution.

That clarity of thought should also be evident in the clarity of presentation. The outline should be evident in the headings. Short sentences. Short paragraphs. There is room for nuance, but it should be presented directly. The content may be challenging, but the communication should not be more complex than it has to be.

Being clear does require more work for the author. Clarity of expression takes greater skill and mastery of one's topic than presenting a lump of great worth that is not yet mined and refined. But the work presented in this journal is too valuable to be left inchoate. The author's task is not only to present new, relevant, and insightful ideas. It is to present them in a way that the reader can readily understand the contribution. The essays that we publish are ones that are accurate, fitting, new, and clear.

James C. Peterson, *Editor*

In This Issue

One year ago, Heather Looy agreed to post on the ASA and CSCA web sites, an analysis of some of the current interactions between psychology and the Christian tradition. That triggered many thoughtful essays in response. Four of the best follow here. As co-editor for the articles in this psychology-themed issue, Looy ably organized the rigorous peer review to recognize and develop them.

The first is by Duane Kauffmann and counterbalances part of Looy's initial essay. He argues that the striving of psychological science for an empirical

approach should remain central to sorting through the tangle of human self-perception. Next, Russell Kosits calls for scholarship in psychology that is distinctively Christian in its perspective, and yet so compelling in its insight that it engages and challenges those outside the Christian tradition. Noreen Herzfeld warns that the expanding power of machine memory will never replace truly human memory, and Gareth Jones describes and tests proposals to use technology to shape our brains to higher moral achievement.

In Communications, Denis Lamoureux shares a story of healing through medications that repair brain chemistry. Kevin Reimer then writes of his experience and research with the differently abled core members and their assistants at L'Arche.

Our book review section goes beyond psychology, ranging across the latest conversation between science and the Christian tradition. Then, in a letter, Kenell Touryan draws from his extensive experience of dialogue with scientists who are atheists, to extend the analysis of a June issue article on science and atheism. A letter follows from Charles Austerberry that challenges the June essay that advocated uniformitarianism. The author, Bruce Gordon, replies.

James C. Peterson, *Editor*

Heather Looy

Psychology at the Theological Frontiers

Heather Looy

This article is an invitation to dialogue about the foundational assumptions of North American psychology, and the implications of those assumptions in research and practice. Mainstream psychology uses a positivist notion of science to systematically study human experience and behavior. This "view from without" is a valuable means of obtaining certain kinds of information about ourselves. However, the unwillingness of many in the field to acknowledge the basic worldview assumptions that lead to the prioritizing of positivist science can limit and distort our human understanding. These problems include an extreme objectivism, bad reductions that leave out essential aspects of human experience, and decontextualized and individualized approaches to human distress. This type of science is also used to study religion and faith as variables rather than as foundational contexts, to push for a transhuman future, and to increase our disconnection with the natural world. Christians are called to make explicit, and where appropriate challenge, the foundational assumptions of psychology, to integrate the standard "view from without" methods with rigorous methods that take a "view from within," and to reflect on the priorities of the field in light of Christian theology.

Philosophers, theologians, poets, storytellers, and many a wakeful person longing for self-understanding ask questions about human identity and behavior. Who am I? Why do I do what I do? And often, why do I do what I do *not* wish to do? We experience ourselves as both freed by and frustratingly limited by our physicality, as both "embodied spirits and inspirited bodies."[1] We wrestle with questions of meaning and purpose. Self-understanding is neither immediately obvious nor easily obtained.

We turn for answers to whatever sources of knowledge we value and trust. For those who accept the Bible and the Christian tradition as such a source, we are both dust of the earth and a little lower than the angels, called to care for and cultivate the creation (Gen. 1:28; Ps. 8:4–6). Dietrich Bonhoeffer explored these questions through theology and poetry.[2] Those who wish to explore these questions philosophically can turn to a rich written tradition that in the West includes Plato, Aquinas, Nietzsche, and Freud. C. S. Lewis uses story to paint a picture of human nature: When young Prince Caspian discovers he is the descendant of pirates who accidentally stumbled through a door between worlds and conquered Narnia, he says, "I was wishing that I came of a more honorable lineage." "You come of the Lord Adam and the Lady Eve," said Aslan, "and that is both honor enough to erect the head of the poorest beggar, and shame enough to bow the shoulders of the greatest emperor in earth. Be content."[3]

Heather Looy *is Professor of Psychology at The King's University College in Edmonton. She focuses on biopsychology, with particular interests in gender and sexuality, food, emotions, and moral judgment. She also engages in science-religion dialogue, and co-edited with Heidi A. Campbell,* A Science and Religion Primer *(Baker Academic).*

We get a rather different picture of ourselves when we turn to psychology. Psychology self-defines as the *science* of human behavior and mental processes. This field uses a particular, rather positivistic, definition of science, invoking the language of process, mechanism, probability, prediction, and causation. We mark the beginning of psychology as a separate discipline at 1879, the year that a German scientist by the name of Wilhelm Wundt opened a *scientific* laboratory explicitly dedicated to "experimental psychology" (although Wundt himself defined science more broadly than do modern psychologists). Although many psychologists work in applied areas such as counseling or human resource management rather than research, they have virtually all been trained as "scientist-practitioners" and are encouraged to engage in "evidence-based practice." In other words, to be a psychologist is to be a scientist.

The heart of this article is an exploration of how this self-definition of psychology as a science helps and hinders our self-understanding. I will focus on what might be called "mainstream" North American psychology: The theories, practices, and methods accepted by the American Psychological Association (APA) and the Association for Psychological Science (APS), the two largest professional organizations in the field. Of course, in practice, psychologists draw on a diverse collection of approaches ranging from the biological to the sociological, using methods that include the quantitatively empirical to the phenomenological. My narrower focus is not intended to exclude or deny this diversity but merely to engage the most dominant themes in the field, in particular, those that I believe Christians need most to engage. This is a highly selective and idiosyncratic list influenced by my own background as a biopsychologist working interdisciplinarily and integratively in the context of a Christian university. My intent is to spur dialogue and debate, and I invite readers to correct or to expand upon the issues I raise here, and to point out others as needed.

Science and Worldview

When we hear "scientists say," we listen. Science and scientists are given great authority and power in modern Western culture. The particular view of science that the early psychologists deliberately embraced emerged from the Enlightenment and positivistic beliefs in the lawful, mechanical nature of creation, and the power of human rationality to discover and utilize those laws. We human beings, "after all, are just extremely complicated machines."[4] Our complicated machinery has given rise to a rationality that enables us somehow to transcend our mechanical nature in order to discover and ultimately control our own mechanisms. "Technologies of behavior" are the only way we will solve our emotional, behavioral, and social problems.[5]

Psychologists rarely acknowledge that this mechanistic view of human nature is part of a particular worldview which, by definition, is neither scientifically nor logically verifiable. Instead, the culture of psychology convinces its students that these worldview beliefs are objective, verifiable truths. Yet, as long as psychologists claim that they can discover fully objective truths about human behavior, they risk failing to notice the limits and distortions of their knowledge and close their minds to other potentially fruitful ways of coming to self-understanding. The refusal to acknowledge that everyone has a "view from somewhere" also creates difficulties for Christians who engage psychological science expressly from a Christian worldview.[6] Mainstream psychologists treat faith as simply one of a multitude of variables relevant to an objective account of human behavior, rather than the lenses through which each one of us, psychological researchers included, engages the world.

Objectivity and Objectivism

Students enter psychological studies with passionate questions about who we are, why we behave as we do, and how to deal with emotional or relational difficulties. One of the first things they are taught is that people cannot be trusted to have accurate insight into their own psyche. It is the psychological *scientist* alone who, by observing dispassionately from the outside, can tell people the *real* reasons for their behavior or mental states. The psychologist is the expert, the objective observer, the one in a position to obtain the real truth.

Because of the worldview belief that human beings are "nothing but" complicated natural mechanisms, psychologists are taught that we can, for

the purposes of research, ignore that we are human beings studying ourselves. We view the very traits that enable us *to* study ourselves—our subjective experience, meaning-making, self-awareness, unique access to what it is *like* to be human—as irrelevant to self-understanding. Instead, we are to take an objective view, or as G. K. Chesterton's fictional detective Father Brown puts it, "getting outside a man [sic] and studying him as if he were a gigantic insect: in what they would call a dry impartial light, in what I should call a dead and dehumanized light."[7] This is a form of *objectivism*, a position that "portrays truth as something we can achieve only by disconnecting ourselves, physically and emotionally, from the thing we want to know."[8]

Thus, research participants are "subjects" who must be deceived so they cannot adjust their behavior in accordance with their own or the researcher's expectations, so that they behave "naturally." While in everyday life behaving "naturally" actually does involve making meaning and self-reflection—not just reflexive reactions—these natural processes are viewed as sources of "error" in positivistic psychology.[9] Participants cannot be trusted to know their real motives nor accurately predict their responses—only the researcher has access to that.

Researchers are also suspect. Because they are human, they are "biased," and this bias must be prevented from influencing participants' behavior and the researchers' observations and interpretations. Thus researchers are required to systematically separate themselves from their participants and treat each identically to prevent the researchers from distorting the "objective truth" of the participants' motives and behavior. For example, administering a standardized intelligence test to young children can involve the tester reading from a script rather than adjusting behavior depending on the child's emotional state, despite the fact that under such conditions a confident child might show her full potential while a timid or anxious child might perform well below his actual ability. Becoming blind to the condition or state of the participant being observed and leaving the participant blind to the observations and expectations of the researcher are viewed as laudable goals, and indeed, sometimes they are. However, the contortions researchers undergo to deny their subjective knowledge in the interests of objectively applying their rationality through the methods of the natural science (or a caricature thereof) can actually distort the "truth" of human experience and behavior.

There is nothing wrong with trying to be objective in the sense of remaining humble about our limitations. We are self-serving, self-deceived, and shortsighted, accounting for our own behavior in ways consistent with our self-image. Christian theology reminds us that we are both creatures and sinners, limited and distorted. Psychological research into the limits of human reasoning—persistent biases of thought, perception, and emotion—has confirmed this age-old truth, and thus there is an important place for the "view from without." We need to structure our observations of the world in such a manner that we minimize the possibility of seeing only that which we wish to see. However, we so easily slip from this sort of humility into the arrogance of believing that if we simply use the correct method, we can achieve a truly objective view of the world and of ourselves. Is it *ever* possible for us to see ourselves from the outside? We *are* subjective, self-aware, compulsive meaning-makers who experience the world *in relationship*.[10] We cannot even perceive the external world from the outside; perception is heavily influenced by our particular sensory systems and the language and cultural contexts within which we interpret sensory information. How much more difficult it is for us to perceive *ourselves* from the outside. To act as if we *can* and *should* seek a view from without, and at the same time dismiss the view from within, surely deeply distorts our understanding of the causes of our behavior.

Another problem with objectivist methodologies is the potential for ethically questionable practices. Psychologists regularly practice complex and layered forms of deception to achieve objectivity, and the consequences of this should lead Christians to ask hard questions.[11] The claim that such deception is necessary to determine the real truth of human behavior is weakened by the fact that experimental economists eschew deception in research on principle.[12]

Psychologists are not unified in their commitment to objectivist research. There have always been countering voices, as well as researchers who use

methodologies that attempt to honor the subjectivity and relationality of the researcher and participant.[13] While these methodologies have been more widely adopted and accepted in fields such as sociology and health sciences, they are gaining traction within psychology itself. At present, however, such approaches remain on the margins. "Success" in mainstream psychology still requires a commitment to and competence with objectivist, quantitative approaches.[14] Christians in the field would do well to provide articulate grounds for methodologies that better reflect our understanding of human nature; to develop, teach, and practice those methodologies; and to challenge and engage the mainstream in recognizing their rigor and validity.

Good and Bad Reduction

Science necessarily involves a process of simplifying or reducing the complexity of reality. Exploring and learning about an aspect of human experience is similar to creating a map. A map is not intended to tell us everything about a territory, but only those things we need to navigate successfully. A map that is exactly the same size as the territory and contains within it every single element of that territory is actually useless.[15] Thus maps are, by definition, simplifications, reductions, of the reality to which they refer.

This type of reduction is necessary and desirable. Reduction only becomes inappropriate when someone claims that what is in the map contains all that is essential to understanding the whole in its richness and complexity. The map should contain all that is essential to understanding certain *aspects* of reality, just as Newton's laws of planetary motion actually do explain planetary motion. However, those laws say nothing of the size, composition, atmosphere, and other features of the planets. Should someone claim that Newton's laws tell us everything meaningful about the planets they would be engaging in "bad" reduction.[16]

I submit that much of modern psychology engages in bad reduction. It leaves out elements essential to understanding the rich experience of being human in its attempt to uncover the natural, mechanical laws that supposedly govern our behavior. The currently popular level to which we are reduced is usually biology. It is certainly much easier (though by no means easy) to study concrete biological systems, such as the genome, neurochemistry, or brain structures, than to examine subjective traits such as empathy and intelligence that are invisible to the senses except through our words and actions. Thus we speak of how depressed persons are more likely to carry a particular allele, or to have diminished serotonin function or activity in the "reward" areas of the brain, losing sight of—or frankly finding irrelevant—the subjective reasons such persons might give for their deep hopelessness and despair. This "biologism" is problematic in many ways, as I have addressed in more detail elsewhere.[17] While these approaches do honor our embodied creatureliness, they deny or make problematic intention, free will, moral responsibility, and subjective experience. They also isolate human problems to the individual, by and large ignoring the contributions of community, and our collective responsibility for one another. Solutions to psychological problems are limited to those that alter our biological function.

Reducing human nature to "nothing but" biological mechanism (or, for that matter, social construction) and believing that this will reveal the "real truth" about ourselves is both paradoxical (how can mechanisms become the mechanics?) and prideful. How can Christians engage in *good* reductions, thosethat are necessary to doing good psychological studies, without losing sight of essential dimensions to human *being* and *behavior*? One place to start is to become aware of the problems of bad reduction by reading some of the helpful critiques available.[18] In addition to using more traditional quantitative methods, the development and practice of research methods that attempt to honor human subjectivity, such as those coming from "human science," and feminist and existential-phenomenological perspectives, are other important goals.

Context and Individualism

When psychologists speak of human nature, they often mean a context-independent set of characteristics that are species-specific and universal. Constructs such as intelligence, aggression, introversion, self-esteem, or compassion are treated as real, stable

things that can vary quantitatively. Psychological measures are presumed to be valid indicators of these constructs; these measures are called operational definitions. For example, "intelligence" might be operationalized as a "score on the Wechsler Adult Intelligence Scale" or "school grades."

Operationalizing involves decisions about which indicators of the construct are most valid, central, or characteristic—decisions that are influenced by one's worldview. For a long time, psychologists were oblivious to the idea that intelligence might look quite different in different contexts and came to the peculiar conclusions that black people are inherently less intelligent than white people, poor than rich, aboriginals than Europeans. This error was caused by the indicators of intelligence—IQ scores, school grades, financial success—which were measures of ability to function within a particular context with particular values and expectations. Alternative, culture-sensitive measures of intelligence acknowledge that what it means to be intelligent in urban North America may be profoundly different from that in the Australian outback or Canada's far north. However, much psychological research is based on operational definitions that are developed for the North American context but presented as if they are universally applicable. Indeed, many operational definitions are so context independent that they are applied across species; for example, studying "empathy" in rodents as a model for human interaction. Psychologists put a lot of energy into formulating, comparing, validating, and modifying operational definitions. However, it is easy to forget the disputed, contextual nature of those definitions and measures; conclusions are often written in a manner that appears to assume that we are using objective measures of real and universal human characteristics.

Ignoring context leads to other distortions of our understanding of human experience.[19] For example, the Diagnostic and Statistical Manual of Mental Disorders is intended to standardize diagnoses and make them more consistent across professionals and settings. It does so by using lists of context-independent symptoms, intensities, and durations. While there is value to a standardized system, it can lead to phenomena such as labeling both a deeply sad, middle-aged man with few apparent external stressors and a young child dealing with her parents' unpleasant divorce with the same diagnosis of depression. It can also lead to both people receiving the same treatment, usually drugs, which are themselves nonspecific, context-independent forms of treatment.

In the attempt to identify universal laws of human behavior, variability in that behavior literally becomes "error," to be controlled statistically. While this is a useful procedure if the research question asks about general tendencies or probabilities, it is less useful when dealing with particular people in particular contexts, something that most applied psychologists, in fact, do. Rich and meaningful diversity is lost in means and standard deviations. Difference can become abnormality, leading to alienation, stigmatization, even unnecessary treatment of the glorious variation of human experience and behavior.

How might the theology of the image of God help us deal with the pitfalls and opportunities of psychological research that ignores or attempts to control the effects of context? How can Christian psychologists learn to become more self-critical about their complicity in an enterprise that often makes universal claims about human experience and well-being without humble acknowledgment of the complexity and limitations of our self-knowledge?

The Christian faith reminds us that we are fundamentally relational beings, part of a creation that includes nonhuman beings and inorganic elements, unable to develop and function without a social community. Along with a few wise voices emerging from mainstream psychology, Christians can and should speak to the importance of considering context and community in understanding a person's experience and behavior. The concept of the body of Christ may be helpful in structuring a more contextual and relational approach to understand human distress and flourishing. Further, Christians have impetus from their faith to challenge clinical and counseling psychologists to consider how they can play a role in promoting healthier contexts and communities rather than focusing exclusively on helping people cope with, or flee from, toxic environments.

Christianizing Psychology / Psychology of Religion

Christians sometimes use mainstream psychological methods to study various "Christian" topics, such as forgiveness, repentance, gratitude, altruism,[20] the effectiveness of prayer,[21] or the impact of religion on physical and mental health.[22] They also study how mainstream psychological theories and treatment approaches can and cannot be used effectively with Christian clients.[23]

While this research meets standards of rigor within the psychological community, by doing so these researchers implicitly agree with the foundational assumptions described earlier. Does it make sense for Christian psychologists to work within a positivist, mechanist, objectivist, reductive, context-independent field in order to demonstrate *scientifically* that Christian values lead to more happiness, flourishing, psychological stability, and so forth? Many Christians delight in finding scientific evidence to support the value and efficacy of the faith for human well-being, without necessarily questioning the validity of the source of these conclusions.

Should Christians therefore develop a parallel, alternative form of psychology? Stand within their own worldview and critique mainstream psychology? Accept that mainstream psychology explores the same reality and therefore is one means to truth about human experience? Work subversively within the mainstream, both participating and presenting alternatives? The fact is that we live in a culture that values psychological research as a source of knowledge about ourselves. How do we live in the tension of being *in* but not necessarily *of* that world?[24] If God encourages or commands us to live in particular ways, we may presume that these are not simply arbitrary commands intended solely to test our faithfulness, but instead to reveal what God knows will help us be most fully ourselves, best able to fulfill our calling. And if so, then it is possible that systematic examination of those who attempt to live in God's way might reveal positive outcomes of doing so. Further, on the presumption that "all truth is God's truth," it may be that knowledge obtained through psychological science is no *less* and no *more* truthful than knowledge obtained through other means, such as a faith tradition. Thus there is some warrant for Christians to use psychological science to learn more about ourselves and specifically to study the effects of Christianity on human experience and behavior. Nevertheless, the tensions inherent in a field that uses assumptions about human nature and about knowledge that do not always harmonize with those of Christianity are real, and the implications have not been fully worked out.

Becoming More Than Human

The study of mind and mental processes has been converging with the study of brain and neural networks and with the study and development of computer systems. One of the most well-funded and publicly popular areas of psychological research today is cognitive neuroscience, the scientific study of the biological aspects of mental processes. Computers are used in this area not only as technological supports, but also as models and metaphors for human mental processes.

Computers can be used to model human mental processes: programmed to learn, adapt, and even create in ways that are sometimes indistinguishable from human behaviors and products. This appears to confirm the belief that the human mind is simply a (very complex) biological mechanism, a system that may even be reducible to computations. It further supports the belief that we can use our rationality to discover our own mechanisms, since we can construct machines that behave very much as we do. The next logical step, in the eyes of some, is to use technology to enhance and extend human abilities.

Already computer technology is used to heal and mitigate the effects of disease and disability: cochlear implants for the hearing impaired, interfaces that enable mute or paralyzed people to communicate and interact, electrodes implanted deep in the brain to alleviate intractable depression. Pharmaceutical technology is also being used for healing or altering mental states. Christians often feel comfortable with such uses of technology; healing is an important calling. But the line between healing and enhancement is a blurry one. Should we use drugs or computer technology to boost human memory beyond its creaturely limits? To enable someone to see clearly in the dark? To give firefighters more strength, CEOs and university students more energy, or reduce the need for sleep?[25]

The questions that arise from the push to expand our human limitations are not merely those of how to draw the line between healing and enhancement. Christians especially should be asking whether these technologies and drugs are implemented as part of a culture focused on human beings as psychophysical unities, embodied spirits and inspirited bodies,[26] members of the body of Christ, integrally connected with the rest of creation. Are they means of developing character or fulfilling our calling? Or are they short-cuts that exemplify human hubris, that emerge from a paradoxical desire to transcend our biological limits and take control of our own destiny, no matter what the cost to our planet or ourselves? These are not new questions—C. S. Lewis already pointed to these concerns in his science fiction trilogy, particularly in *Out of the Silent Planet*—but they are becoming increasingly pertinent.[27]

Psychology and the Human Relationship with the Natural World

The transhumanist ideal attempts to further separate humanity from the rest of creation. The modern science that the early psychologists so enthusiastically embraced is also the science that has both emerged from and, in turn, actively supported the industrial revolution and the dramatic and devastating impact it has had on our planet. Today there are many people, scientists and nonscientists alike, who are raising the alarm about the cumulative and accelerating damage we are causing to planetary climate and ecosystems, damage that reflects our failings as stewards of creation and that will ultimately create unspeakable hardship for all living creatures, including ourselves. We need a real change of perspective, attitude, values, and behavior, and a fundamental alteration of how we think about and act within the natural world.[28]

As noted earlier, most psychologists focus on people as beings apart from their contexts; when context is addressed, it is only the human aspects—family, immediate community—that receive attention. Apart from some environmental and conservation psychologists, few in the field seriously consider the relationships between human and nonhuman well-being. Pollution, climate change, environmental toxins, highly processed foods, living in a built environment separated from natural rhythms and processes, all have a significant impact on human psychology. And vice versa, human psychology—attitudes and behavior—contributes to these problems.[29]

Despite their limitations, psychological studies can help us to understand overall patterns of human thought and behavior, the formation of attitudes, emotional responses, and their relationship to action. Expanding the use of more qualitative and "subjective" methodologies would also help us probe the interplay between the natural environment and the human person as part of, yet subjectively separate from, that environment. This is urgently necessary not only for improvements in human well-being but also for the well-being of the planet. We badly need to come to a profound awareness that our well-being is intimately tied to that of our earth.[30] While there are certainly serious problems *within* human communities—poverty, violence, insecurity, malnourishment, corporate greed, and others—foundational to them all are the ways in which our deep psychological separation from the natural world is creating the environmental conditions that exacerbate many of these human woes.

Christianity contains within its traditions and scriptural interpretations beliefs that have contributed to our separation from and destruction of the natural world,[31] as well as those that support a much more intimate and responsible relationship with creation.[32] I believe that one of the priorities for Christians engaged in psychological studies and practice should be to find ways to demonstrate the consequences of this separation and to promote paths toward healing, enabling us to collectively recognize our failure to live out our calling as stewards of creation, to repent, and to find ways to change.

Conclusions

This brief foray into psychological studies, as widely understood and practiced in the Western world, is intended to highlight what I perceive to be key concerns and possibilities, particularly for Christians. I am most concerned that Christians recognize the deep assumptions that permeate the discipline—assumptions about the natural world, human nature,

and the means of obtaining "true" or "real" knowledge. These deep assumptions may or may not be consonant with a Christian worldview, but until they are brought to conscious awareness they will quietly permeate psychological theory and practice for good or for ill. And as I have argued here, some of those assumptions may produce dangerous distortions or limitations of self-understanding.

Here are a few foundational questions Christians might ask about psychology: To what extent and in what manner can and should Christians embrace a view of human nature as a biological mechanism or as a system of computations? The notion that human beings are equipped to use their rationality to understand, predict, and control those mechanisms? The belief that the truest knowledge about ourselves is "objective" knowledge, while the subjective "view from inside" is suspect?

Movements within psychology that reduce human nature to biology or to computation, as observed in the rise and popularity of cognitive neuroscience, artificial intelligence, and neural network modeling, support and enable the desire to transcend ourselves through the use of technology. Christians should participate in open and active conversation around the rationale for, development and use of such explorations and the related technologies. Historically, science has proceeded at a steady pace while ethical discussion has lagged; must that be the case when we are talking about transforming what it means to be human?

These transhumanist movements both reflect and increase our psychological disconnection from the rest of the natural world. While the environmental consequences of this disconnection are being explored by scientists in other fields, psychologists could, and I believe should, prioritize increased understanding of the psychological consequences of this disconnection. Finding ways to live sustainably on our planet primarily involves changes in human attitudes and behavior, and, in moving toward this goal, problems of poverty, violence, and injustice will also be mitigated.

Seeking answers to questions about human experience and behavior is not so much a process of finding the "objective" truth of ourselves, but rather one of finding ways to live well and faithfully in our current context. Psychological science can play a role, but only if its assumptions and limitations are recognized and, where necessary, transformed. ❍

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Duane Kauffmann

Article

Biological and Environmental Constraints on Knowing the Self

Duane Kauffmann

In the context of dialogue between psychological science and Christian faith, Heather Looy offered a critique of the assumptions and practices of psychology, especially as they pertain to self-understanding. In response, this article offers a brief review of research findings pertaining to automaticity, situational effects on behavior, and heritability components in belief patterns, and argues that this empirical work provides both insights into, and constraints on, self-understanding. The concluding section identifies issues and questions requiring attention as the dialogue Looy initiated continues.

In her article stimulating discussion of issues on the psychological science/Christian faith and practice frontier, Heather Looy chides those in the psychology classroom for teaching that

> One of the first things they are taught is that people cannot be trusted to have accurate insight into their own psyche. It is the psychological *scientist* alone who, by observing dispassionately from the outside, can tell people the *real* reasons for their behavior or mental states.[1]

In this essay, the author argues that the evidence from current research suggests that there are biological and environmental barriers to "accurate insight" and "real reasons," and that the professors are correct in contending that research can provide insights into the working of relevant cognitive and psychological processes. To be sure, the scientific community is still a long way from a complete understanding of how we come to understand who we are—and thus it would certainly be an overstatement to claim that the "real reasons" can be *fully* specified or that psychological science *alone* will provide all the answers. However, the research discussed below identifies some of the barriers to freedom of choice and action that constrain human "free will," and the equally numerous challenges humans face in understanding who they are.

It is readily granted that humans enjoy the feeling of being in control of their lives; they are usually quite convinced that the beliefs, values, and behavior patterns they have chosen for themselves are more desirable than the alternatives they have rejected. These perceptions are reinforced by a culture that emphasizes individual choice and the freedom to believe as one wishes. The Christian community reinforces these perceptions when it emphasizes the need for individuals to choose the way of Jesus and to make freely selected changes in beliefs and behavior. Thus it comes as a splash of ice water to confront research that suggests that we are much less knowledgeable and accurate about who we are, and how we came to be where we are, than we recognize, and we are not nearly so free to choose as we would like to believe.

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Streams of Evidence

While psychology as science may not be able to provide detailed understandings of *all* the activity of the individual mind, it can use the methods of science (even while acknowledging all the cautions and limitations noted by critics) to identify some of the factors that impact what goes on in the individual mind as it strives for meaning and self-understanding. For as much as I (and Looy) might wish to believe that what goes on in the meaning-making mind is the product of free will and generates accurate self-understanding, there is very good reason to argue that (a) the amount of "free will" in this process is less than generally believed, and (b) the level of self-understanding is indeed "through a glass darkly."

Automaticity

> The present findings point to the automatic nature of evaluative differentiation between in-groups and out-groups, suggesting that people are hard-wired for intergroup bias. That is, intergroup bias emerges at the implicit level, without people's intent or conscious awareness.[2]

This research shows a very active neural system which acts at speeds faster than the conscious systems in the brain can immediately interpret, and in a preconsciousness domain that shapes the way the aware brain responds. While there are any number of ways such preconscious processing affects human beings, a very brief exploration in one area, person perception, will demonstrate the character of the automaticity research stream.

A substantial body of research shows that there are elements of the cognitive processes of recognition and categorization that occur physiologically some moments before we become consciously aware.[3] Thus, we might say that our brain "knows" the sex, age category, and ethnicity of a person we meet on the sidewalk (or whom a researcher has "primed" through a laboratory manipulation) some milliseconds before we are able to overtly respond. Furthermore, the research demonstrates that the brain network invokes its hard-wired propensity to detect features and categorize a visual stimulus.[4] Categorization leads to the selection of a classification label. With this label comes an entire network of connections and associations.

It should not be surprising that the brain has a natural propensity (i.e., is "hardwired") for categorization.[5] Many who have studied developmental learning believe that the human brain is uniquely and innately structured (i.e., a "language acquisition device") to acquire language. A substantial proportion of the learning associated with language is the formation of categories and their associated boundaries; that is, what is a cat? what is a dog? and what is the difference? The human brain seems well designed for this differentiation and categorization process. Thus it should not be surprising when that categorization process is extended to the perception of people and the placing of people into groups defined by association-rich category labels, often characterized as stereotypes. Indeed, it may take only the presence (or mention) of a person to trigger automatically the attitudes stored in our brain's memory banks.[6]

In the context of this physiological reality, the most disturbing element of the person perception process appears to be the brain's propensity to demonstrate "bias" toward those who are like us and against those who are unlike us, a bias which may be built into the neuronal processes that precede awareness. For persons with a commitment to the equality of all humans, this bias serves as a nagging temptation whose effects must be acknowledged and resisted. Unfortunately, both the empirical literature and the history of human relationships demonstrate all too clearly that resistance is neither quick nor easy.

One fascinating question social psychologists are now confronting is whether persons can alter or "educate" the brain networks that label and associate when we encounter persons. Could we train our neurons to use superordinate categories such as "human being" or "child of God" rather than male, African-American, Latino, female, or Muslim cleric?[7] Would it be possible for us to focus our concern for others in a manner that stimulates activity in the brain circuits that promote empathy?[8] Is it possible to restructure our "hard-wired" neural networks to avoid intergroup bias (e.g., transfer positive automatic views[9])? Might it indeed be that the transformation of the neural network becomes the process by which our thoughts are transformed (Psalm 139, Rom. 12:2) and we demonstrate "the mind of Christ"?

The empirical evidence that suggests that automatic responses may not be easily controlled must

also be reviewed. As summarized in the quotation at the beginning of this section, some researchers feel that the emphasis should be on the automaticity of impressions and beliefs. This conclusion echoes the earlier words of Bargh and Chartrand.

> So it may be, especially for evaluations and judgments of novel people and objects, that what we think we are doing while consciously deliberating in actuality has no effect on the outcome of the judgment, as it has already been made through relatively immediate, automatic means.[10]

The implications for automaticity and its effects on self-understanding are summarized effectively by Mahzarin Banaji, a social psychologist who has contributed significantly to research concerning implicit attitudes.

> My colleagues and I have conducted research on implicit social cognition, first by offering demonstrations that our minds contain knowledge about social groups (stereotypes) and attitudes (prejudice) towards them—whether we want to or not. We expect that such processes operate in ordinary ways in the course of everyday life—whether we wish them to or not. And the implication of this discovery poses a challenge to those who argue in seminars, in diversity training workshops, and in private decisions that all we need do is to simply rise above social group categories, to put them aside in our judgments. That may be a luxury afforded to conscious thought and feeling, not necessarily to judgments that have their basis in implicit social cognition.[11]

The research on automaticity, as reflected in Banaji's comments, makes it evident that transcending interpersonal and intergroup barriers will not easily result from good intentions or governing legislation. Indeed, ongoing tensions in many parts of the world are reflected with depressing regularity by border barriers, ethnic cleansing, and/or civil wars, making it evident that "we" versus "they" is deeply rooted in "implicit social cognition." Lest we become unduly pessimistic about the human capacity to overcome the bondage of automaticity, let us remember that the biblical image of "wars and rumors of wars" (Matt. 24:6) is transformed by a message and a Power that is eloquently summarized by songwriter John Oxenham: "In Christ there is no East or West, in Him no South or North; But one great fellowship of love, Throughout the whole wide earth."

Power of the Situation

Another research tradition identifies external forces that quite directly restrict the freedom to act as freely as we might believe we are capable. Classic research such as Milgram's[12] famous studies of obedience and the Stanford Prison experiment[13] demonstrated just how powerful situational variables can be. Milgram found that a large number of "good" people would follow the orders of a researcher and deliver strong, potentially lethal, shocks to another individual. Zimbardo and his colleagues had to terminate their simulation when "guards" and "prisoners" allowed the situation to shape their behavior in sadistic and passive directions respectively. These research studies show that whereas individuals may believe they have the freedom to define a situation and respond freely, the evidence suggests that the situation shapes the parameters of the situational definition and the behavior that is evoked.

It is of interest that social psychologists have found that human observers of others' behavior are guilty of a "correspondence bias"[14] in the form of a "fundamental attribution error."[15] These terms refer to the fact that observers of others attribute to those others the character or traits associated with the behavior they observe—and ignore situational constraints that may affect the behavior (which they view as "excusing" the acts).[16] That is, observers attribute freedom to act and assign responsibility to the individual, while the individuals in the situation see it quite differently. They take credit when the behavior is positive or successful, while blaming the situation for undesirable outcomes. As Nauta found, this pattern is found even in ministers!

> The differential attribution of positive and negative outcomes to internal and external factors demonstrates the self-serving bias active in ministerial performance explanation. Positive outcomes are attributed to internal factors, a self-enhancement effect; negative outcomes are attributed to external factors, a self-defensive or self-protective effect. When something positive happens, ministers accept some personal responsibility. When confronted with something negative, responsibility is not accepted but attributed to external circumstances.[17]

The power of social factors to shape meaning is pervasive in the sociology of religion. Examination of a recent issue of the *Journal for the Scientific Study of Religion* reinforces this point. Among the articles, one

finds research on how religious values affect the development of hope and self-esteem in adolescents,[18] the ways in which socioeconomic status is linked to beliefs in prosperity gospel,[19] and how parental religion and parental divorce shape the meaning systems of those who experience these dynamics.[20]

While it is highly unlikely that the day of judgment will allow a "the environment made me do it" defense, environments do put a great deal of pressure on behavior. While, indeed, it could be argued that one always has the freedom to resist, the environment adds one more element to those that shape the meaning of a situation and that narrow the range of our freedom to act. Individuals may feel they have freely created meaning as they move through the situations of life, but the evidence suggests that the situations themselves often do the shaping of that meaning. The fact that almost no one anticipated the findings of Milgram and Zimbardo shows that we humans may be very good at making internal meaning, but our "real human understanding"[21] may not be very accurate and not very predictive of our actual behavior.

Belief Systems

> Seeking answers to questions about human experience and behavior is not so much a process of finding the "objective" truth of ourselves, but rather one of finding ways to live well and faithfully in our current context.[22]

While no one would object to living well and faithfully, and while the temptation to biologism and excessively reductionist science must surely be avoided, recent work suggests that humans are not as free to make choices about what to believe and how to live as many may wish. In short, there is much evidence that we are not as free of the effects of environment and biology (and their interaction) as many assume.

Many a thoughtful observer in the US has surely pondered the question—how did Rush Limbaugh, Chris Mathews, Glenn Beck, or Jesse Jackson come to make meaning in such very different ways? Or more personally, how can people hold views that are so very different from those I hold since I am so convinced of the correctness of my views? To what degree did I or any of those mentioned above have the freedom to choose to make meaning of our lives and choose as we did—and to what extent were we shaped by powerful forces over which we had little or no control?

To illustrate these points, consider political and religious beliefs. While many would argue that these are freely chosen, it seems apparent we are not so free as we would like to believe. We have known for some decades that the best predictor of one's religious beliefs are those of the parents. To be sure, the correlation is not 1.0, but it is positive and of considerable magnitude.[23] More recently, there has been a pattern of results suggesting that political beliefs are affected by developmental factors.[24] And consistent with the automaticity theme above, Haidt notes that "liberal brains" and "conservative brains" respond differently to stimuli. "Within the first half second after hearing a statement, partisan brains are already reacting differently."[25]

The argument is not that we have no control over our choices, but that those choices are strongly shaped by variables over which we had little or no control. Could we have chosen otherwise? Perhaps. But the evidence suggests that what seem to us to be freely chosen beliefs are in fact beliefs shaped by powerful forces of which we are not aware. The perceived freedom feels good, but is it really free?

The Brain

Consider the following: dementia, ADHD, stroke, Alzheimer's disease, autism, psychopathy. In each of these conditions, along with many others, the brain and central nervous system are implicated. Two pertinent questions deserve comment: (1) to what degree are those suffering from brain challenges responsible for their behavior? and (2) to what degree are such persons capable of achieving self-understanding?

Unfortunately, the vicissitudes of life give us all-too-many examples of the dominant effects of neurons firing (or failing to fire). Encountering persons who have Alzheimer's disease, are dangerously psychotic, or have experienced a stroke, one realizes that what happens in the brain has the capacity to completely alter lives and leave individuals at the mercy of nerve fibers and neurotransmitters. In the midst of such cases, one is forced to realize that there are humans who are greatly limited in their ability to self-understand and who lack the free will to make responsible decisions. This point is clearly articulated by neuroscientist David Goldman:

> At some point the victim of Alzheimer's disease loses touch with enough parts of their own self that the body and brain that go forward are no longer the former self, and at some point there is no mind to make free choices.[26]

The courts have long struggled with the question of responsibility for behavior and have determined that there are, indeed, cases in which the individual was not capable of determining that their behavior was dangerous or illegal (see Steinberg et al.,[27] for a discussion of these issues in adolescence). This requirement of the law is a good window into the complex world of self-understanding and the limitations of free will. The important consideration is that the legal system (like the divine judge of Matthew 25) must make a dichotomous distinction—guilty or not guilty—on a dynamic that is inherently a continuous variable. The key point is that human self-understanding and behavior are fundamentally affected by the biological processes of the human brain. The degree varies, as the diminished examples make clear, but none of us can escape the fact that we are not completely free of our biology. Science may ultimately help us understand the magnitude of the effect on self-understanding, but we must acknowledge we are not as free of our biology as we may perceive.

Into the Dialogue

> To act as if we *can* and *should* seek a view from without, and at the same time dismiss the view from within, surely deeply distorts our understanding of the causes of our behavior.[28]

> Seldom is DNA destiny and the predictive value of any individual genetic marker available today is low, but it is a misappreciation of the science to disregard the importance of inheritance.[29]

The research just discussed provides the framework for addressing a host of intriguing, challenging, and frustrating questions, questions which get to the substance of how subjective meaning-making may be leavened by appreciation of a "view from without," that is, knowledge of "external" research findings. To what extent are individuals capable of accurately understanding who they are and why they do what they do? At what point does a stroke or dementia victim lose the capacity for self-understanding? What does it mean for a person who becomes a Christian to have a renewed mind? Can the research evidence help us understand the biblical observation about the human tendency to do what is right in their own eyes? Does the empirical evidence support the conclusion that discernment concerning issues of faith is best undertaken as a group task? What are the implications of genetic and social variables for how believers think about, and practice, evangelism? Should the research evidence compel us to think in new ways about the role of the Holy Spirit in people's lives?

To be sure, there is no way one can address even one of these questions fully in the space available, much less all of them. In view of this fact, and in the spirit of the current effort to stimulate dialogue, the present author will identify, and comment briefly on, several implications that might be derived from the evidence cited above.

1. Capacity for self-understanding is a continuous variable with many limitations. While there are substantial individual differences, we can likely all agree that those suffering a serious stroke and those experiencing advanced Alzheimer's disease may have their capacity for complete self-understanding compromised. In a similar vein, the depressed individual with strong suicidal thoughts and the ideologically radical person who believes there is justification for killing others may be viewed as lacking acceptable self-understanding. But self-understanding is an individual differences variable and even those of us who consider ourselves normal, perhaps exceptional, are subject to limitations and blind spots in self-understanding. Looy may argue, "Let us remember that we are always inside a human being, and in our subjective, experiential perspective is rooted all real human understanding,"[30] but the scientific evidence suggests powerful limitations. Autonomic systems, genetic factors, and environmental variables, some of them known, some not, exert influence on even those most confident of the understanding and meaning they attribute. In the face of these factors, how individuals and/or psychological scientists contribute to "all real human understanding" will be crucial to the conversation.

2. The Bible teaches skepticism and limits concerning self-understanding. "The heart is deceitful above all things, and desperately wicked: who can know it?" (Jer. 17:9). "A person may think their own ways are right, but the LORD weighs the heart" (Prov. 21:2, NIV). Psychology as a scientific discipline is not in a position to evaluate its findings on the environ-

ment and the brain and their effects on self-understanding in the context of Scripture. Consequently, the dialogue about human self-understanding among believers will need to consider findings from science in the context of the advice and counsel of scripture.

3. Research can provide valuable assistance in self-understanding. The author readily admits a strong commitment to a rigorous research approach to psychology, a perspective reflected in the closing paragraphs of Ferguson and Heene's essay on "undead theories" in psychology.

> Instead of rigid adherence to an objective process of replication and falsification, debates within psychology too easily degenerate into ideological snowball fights, the end result of which is to allow poor quality theories to survive indefinitely.[31]

To be sure, one must acknowledge the temptation to reductionism, show caution in generalization, and await the confidence in conclusions that comes following replication. The stream of evidence cited above, while acknowledging that much of it is part of ongoing work without conclusive answers, provides helpful insight into the operation of the human cognitive system. As such, it provides valuable input to the conversation concerning human self-understanding.

In considering the relative value of research findings and personal insight with respect to self-understanding, it is worth noting the classic confrontation between clinical (interviews, professional judgment) and actuarial (test-based, statistical) approaches to prediction.[32] While it could perhaps be argued that the data is biased because it has been generated by scientific methods, the trend of the data throughout all of the many variations and investigators is compelling. In repeated tests of clinical and actuarial predictions, the actuarial approach is consistently found to produce a superior outcome. For this writer, such a strong and consistent outcome suggests that psychological research findings can be quite valuable and provide a needed corrective to individual efforts at self-understanding.

4. A renewed mind is of the Spirit. "Do not be conformed to this world, but be transformed by the renewing of your mind" (Rom. 2:2). To achieve this goal in light of the research evidence of powerful constraining variables, the Christian might well be driven to consider anew the necessity of the Holy Spirit in transforming the human mind. Personal commitment and a supportive community of believers can be of great import, but the renewing of the mind at its deepest regions must surely require power beyond human understanding. Indeed, believers might wish to thank the research community for calling attention to the effects of genetic and environmental "principalities and powers" against which they are arrayed.

5. Discernment is a community activity. I strongly affirm Looy's comments on the relational character of the human individual ("fundamentally relational beings") and the essential role that others play in self-understanding ("unable to develop and function without a social community").[33] We need our sisters and brothers in the believing community to assist us in living a life of faith in the midst of many rival approaches to ultimate meaning. Each of us individually carries far too many limitations to fully understand. It is an essential role of the community of faith to help us deal with the effects of those constraining variables that research has identified. Indeed, given the research evidence, it seems that Christians should reaffirm the need to seek the perspectives of other believers as an important corrective to the limits of individual understanding.

6. For Christians, there are many issues in the free will/self-understanding domain that we can likely understand only in part. We do see through a glass darkly as we consider such questions as the following: Did I, a committed believer raised in, and committed to, the Anabaptist tradition, have the freedom to be a Baptist or an agnostic? Does the individual born into a stressful, violent, agnostic, drug-culture home have as much chance to come to faith as one born to caring, believing parents? Where is free will and/or responsibility for self-understanding, for choosing the way of Christ, in the midst of powerful biological and environmental forces? What are the implications of these issues for the way in which the Christian community approaches evangelism?

The challenge we face in seeking to answer such questions must surely require our best efforts as we seek to understand the implications of findings in social and physiological psychology for the life of faith. Indeed, as we come to understand the substantial genetic and social forces at work in the human cognitive system, it can be hoped we become more understanding and accepting of others who are also

struggling to understand who they are and how they got that way. For they too, like us, are the result of a complex process over which limited control is possible and which we have only begun to understand. ○

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Russell D. Kosits

Deeply Engaged *and* Strongly Perspectival? The Impasse in the Psychology-Christianity Dialogue and Its Missional Resolution

Russell D. Kosits

Christians in psychology tend to do two types of scholarship: (1) deeply engaged, weakly perspectival research, in which the work is done for mainstream audiences but Christian beliefs remain largely implicit, and/or (2) strongly perspectival, relatively disengaged research, in which Christian beliefs are made explicit but the work is done for a nonmainstream, typically Christian, audience. Though both of these types of scholarship are essential, there appears to be a paucity of (3) deeply engaged, strongly perspectival research, in which the work is done for mainstream audiences yet with an explicitly Christian perspective. That this is the case, why it is so, and what we might do about it, is explored in this article.

Today we hear a lot about the importance of asking "the right questions." Do a Google search on Claude Lévi-Strauss's line, "The scientist is not a person who gives the right answers, he is one who asks the right questions," and you will find over 43,000 hits—for an exact quote! The (exact) phrase "the right questions" returns about 2.6 million hits. Any academic paper purporting to identify "a right question" may therefore seem to be merely reposting an internet meme or replacing catch-phrases for scholarship. But I remain undaunted. This paper aims to identify and explore a new—and I will argue *right*—question for the psychology-Christianity dialogue, though I do confess to feeling a little embarrassed beginning this article with what has evidently become something of a cliché. But as David Foster Wallace's fictional Don Gately put it, "The clichéd directives are a lot more deep" than we might originally think, and, "hard to actually *do*."[1] "Right questions" are indeed more difficult to identify than an internet meme would imply. And some of these questions can even be transformative.

Consider the philosopher Immanuel Kant. A thinker of profound depth (and striking difficulty), Kant illustrates Gately's point beautifully. Indeed, you might say that Kant's philosophical career—not to mention philosophy itself—was transformed when he articulated a "right question." This is not an article on Kant or his question. But there are interesting parallels between that question and the one I would like to pose for the psychology-Christianity dialogue. So let me here, in a very cursory way, sketch the background, the structure, and the consequences of

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Kant's question. Then we will be in a better position to articulate and explore the question that will be the focus of this article.

From Kant's Consequential Question to Our Own

For ease of comparison, I will distill Kant's question into five elements, the first of which is the intellectual context.[2] Eighteenth-century philosophy had been suffering a deep impasse between the rationalists and the empiricists, whose major figures at that time were Leibniz and Hume, respectively. To many, the philosophy of the rationalists seemed too speculative and out-of-touch to be believed (as parodied in Voltaire's famous novel *Candide*), but philosophical empiricism had, in Hume, led to skepticism about the very possibility of philosophical knowledge. Nevertheless—and this is the second element—the two opposing camps did share an assumption. The assumption was that there are two different types of knowledge, roughly, knowledge that comes through logic and reason alone on the one hand, and knowledge that comes from experience on the other. The disagreement between the two, then, had to do with which source to emphasize, and how much could be known given this bifurcation. Third, Kant argued in effect that this agreed-upon assumption actually conflated or merged two separate issues. One of these issues is the difference between cognitions that are *a priori* (roughly speaking, those which are independent of experience) and those that are *a posteriori* (which come from experience). The other issue is the difference between cognitions that are *analytic* (very roughly, definitional, such as bachelors are unmarried men) and those that are *synthetic* (those that go beyond definitional issues, such as bachelors tend to be, say, relatively young).

Fourth, in teasing apart these issues, Kant was able to formulate his monumental question. From the vantage point of previous thinking, "one would expect all … a priori judgments to be analytic, and all … [a posteriori] judgments to be synthetic."[3] Kant showed, however, that this is not always the case. Some judgments—indeed, the kind of judgments relevant to philosophy—could arguably be both a priori *and* synthetic (such as the idea that every event has a cause). Kant's great question then was, "How are synthetic judgments a priori possible?"[4] This question was the focus of his enormously influential book *Critique of Pure Reason.*

Fifth, and finally, is the issue of the consequences of Kant's great question. Kant was sure that "asking the right question" was of paramount importance. "One has already *gained a great deal*," he said, "if one can bring a multitude of investigations under the formula of a single problem [or question]."[5] Kant thought that his question represented something of a "Copernican Revolution" in philosophy, a completely new, yet essential, vantage point that could not only rescue philosophy from skepticism, but also prevent it from attempting to answer questions beyond its competence.

There are remarkable parallels between Kant's situation and our own. First, in terms of intellectual context, we too suffer from what appears to be a rather strong impasse in the psychology-Christianity debate. Though there are many different "views" on the relationship between psychology and Christianity, I think David Myers is correct when he contends that these may be reduced to "two distinct paths to doing psychology Christianly."[6] As I shall develop below, one of these paths emphasizes direct participation in mainstream psychology; the other path emphasizes the development of distinctively Christian perspectives.

Second, these two groups also appear to share a not-so-thinly veiled assumption about scholarship, namely, that there will be an inverse relationship between explicitness of Christian perspective and degree of participation in mainstream disciplinary discussion. The difference between the two camps, then, hinges on which of these two emphases is taken to better represent faithful Christian psychologizing. Third, as was the case in Kant's situation, this shared assumption also conflates two issues: mainstream engagement and Christian perspective. In order to more adequately parse the alternatives for scholarship, we ought to draw two distinctions: (1) between deep engagement and relative disengagement in the mainstream, and (2) between strongly perspectival and weakly perspectival approaches. Fourth, these distinctions then allow us, at last, to pose *our* question: Can scholarship in psychology be simultaneously deeply engaged *and* strongly perspectival? Or to use a more Kantian-

sounding phrase, *How are deeply engaged, strongly perspectival approaches possible?*

The remainder of this article will attempt to establish, provisionally answer, and draw out some implications of this question. To this end, I will first define the aforementioned distinction between "deeply engaged" and (relatively) "disengaged" research, and the distinction between "strongly perspectival" and "weakly perspectival" research. I will then provide initial evidence to suggest that scholarship conducted by Christians in psychology today tends to be either deeply engaged but weakly perspectival, or strongly perspectival but relatively disengaged. Since deeply engaged, strongly perspectival research appears to be, at best, rare, I will turn my attention to the question of *how* such approaches may be developed, suggesting that we need to build on the work of previous Christian scholars who have emphasized pluralism—George Marsden, in particular—by embracing a *missional* orientation. I will further argue that a missional perspective can go far in helping us to understand why we suffer from this impasse, and also in providing some general ideas—not to mention the motivation—to move forward.

I have, of course, not yet drawn the fifth and final parallel to Kant's situation. Just as Kant believed that his "right question" represented something of a revolution for philosophy, this article will close by asking whether the flourishing of deeply engaged, strongly perspectival research might signify a "Copernican revolution"—not only for Christians in psychology, but also for the discipline of psychology itself.

Defining "Deeply Engaged" and "Strongly Perspectival"

In her introductory article to this theme issue, Heather Looy is right to suggest that we focus on mainstream psychological science. As she says, to be a mainstream psychologist today is to be a scientist.[7] While there is a place for Christians to break off and "do their own thing," there are many philosophical and practical reasons for engagement. How else can we be "in the world but not of it?" How else can Christians in psychology have an impact on the world of higher education? How else will our students be prepared for today's job market or graduate schools? At Christian universities, we have no choice but to engage the world of mainstream psychology on some level. At the very least, our curricula have been set by the mainstream. We also use the same textbooks as in the mainstream; our PhDs have been granted by mainstream institutions; our courses are designed to transfer to mainstream schools whenever possible. Of course, it is possible to do all these things and still be somewhat cut off from mainstream disciplinary discussion. This explains why many faculty present at mainstream conferences and publish in mainstream journals. In this article, then, a "deeply engaged" approach is one that seeks not only to teach or understand or critique mainstream psychological science, but also to be part of mainstream disciplinary discussion.

On the other hand is the issue of Christian perspective in psychology. When one considers the numerous potential downsides to uncritical Christian engagement in mainstream psychological science (Looy points out several—an implicitly mechanistic worldview, context-independent measures, antisubjectivity, and a host of *isms*: objectivism, biologism, reductionism, and positivism for starters), such perspective seems more critical than ever. As Harold Heie put it, "Scholarly work is perspectival when the research is influenced by the particular worldview beliefs of the scholar …"[8] At the very least, this influence will shape choices of topics and questions. Beyond that, however, the influence of Christian perspective can be more or less overt.

Building off the work of George Marsden, Heie makes a helpful distinction between "weakly perspectival" and "strongly perspectival" research. Though this move dichotomizes (what at least *should be*) a continuous variable, the framework helpfully enables us to make a first approximation and assessment of our current situation. The adverbs ("weakly" and "strongly")—despite initial appearances—are not intended to be value judgments (he respects both types of scholarship, as do I), but rather they describe the *results* of the scholarship.[9] In the former category, the results of the research are not in any overt way shaped by the scholar's worldview; in the latter category, however, Christian beliefs are brought explicitly into the mix. In this spirit, I define research as strongly perspectival when it leans upon Christian sources (scripture,

Spirit, tradition) and draws explicitly Christian conclusions.

The State of the Dialogue Today

In this article, I will use Eric Johnson's 2010 edited volume *Psychology & Christianity: Five Views* as my point of reference for the state of the dialogue today. I concede at the outset that this is not the only way—and very well may not be the best way—to proceed. But it is the way *I* know best,[10] and, given the wide acceptance of this volume at Christian universities, it does likely represent the way most of us, faculty and students alike, have been taught to think about the problem.[11] It is in analyzing this volume that the aforementioned problem arises. The book boasts strongly perspectival yet disengaged approaches, and it contains a deeply engaged yet weakly perspectival approach. What is lacking, I would argue, is a deeply engaged *and* strongly perspectival alternative.

For the sake of those readers who are not familiar with this volume, let me briefly summarize it here. At the heart of this edited book are five chapters, written by different authors, each defending his own particular view of the relationship between psychology and Christianity. The first of these defends the "levels of explanation" view by David Myers, and argues that theology, philosophy, psychology, biology, and other disciplines, represent differing vantage points from which one might explain psychological reality. As a science, psychology does not pretend to answer theological or philosophical questions. The results of psychology, however, usually support, although sometimes challenge, our theological beliefs.

The "integration view," presented by Stan Jones, is the next chapter. Jones challenges the idea that psychological science is or can be entirely cut off from theological and philosophical assumptions, and insists that Christians respect and bring together ("integrate") science and scripture in their attempt to understand mind and behavior. The following chapter, written by Robert Roberts and P. J. Watson, argues for the "Christian psychology" view, the essence of which is the quest to articulate a psychology uncorrupted by modern assumptions through careful investigation of the Bible and of Christian tradition. Empirical investigations are of interest so far as they explore religious themes such as prayer, forgiveness, and gratitude.

The somewhat mystical "transformational psychology" view of John Coe and Todd Hall aims to be transformational in two ways: (1) the psychologist is transformed by the Holy Spirit and (2) psychology itself, both as a process and as a product, is transformed into "a single act of faith and love"[12] through the labors of the sanctified psychologist. Finally, David Powlison's chapter describes the "biblical counseling" view, whose primary move is to bring the full, but typically underappreciated, interpretive, and healing richness of the scriptures to bear on our real-life day-to-day struggles.

The levels-of-explanation approach of Myers would represent a deeply engaged, weakly perspectival approach. As far as engagement with psychological science goes, Myers is unsurpassed. His name is instantly recognized at the top conferences, his research well respected, and his introductory and social psychology textbooks are perennial best-sellers. Insofar as his scientific work goes, Myers seeks, along with the mainstream, to put testable ideas to the test and to be guided by data rather than presupposition. Clearly, when one reads his textbooks or scientific publications, the influence of his faith remains implicit—Myers's approach is "weakly perspectival," as defined above.

There is a nuance that we could add, however. Myers does do strongly perspectival work—but here he typically steps out of his role as a psychological scientist per se and writes for a Christian audience.[13] His *Psychology through the Eyes of Faith*, coauthored with Malcolm Jeeves, quotes freely from the Bible[14] and says many insightful and explicitly Christian things about the field. One of my favorite points is how he applies the notion of perceptual set to science, arguing that nonreligious scientists have a schema that preconditions them to be blind to God's fingerprint in nature.[15] I would call this strongly perspectival work the "private face" of the levels-of-explanation approach, "Levels-of-Explanation II," if you will.

Psychology & Christianity: Five Views also has many examples of strongly perspectival, yet relatively disengaged approaches. In particular, the Christian

psychology view, the transformational psychology view, and the biblical counseling view may all be characterized as strongly perspectival. In the Christian psychology view, Roberts encourages Christians to "retrieve the Christian psychology of the past," that is, to read older, premodern/prescientific sources of distinctively Christian psychological insight. A main characteristic of the transformational psychology view is—as the title suggests—the quest for Spirit-wrought change and insight. And biblical counseling draws deeply from scripture for comfort, admonition, and long-term change. Each of these approaches is strongly perspectival and admirable and important in its own right.

Yet it is also the case that each approach is relatively disengaged from the psychological mainstream. Though Roberts's textual approach has perhaps some superficial similarities to the traditional personality theories class, with its emphasis on old texts, he draws from a completely different canon, as one might expect. Coe and Hall place strong emphasis on looking "beyond the veil" of earthly tradition, and in their chapter, they do not seem particularly concerned with deeply engaging the mainstream.[16] Although apologetics does play an important role in the biblical counseling approach, they very self-consciously see themselves as a church-centric alterative to mainstream counseling approaches. Myers's own response to each of these approaches attests to the degree of their disengagement. He sees Roberts's Christian psychology approach as "replacing psychological science with the sages of the ages," Coe and Hall as "transform[ing] 'psychology' into religion," and Powlison's biblical counseling as "spurn[ing] today's psychological science for a faith, that, with its own implicit psychology, has little need for science."[17]

Here as well we can add some nuance. Just as there is a private face to "levels-of-explanation," there is perhaps a less obvious "public face" in some of these other approaches as they seek to contribute to mainstream psychological science. The most conspicuous example of this would be what Roberts and his co-author Watson call "step two" in Christian psychology: applying the traditional empirical methods of psychological science to issues of Christian interest such as prayer. When engaging in this type of research, it is possible, of course, to publish in mainstream journals, but here the emphases reverse, that is, the work generally[18] becomes deeply engaged but also weakly perspectival. We may call this deeply engaged, weakly perspectival public face of this approach "Christian Psychology II."

We see something similar in the transformational camp. Hall has done well-respected empirical work in the psychology of religion which has been cited in the top journal in social psychology, but here also Hall's approach is weakly perspectival and deeply engaged.[19] Perhaps we can call this "Transformational II." Though some members of the biblical counseling movement have received PhDs in psychology and have made weakly perspectival contributions to psychological science,[20] engagement with the psychological mainstream does not yet seem to be a priority in the movement. It therefore does not seem appropriate to talk about a "public" (i.e., mainstream) face of the biblical counseling movement.

If any approach in the book promises to consistently approximate the deeply engaged, strongly perspectival approach I am advocating, it would be the integration view, described in the 2010 edition of *Psychology & Christianity* by Jones. Central to his integration vision is giving "*special revelation—God's true Word—its appropriate place of authority*"[21] in psychological work. Yet, for all of its promise, the integration approach has, by profession of its greatest advocates, tended to fall short of its aspirations. And, ironically enough, integration proponents have slipped into the same dichotomy between public/private personae.

According to leading integrationists, the integration approach has struggled to achieve its goals. In the first edition (2000) of *Psychology & Christianity*, the chapter on integration, written by Gary Collins, complained that

> *Integration* has become a word shrouded in mystery, a slogan, a buzzword that gives us warm feelings but is used more as a gimmick to attract students than as a genuine scholarly achievement or a practical methodology.[22]

Prior to publishing his chapter in the 2010 edition, Jones repeated a similar concern: "It has been a concern for me for many years that we spend so much

time defending and defining integration and so rarely get around to doing it."[23]

The problem of enacting the integration vision is not limited to psychology alone. Heie, who knows the landscape of evangelical colleges very well indeed, writes of the general failure of Christian scholars to produce the strongly perspectival research that he advocates. Such scholarship, he argues, "is too often neglected at Christian colleges."[24] Although the mission statements of Christian colleges (particularly those in the CCCU) "invariably … claim that one of the goals they consider to be most important is the integration of faith, learning, and living, or words to that effect," the sad reality, according to Heie, is that "much of what is passed off as 'integration' in Christian higher education is no better than coexistence. *Coexistence is not integration*. Putting two good things side by side is not integration."[25]

Just as is the case with the levels-of-explanation, Christian psychology, and transformational approaches, there also appears to be a public and private face to the work of advocates of the integration approach, yet neither of these faces is simultaneously deeply engaged and strongly perspectival. When advocates of integration articulate strongly perspectival approaches, they tend to be disengaged from the mainstream (in the sense that they are speaking to themselves only). Jones characterized the integration advocates as having "an isolated dialogue within their community."[26] Jones's own *Modern Psychotherapies* is a case in point—an explicitly Christian appraisal of the various leading psychotherapies written for a Christian audience. Gary Collins, reminiscing about the glory days of integration in the mid-70s and early 80s, admitted that they were not only "ignored by the psychology establishment," but also did not, it seems, intend to speak to the mainstream. Instead,

> we were … convinced that our faith and our psychology could be combined in ways that would help emotionally hurting people, stimulate psychological and spiritual maturity, and enable the church to be a more sensitive, caring institution.[27]

When advocates of integration write for the mainstream, however, it appears that they may—often for very good reason—assume a weakly perspectival approach. When chiming in on the politically charged issue of sexual orientation change efforts, Jones and his colleagues courageously challenged the American Psychological Association (APA)'s recently published Guidelines impinging upon these efforts. It would have been unwise to take a strongly perspectival approach to this issue, and the article called psychologists to a more rigorously evidence-based platform to guide such therapies. Similarly, even in his classic "boldest model yet" *American Psychologist* piece, Jones was not obviously arguing from or for explicitly Christian presuppositions, but rather he attempted to rationally articulate a basis for broader interaction between psychology and "religion."[28] We might call this face of integration, "Integration II."

It would seem, then, that Myers summarizes the situation well:

> Christian students … are offered two distinct paths to doing psychology Christianly. Both are well-intentioned. Both have advocates. One path, represented by Coe and Hall (and by Powlison, as well as Roberts and Watson) is to come apart from the "biased" world of secular psychology and to create, off in a corner, a focused Christian psychology where conservative Christians talk among themselves. The other path takes us into the playing fields of mainstream psychological science … As for me, the chosen path is not the separatist enclave.[29]

Myers respects Jones and charitably does not list his integration approach among the approaches that feature "conservative Christians talk[ing] among themselves." But by Jones's own admission, the integration movement has tended to be just that kind of conversation. So I would include the integration approach among those whose primary move has been "to come apart from the 'biased' world of secular psychology," that is, as a relatively *disengaged* kind of approach.

I hope the preceding analysis makes clear that there is, however, an irony here. Myers's description—that there are "two distinct paths of doing psychology Christianly"—can be taken in a different way, as a description of the two faces of each approach. The official position of each approach represents a primary *modus operandi.* However, most of the approaches—including the levels-of-explanation approach—have a secondary *modus operandi* in which emphases reverse. Strongly perspectival but weakly engaged approaches become deeply engaged

but weakly perspectival, and vice versa. In other words, each approach represents not a *modus operandi*, but rather *modi operandi*, depending upon the community to which they speak, reflecting the shared assumption that there will be an inverse relationship between explicitness of Christian perspective and degree of participation in mainstream disciplinary discussion. If we ask, "Is it possible to bring these 'two distinct paths of doing psychology Christianly' together?" we are restating our original question: "How are deeply engaged, strongly perspectival approaches possible?"

I, with Myers, do not want to spend my professional life hidden in a "separatist enclave" (though I do believe that, in our secularized culture, separate Christian institutions are necessary). But, along with the advocates of the other approaches, I do not want to abandon the pursuit of strongly perspectival scholarship, either. And I think that those who are committed to Christian higher education (e.g., members of the CCCU) feel the same way. The ideal of strongly perspectival, deeply engaged research gets very much to the heart of what the contemporary resurgence in Christian higher education has always been about, even if we have not yet attained that ideal, at least in psychology. So we must confront the pressing questions: *Why* have we fallen short in our attempts so far? And is there a way out?

In what follows, we will first consider some previous, essential reflection on these questions, specifically the work of George Marsden. Then, in view of the insights and unresolved tensions within that approach, we will consider how an explicitly *missional* perspective can fill in some important gaps, motivate fresh action, and move the conversation forward.

Revisiting Marsden's *Outrageous Idea*

Though it appears that Christians in psychology have not thought much about deeply engaged, strongly perspectival research, Christians in other fields have. Arguably, the most sophisticated and influential treatment of the issue of Christian perspective in the mainstream is Marsden's book *The Outrageous Idea of Christian Scholarship*.[30] We will begin our discussion of how to move forward with an analysis of his approach.

It is important to remember the context of Marsden's book. His brilliant *The Soul of the American University* (1994) was a historical exploration of the secularization of American universities, an attempt to explain how these formerly Christian institutions became prejudiced against their founding traditions. Marsden noted that in the mainstream "only purely naturalistic viewpoints are allowed a serious academic hearing,"[31] that this bias was understandable but unwarranted, and that there ought to be greater openness to religious perspectives in the mainstream. Given the rather strong resistance to his suggestion, *Outrageous Idea* appeared three years later, as an attempt to defend that position.

There is an interesting tension in *Outrageous Idea*, which Marsden acknowledges, between what may be called the realistic and the idealistic sides of his argument.[32] The realistic side of the case deals honestly with the profound historical and intellectual barriers to overt Christian perspectives in the mainstream academy. Historically, for example, traditional Christian perspectives were intentionally suppressed as universities moved away from Christian establishment to more democratic and inclusive approaches. Among the intellectual barriers are scientific, multicultural, and political arguments which are adduced to justify continued exclusion.

Idealistically, however, Marsden presented a hopeful case. For one, the historical reasons for exclusion no longer apply. Indeed, the removal of a Christian establishment (which was needed if the university was to be truly public) led ironically to a different, secular, establishment (which, of course, does not reflect the public). Marsden likewise shows that the intellectual barriers to inclusion lack coherence. Further, while the reasons for exclusion are weak, there *are* strong reasons for inclusion. As the contemporary academy secularized, it adopted a pragmatic, pluralistic approach in which all worldviews and perspectives could, in theory, be included as long as all parties were willing to base arguments on publicly available and accessible standards of evidence. This approach has served certain perspectives (e.g., Marxist, feminist, queer) very well. Yet, for the historical and intellectual reasons just

mentioned, this inclusion has not yet been extended to religious scholars. Though there are many Christians in the mainstream academy, and though there are no *official* rules excluding such perspectives, the pressures toward silence are powerful, so religious scholars typically learn to self-censor and repress overt expression of their faith. Marsden therefore encourages Christians to re-imagine scholarly life in the mainstream and gently, but firmly, advocate for greater consistency. The appeal for a genuine pluralism is, of course, a common theme in contemporary Christian scholarship.[33]

With historical and intellectual barriers exposed and a pluralistic rationale articulated, Marsden then dealt head-on with the concerns of secular scholars, articulating a "tamed" approach to overtly perspectival research.[34] Though we cannot expect non-Christians to take scripture and tradition as authoritative, these still can serve as sources of ideas as long as we defend them using the accepted evidentiary disciplinary standards. Given that "background beliefs" inevitably shape scholarly work in a variety of ways, it only makes sense that scholars reflect occasionally on this relationship. Indeed, one potential implication of this line of thinking is that there ought to be space for scholars from *all* traditions and worldviews to participate in deeply engaged, strongly perspectival research.[35] Marsden's vision for an inclusive and self-aware public academy remains an inspiring ideal, and his guidance for perspectival research in that context remains essential.

However, we need to ask: is the idea of Christian perspectives in the mainstream any less outrageous today, some sixteen years later? Perhaps a bit. Many Christians inspired by Marsden's *Outrageous Idea* (and Mark Noll's *The Scandal of the Evangelical Mind*) have successfully pursued academic careers. There is also some evidence of a measure of greater inclusiveness in a handful of academic disciplines.[36] However, Marsden's idea remains outrageous in much of the mainstream academy, including psychology. As we have seen, in psychology at least, deeply engaged, strongly perspectival approaches seem rare at best. If anything, the mainstream academy seems less hospitable, and the proponents of atheistic materialism seem stronger than ever.

There are three tensions within Marsden's own book which, when placed alongside the sobering "realistic" side of his argument, suggest that Christian scholarship is likely to remain an outrageous idea in the mainstream for the foreseeable future. First, there is a tension in Marsden's epistemological recommendations. Marsden's epistemology depends—quite rightly, I believe—on a distinction between "publicly available" ("data"-level) knowledge and the more ultimate-level background or control beliefs that shape the way we select and interpret "the facts."[37] His inclusive vision requires that people be willing to reflect on this distinction and the relation between these levels. Yet, at the same time, he acknowledges that mainstream academics show very little willingness to reflect on first principles.[38] This is certainly the case in psychological science, where naturalistic, ultimate-level frameworks are given free interpretive reign in psychology without any awareness or admission that these are frameworks.[39] We need to realize that our attempts to do deeply engaged, strongly perspectival work will likely be resisted as "unscientific."[40]

Second, there is, in this book, a tension between Marsden's account of Christian historical explanation and his practice, which turns out to be quite germane. To illustrate how Christian historians can avoid reductionism, he says,

> No matter how ingenious our [natural/historical] explanation of how George Whitefield sparked the Great Awakening, we will not likely tell the story as though that exhausts the explanation.[41]

Yet, Marsden's nuanced and multifaceted natural/historical account of the institutional prejudice that Christians experience in the mainstream reads like such an explanation, probably for reasons of audience. However, the Reformed theological tradition that Marsden and I share, and biblical passages such as Romans 1, suggest that there is a general human prejudice against acknowledging God's handiwork that transcends the particular historical contingencies he explores. This spiritual dimension of our struggle implies that our attempt to do strongly perspectival, deeply engaged work will meet greater resistance than Marsden perhaps implies.

Third, there is a tension between Marsden's "tamed," nonproselytizing vision of Christian schol-

arship and his understanding of how Christian perspective can "function as a critique of current scholarly assumptions."[42] One the one hand, he asks that Christian scholars simply be given the freedom to occasionally and publicly reflect on how their faith informs their scholarship. On the other hand, Marsden argues—again quite correctly—that Christian faith can offer a kind of coherence that is conspicuously lacking in mainstream discourse.[43] Suppose a Christian scholar wanted to make this issue the *focus* of her scholarly investigations? In such a scenario, such reflection would be neither "occasional" nor would it necessarily be perceived as "tamed." Indeed, no matter how careful we are, it may even seem like elitism or proselytizing.[44] Further, as Marsden notes again and again, the major background assumption in the contemporary academy is that we can make sense of reality without God. If a deeply engaged, strongly perspectival program of research *did* attempt to challenge this assumption, we would again expect resistance. It is little wonder, then, that those Christians in psychology desiring to articulate strongly perspectival approaches tend to remain relatively disengaged.

This brings us to the crux of the issue. The key shortcoming of pluralistic approaches such as Marsden's—and very likely an impediment to progress in the psychology-Christianity dialogue as well—is the assumption (or, at least, the unintended perceived implication) that moving forward with deeply engaged, strongly perspectival research depends upon first making the idea seem less outrageous to the mainstream. Another way of saying this is that such approaches give too much power to the contemporary "secular" university. The emphasis throughout *The Outrageous Idea* is on making the case for greater inclusion in the mainstream, that is, that Christian perspectives "be accepted as legitimate in the mainstream academy."[45]

Once again, I fully support that goal, and I think that Marsden provides good advice to help us move toward that end. However, such an emphasis seems to put our quest for deeply engaged, strongly perspectival research on hold, his remarks on the importance of building academic communities notwithstanding.[46] Christians in psychology and, presumably, in other disciplines, need to ask themselves a question: do we need first to be "accepted" before we begin? In the psychology-Christianity dialogue, it seems that we have implicitly answered this question in the affirmative. What seems to be needed, then, is an empowering vision for Christian scholarship—a vision that shifts us from pleading for permission and acceptance, to a deep sense of having been commissioned by God himself. We need a vision that shifts our emphasis from doing strongly perspectival work "in" the mainstream academy, to doing such work "for" the mainstream. Such a vision will require that we turn to scripture itself for guidance.

From Permission to Commission: The Missing *Missional* Context

The last recorded act of Jesus Christ in Mark's gospel was to instruct his disciples to "go into all the world and proclaim the gospel to the whole creation" (Mark 16:15). At first blush, the Great Commission may seem an unlikely place to turn to for the resolution of a complex theoretical conundrum regarding the possibilities for deeply engaged Christian scholarship. Yet, I hope to show that the mission of the church, with its high calling of bringing the Christian message to different contexts and cultures, speaks directly to the impasse we suffer in the psychology-Christianity dialogue. Thankfully, we are not left to our own devices in beginning to get some grasp on the relevance of the church's mission to the academic disciplines. Thinkers like Lesslie Newbigin, the great twentieth-century missiologist, have shown the relevance of a missional mindset thereto.

Michael Goheen and Craig Bartholomew, two students of Newbigin, also provide some excellent foundational work upon which we might build.[47] To begin, they argue (along with a host of biblical theologians) that *kingdom* is the central organizing principle of the New Testament.[48] The gospel of Christ which the church is called to proclaim is the good news of the Kingdom of God, of the restoration of God's *comprehensive* rule over all things. Before sin, God reigned over every aspect of human life, over all cultural activity, including science (as undeveloped as that might have been). God was glorified in all of these cultural activities. Science would be the explication of Psalm 19—giving voice to the creation's praise to God. Due to sin, this is no longer

the case. For all of the accomplishments of science in studying the creation, God's authority is no longer acknowledged, his glory in what has been made suppressed (Rom. 1:18).

It would seem that for psychology, then, the gospel of the kingdom would be the joyous news that God's authority and glory may increasingly be acknowledged and praised through our study of the brain, behavior, and mental life. We are Christ's followers, commissioned to take his message into all the world, in every corner, every square inch, including the mainstream academy whose controlling assumption is, as Marsden says, that "there is no creator god."[49] As we go, we are asking that Christ's call to *metanoia*, a "U-turn of the mind,"[50] will be heard by some. Of course, *how* precisely the call is to be issued in psychology, and *what* precisely such a U-turn might look like, should be discussed in detail. The call would certainly need to take into account Marsden's and others' wise advice.[51] However, one thing seems clear enough—the entire psychology-Christianity dialogue is missing this crucial missional mindset. When we "go into all the world," we leave the gospel of the kingdom at home. When we seek to develop a psychology faithful to the gospel, we fail to "go into all the world."

Though a missional mindset will always begin with a deep desire to see the Kingdom of God extended into all cultures, it cannot end there. For cultural engagement is no simple thing. It involves learning a new language, a new set of practices. Something analogous to this happens when Christians train in psychology and give a major portion of their lives to the discipline. However, it also requires putting the gospel into a language so that the inhabitants of that culture can understand it, and understand it as *good news*. This is the place where we need to grow.

Newbigin argued that there are two mistakes that missionaries can make when they venture off into a new culture. On the one hand, a missionary may fail to learn the language of that culture. This is a fatal error leading to irrelevance—the culture sees such a missionary as a strange "babbler" whose words make no sense and do not apply to their lives. The other mistake is syncretism, that is, when the culture is learned so well, and the gospel so accommodated to that culture and "absorbed into the existing worldview," that the call to repentance and faith is never issued and never heard. These missionaries are reduced to the role of "moralists," calling the culture to greater purity, perhaps, but never to *metanoia*.[52]

The impasse in the psychology-Christianity dialogue might be understood in these terms. When we do strongly perspectival work, we tend to do it for ourselves, our voice is never heard by the mainstream—we are off in a corner, irrelevant.[53] To the mainstream, our voice "sounds like a foreigner; [our] message is heard as the babblings of a [group which] really has nothing to say."[54] When we do deeply engaged research, we—as Marsden has noted—suppress the gospel message, and we are sometimes seen as moralists within the discipline, calling, perhaps, for a different view of sexuality, a wider inclusion of or deeper respect for "religion," or, as Looy suggests, deeper environmental consciousness, wider employment of qualitative methods, and so forth. Again, there is a very important place for all these things, and Christians are uniquely positioned to play a significant role in such activities. But we should not confuse these vital activities with the call to gospel *metanoia*.

Finally, a missional mindset will not settle on merely "learning the language" of a culture, but will also strive to understand the narratives that animate these cultures. We all inhabit cultural *stories* and live them out, consciously or unconsciously. But the missional task to psychology is complicated *immensely* by the fact that we Western Christians live and move and have our being in the same cultural story as psychology. This is a point that Marsden's approach tends to neglect, in treating the mainstream academy as an object whose relevant and exclusionary controlling assumptions are entirely distinct from our own.[55] Newbigin, however, upon returning to Britain after decades in India, could see clearly that it can be extremely difficult to bring the gospel to your own culture because it is easy to blur the distinction between your own culture's story and the biblical one. Newbigin thus found the following Chinese proverb apt—"if you want a definition of water, do not ask a fish."[56] His approach raises the possibility that we are like fish, swimming in the cultural assumptions of modern/postmodern

Western culture, unaware of the degree to which they have a controlling, determining influence on the way we live our lives as psychologists.

The very first step we need to take, then, is as Looy suggests—we need to understand the worldview assumptions of psychology. But we need to realize that psychology is embedded within a broader, Western cultural mindset of which *we* are a part. Our task is therefore challenging indeed. We must begin with a clear sense of what these broader Western assumptions are and to what extent they have shaped us, before we can have what Newbigin called a "genuinely missionary encounter" with psychological science.

Many academic disciplines, particularly those in the humanities, have been powerfully affected by postmodern thought. My colleagues from those areas will sometimes respond with profound surprise when they learn that mainstream psychological science still, by and large, inhabits the *modern* Western worldview. If we are to make any headway in contextualizing the gospel for a missionary encounter with psychology, then, we will need to have a keener sense of the characteristics of this "water" in which we continually but unconsciously swim. For a very helpful description of this narrative, we may turn to Newbigin's "profile of a culture," namely, the second chapter of his seminal *Foolishness to the Greeks*. Here he identifies several aspects of the modern story that still animates psychology, such as the emphasis on efficient causality and the removal of final causality.[57] (The prevalence of mechanistic explanation in psychology, which Looy discusses in her introductory essay, flows out of this emphasis.) But the key aspect of the modern narrative is what has been called the fact/value distinction. Reason and faith, science and religion, are understood to be two nonoverlapping worlds. Privately, we are free to believe in whatever we desire. Publicly, however, we must stick to "the facts."

If Marsden's analysis helps us to see how the mainstream academy itself suppresses religious expression, Newbigin's approach reveals why we so easily and without any pangs of conscience comply with these pressures. In other words, the two approaches complement each other, taking a different level of analysis, with Marsden looking more narrowly at the historic and intellectual complexities that have shaped the academy itself, and Newbigin focusing instead on broader, shared cultural narratives. It is at Newbigin's level of analysis that we see how powerfully our efforts in psychology have been shaped by modernity itself. In fact, the impasse in the psychology-Christianity debate may also be seen as a rather straightforward imprinting of the modern dichotomy between facts and values upon our own community. *We* have been shaped by the values of modernity, keeping our strongly perspectival ruminations to ourselves (in the private realm of values or religion) and engaging the mainstream in a language that is virtually indistinguishable from the other participants in that public square (the public realm of fact and science).

Goheen and Bartholomew suggest that our task is to become aware of the prevailing Western story, to recognize it as a *competing* story, and to make every effort to inhabit the biblical narrative instead. Then we will be prepared to be in this world but not of it, prepared for a genuinely missionary encounter with psychological science.

Next let us consider, in a bit more detail, the devastating effect of modernity on our own witness to psychology. We must raise the question of what will happen when we do not fully recognize the Western narrative for what it is, and we begin to live our gospel not on its own terms, but on the terms of the Western narrative itself.

The Dividing of Our Worldview

If we are not sufficiently critical of the prevailing cultural story, Goheen and Bartholomew warn that "there is another, darker possibility." Christians may inadvertently "tailor the gospel to fit somewhere within that cultural story." If this happens,

> the inevitable result for the church is compromise and unfaithfulness, for it will not be offering the gospel to the world on the gospel's own terms, namely, that it alone is the truth about our world and about our lives in it.[58]

I am afraid that to some extent this is what has happened in the psychology-Christianity dialogue. Goheen and Bartholomew continue:

> Newbigin believed that the church had deeply compromised its living out of the gospel, allowing

> the biblical story to be subsumed within the modern scientific story. He spoke of the Western church as being "an advanced case of syncretism," having accepted the fusing together of two incompatible viewpoints.[59]

I realize that this language is strong, and I again want to affirm how much I value the various perspectives in the psychology-Christianity dialogue. But I do think that our lack of missional engagement reflects a "tailoring of the gospel" to fit the modern Western assumptions of psychology, that is, it has led to a discernible fragmentation in our own worldview, which has severely diminished our capacity for missionary encounter with psychological science. Specifically, when we put on our deeply engaged, weakly perspectival face, we embrace half of our worldview—the half that encourages worldly activity, scientific engagement, and common grace. But we simultaneously jettison or compartmentalize those uncomfortable beliefs about antithesis, revelation, *metanoia*, and so forth. When we put on our strongly perspectival, disengaged faces, the emphases reverse. We embrace those aspects of our worldview that emphasize scripture, antithesis, and sin, while jettisoning or compartmentalizing those uncomfortable beliefs that would have us "go into all the world." A missional framework will hold all of these polarities together.[60]

Newbigin understood that there can, of course, be no "culture-free gospel," that no understanding of the gospel is perfectly pure, and that missionary encounter at its best will include a process of "mutual correction." Yet it is also the case, he insisted, that the gospel properly understood will portray Christ "as the light that alone shows the whole of reality as it really is."[61] Newbigin therefore

> believed that the church must recover the gospel *on its own terms*, as the true and comprehensive story of our world and the declaration of the ultimate goal of cosmic history. Only then, he believed, would the gospel story be liberated for its missionary encounter with Western culture.[62]

This applies to Christians in psychology, too. It is only as we—in all humility and reliance upon Word and Spirit—recover the gospel on its own terms that it (and *we*) will be liberated for missionary encounter with psychology.

A Copernican Revolution?

Kant's search for synthetic propositions a priori led him to an entirely new way of approaching the problem of knowledge, analogous, he thought, to the Copernican shift in astronomy. Just as our understanding of planetary motion was greatly advanced when we stopped positing geocentricism and instead imagined a heliocentric situation, Kant thought that if we stopped wondering about the properties of objects of knowledge as they are in themselves, but rather considered the human mind's contribution to knowledge, philosophy could advance. We have found an analogous situation in this discussion. When we stop assuming that there must be an inverse relationship between mainstream engagement and Christian perspective, Christian scholarship in psychology will be free to move in new and much-needed directions. But as comedian Bob Newhart has taught us, psychologists need to offer more than an admonition to "stop it!" Here work like Newbigin's becomes useful. The "true problem" (to use Kant's phraseology) of the psychology-Christianity dialogue (how are deeply engaged, strongly perspectival approaches possible?) seems to find its animating spirit and its raison d'être when placed in a missional framework, that is, when we begin viewing our strongly perspectival work as *for the mainstream*. So we might be tempted to ask: Would such a missional turn in the psychology-Christianity dialogue represent a "Copernican Revolution" for Christians in psychology?

In some ways, it would not. If the various camps in the dialogue *were* to unite under the banner of the gospel of the Kingdom, we would continue to need deeply engaged, weakly perspectival research, not only to extend psychological science into uncharted territories of Christian interest, but also for our own credibility within the profession. We would need to continue to foster relationships and seek respectful conversations with our non-Christian colleagues, not for instrumental purposes, but because we love and admire and desire to learn from and with them.[63] On the other hand, we would also continue to need strongly perspectival but relatively disengaged, "pure" research, in order to better ascertain the contours of a distinctively Christian psychology. Indeed, we would need this type of research to better ascertain *how* to approach missionary encounter.

It is important to reiterate that the call for deeply engaged, strongly perspectival research should not be understood as devaluing these other more common approaches.[64]

A missional orientation would also sensitize us to work that already comes close to a deeply engaged, strongly perspectival approach. Angela Sabates's *Social Psychology in Christian Perspective* is a good example. Structured as a traditional social psychology textbook, this work could serve as a stand-alone text in a social psychology class. The most exciting feature of the text is the way it attempts to show how a Christian worldview provides

> a richer understanding of human social interaction than if we only used the current naturalist assumptions of social psychology; and further, that Christian ideas of persons are a legitimate and valid starting point for social psychology research.[65]

Published by InterVarsity Press, the book seems well positioned to be adopted at Christian universities, although it is unclear the extent to which the book is intended to influence mainstream discussion.

For most of us, however, a missional perspective would represent a profound shift in the way our conversation has been framed. To move forward, we would need to foreground "missional questions." We would be asking, in effect: How does this thing I am currently working on speak in a distinctively Christian way to the concerns of the mainstream? How can Christian perspective contribute to discussions currently underway in the discipline? How does our current strongly perspectival research demonstrate that the gospel of the Kingdom is *good news* for psychological science? And how could this research be presented to the mainstream *as such*? Such questions certainly violate the controlling nontheistic background belief of the mainstream academy, and the cultural/Western rule that facts and values ought to be separated, but they could also be a catalyst for new and creative thinking.

This creative thinking may extend into how we structure our professional lives. As an example, a shared missional mindset might serve as impetus for an effort to establish a new division in the APA,[66] something analogous to the Society of Christian Philosophers,[67] in which we explicitly identify with and contribute to the mainstream, and yet also unapologetically seek to engage psychology from the vantage point of our own Christian presuppositions. Such an initiative could make use of Marsden's proposal, or Jim Skillen's similar notion of "principled pluralism," in which we contend for equal treatment of diverse religious and philosophical perspectives within psychological science. We would not seek a monopoly on discourse within psychology, but we would seek the freedom to maintain our Christian identity even as we engage in psychological work. As Skillen notes,

> Our religion, on biblical terms, is a way of life and not merely a way of private worship. We are called to live publicly and not merely privately as Christians.[68]

Part of that public life within psychology ought to include the freedom to attempt to persuade our colleagues from other perspectives of the truth of our own, even as we continue to respectfully allow them to attempt to do likewise.

Along these lines, perhaps it is time to begin a new psychology journal that features deeply engaged, strongly perspectival work. The journal would reject all articles in which Christians merely speak to one another. Instead, the articles would be written for a mainstream audience, attempting to show how a Christian perspective sheds light on, advances, critiques, or contributes to current research. It would be a journal in which Christians in psychology give a reason to their colleagues for the hope that is in them. There is, of course, no guarantee that non-Christians would show interest in such a publication. But without venues like this, we can be fairly certain that there will continue to be, as Marsden noted more broadly, "no identifiable Christian schools of thought"[69] in mainstream psychology.

A missional perspective has much to offer the psychology-Christianity dialogue. It helps us to understand why deeply engaged, strongly perspectival approaches, though rare, are necessary. Further, it elucidates why we have had such difficulty articulating them. But it is only when we begin to re-imagine psychological science *in the gospel's own terms* that we will gain the full benefits of such an approach. As Newbigin claimed, when we view modern culture, including psychological science "from within the plausibility structure that is shaped by the Bible, it is perfectly possible to acknowledge

and cherish the insights of our culture [i.e., psychology]."[70] Further, if we could begin to articulate "a view … that is seen to offer … the widest rationality, the greatest capacity to give meaning to the whole of experience,"[71] we may begin to persuade some that the gospel is indeed good news for psychology. For example, we could make the case to the mainstream that it is within this wider rationality of the Christian faith that we can embrace objectivity without falling prey to objectivism, reduction without reductionism, biology without biologism.

In his *Structure of Scientific Revolutions,* Thomas Kuhn drew an analogy between scientific paradigm shifts and religious conversion. Building on Kuhn's argument, Newbigin continues:

> … it follows that the missionary encounter of the gospel with the modern world [of psychology] will, like every true missionary encounter, call for radical conversion. This will be not only a conversion of the will and of the feelings but a conversion of the mind—a "paradigm shift" that leads to a new vision of how things are and, not at once but gradually, to the development of a new plausibility structure in which the most real of all realities is the living God …[72]

When our deeply engaged, strongly perspectival research is used by God to open up such a new vision of *psychological* things—indeed, of psychological science itself—then we may say a truly Copernican Revolution in psychology has begun. ○

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Notes

[1]David Foster Wallace, *Infinite Jest* (Boston, MA: Little, Brown and Company, 1996), 273.

[2]This analysis is based on Sebastian Gardner, *Kant and the Critique of Pure Reason* (New York: Routledge, 1999).

[3]Ibid., 55.

[4]Immanuel Kant, *Critique of Pure Reason*, ed. Paul Guyer and Allen W. Wood (New York: Cambridge University Press, 1998), 146, B19.

[5]Ibid., emphasis added.

[6]Eric L. Johnson, ed., *Psychology & Christianity: Five Views* (Downers Grove, IL: IVP Academic, 2010), 229.

[7]Heather Looy, "Psychology at the Theological Frontiers," *Perspectives on Science and Christian Faith* 65, no. 3 (2013): 148.

[8]Harold Heie, *Learning to Listen, Ready to Talk: A Pilgrimage toward Peacemaking* (Lincoln, NE: iUniverse, 2007), 158. Heie served as the Founding Director of the Center for Faith and Inquiry (formerly the Center for Christian Studies) at Gordon College from 1994–2002.

[9]In our APA-Style-dominated world, "results" has a more specific connotation than Heie intended. Perhaps the term "finished product" better conveys his intention.

[10]For a close analysis, see Russell D. Kosits, "Whose Psychology? Which Christianity?," *McMaster Journal of Theology and Ministry* 13 (2011–2012): 101–97.

[11]Ibid., 101.

[12]John H. Coe and Todd W. Hall, "A Transformational Psychology View," in *Psychology & Christianity: Five Views*, ed. Johnson, 200.

[13]Myers sometimes portrays his work with Christians as a "spokesperson" or ambassador of psychological science. Strictly speaking, such activity *is* part of his role as a psychologist, but not so much advancing the field as much as translating and promoting it for a sometimes skeptical audience. I should also note that Myers wrote an important and winsome response to the new atheism: David Myers, *A Friendly Letter to Skeptics and Atheists: Musings on Why God Is Good and Faith Isn't Evil* (San Francisco, CA: Jossey-Bass, 2008). In this book, Myers attempts to diffuse many of the objections to faith on grounds that would be acceptable to the mainstream. The book is strongly perspectival in the sense that Myers is quite explicit about many of his theological and ethical beliefs. But the book treats the question of worldview/faith in a modern way, as ultimately an autonomous and private decision, not something that (if I may borrow Hume's famous line) "is, and ought … to be" a controlling element of science itself.

[14]Myers does quote freely from the Bible and many other sources in his textbooks, but these quotes are illustrative, not authoritative.

[15]David G. Myers and Malcolm A. Jeeves, *Psychology through the Eyes of Faith*, rev. and updated ed. (New York: HarperCollins, 2003), 60–5.

[16]Coe and Hall, "A Transformational Psychology View," 201.

[17]Johnson, ed., *Psychology & Christianity: Five Views*, 180, 228, 74.

[18]Watson's work is multifaceted, however, and in some of it, his Christian perspective is quite explicit, such as when he analyzes scales for explicit prejudice against Christian samples, and redesigns those scales so that they do a better job, measuring those samples. When doing this sort of work, Watson moves toward the deeply engaged, strongly perspectival approach that tends to be lacking. See Robert C. Roberts and P. J. Watson, "A Christian Psychology View," in *Psychology & Christianity: Five Views*, ed. Johnson, 149–78.

[19]T. W. Hall and K. J. Edwards, "The Spiritual Assessment Inventory: A Theistic Model and Measure for Assessing Spiritual Development," *Journal for the Scientific Study of Religion* 41 (2002). Hall's paper was cited in Julie J. Exline et al., "Anger toward God: Social-Cognitive Predictors,

Prevalence, and Links with Adjustment to Bereavement and Cancer," *Journal of Personality and Social Psychology* 100, no. 1 (2011): 129–48.

[20]Edward T. Welch, "Pattern Reversal Evoked Potentials in Monkeys," PhD diss., University of Utah, 1982. After receiving his seminary degree in 1978, he went on to Utah to study for his PhD. Clearly, Welch maintained a weakly perspectival approach while working on his PhD.

[21]Stanton L. Jones, "An Integration View," in *Psychology & Christianity: Five Views*, ed. Johnson, 102.

[22]Gary R. Collins, "An Integration View," in *Psychology & Christianity: Four Views*, ed. Eric L. Johnson and Stanton L. Jones (Downers Grove, IL: InterVarsity Press, 2000), 105.

[23]Stanton L. Jones, "Integration: Defending It, Describing It, Doing It," *Journal of Psychology and Theology* 34 (2006): 258.

[24]Heie, *Learning to Listen, Ready to Talk*, 160.

[25]Ibid., 169.

[26]Stanton L. Jones, "A Constructive Relationship for Religion with the Science and Profession of Psychology: Perhaps the Boldest Model Yet," *American Psychologist* 49 (1994): 185.

[27]Collins, "An Integration View," 104.

[28]Jones, "A Constructive Relationship for Religion with the Science and Profession of Psychology: Perhaps the Boldest Model Yet"; and Christopher H. Rosik, Stanton L. Jones, and A. Dean Byrd, "Knowing What We Do Not Know About Sexual Orientation Change Efforts," *American Psychologist* 67 (2012).

[29]Johnson, ed., *Psychology & Christianity: Five Views*, 229.

[30]George M. Marsden, *The Outrageous Idea of Christian Scholarship* (New York: Oxford University Press, 1997).

[31]George M. Marsden, *The Soul of the American University: From Protestant Establishment to Established Nonbelief* (New York: Oxford University Press, 1994), 440.

[32]Marsden, *The Outrageous Idea of Christian Scholarship*, 57.

[33]For example, Christian Smith, *Moral, Believing Animals* (New York: Oxford University Press, 2003), 93; James R. Vanderwoerd, "The Challenge of Fundamentalism for Social Work Ethics: Can Anti-oppressive Social Work Include Orthodox Religion?," *Canadian Social Work* 12 (2010).

[34]Marsden, *The Outrageous Idea of Christian Scholarship*, 51, 59.

[35]Thanks to Heather Looy for encouraging me to think about this point.

[36]T. M. Moore, "Still Outrageous: An Interview with George Marsden" (2009), http://www.breakpoint.org/features-columns/archive/1101-still-outrageous-.

[37]For a similar approach, see Kosits, "Whose Psychology? Which Christianity?"

[38]Marsden, *The Outrageous Idea of Christian Scholarship*, 3, 72.

[39]Kosits, "Whose Psychology? Which Christianity?," 118–27.

[40]Marsden, *The Outrageous Idea of Christian Scholarship*, 25–31. As a remedy to this, Christians in psychology should, as Looy suggests, prioritize the identification of the worldview/control beliefs that guide psychological science. We need to relentlessly press this point, and this is a task to which thinkers (Christians or not) inside and outside mainstream institutions can contribute.

[41]Marsden, *The Outrageous Idea of Christian Scholarship*, 74–5.

[42]Ibid., 72.

[43]This also is the major premise of Kosits, "Whose Psychology? Which Christianity?"

[44]As Marsden notes, such arguments would be red herrings, if we frame our arguments carefully and with command of the publicly available evidence. We *all* assume our worldview/control beliefs are true, and we all, on some level, seek to persuade others of their veracity. "Even those who profess to be relativists treat other viewpoints as inferior to their relativism and try to convince others of their viewpoint," in Marsden, *The Outrageous Idea of Christian Scholarship*, 10.

[45]Ibid., 8.

[46]The final chapter in *Outrageous Idea* on building academic communities argues rightly that Christian scholarship needs organizational and institutional support, and he offers several helpful suggestions to that effect. But the emphasis of the chapter is on building scholarly organizations and institutions that support Christian conversations outside of the mainstream. The emphasis is on fostering strongly perspectival scholarship, but the need for deep engagement somehow seems to be diminished. Of course, there is nothing in his proposals that would forbid Christian scholars from strategizing for deep engagement; he just does not emphasize it there.

[47]This section draws heavily from Michael W. Goheen and Craig G. Bartholomew, *Living at the Crossroads: An Introduction to Christian Worldview* (Grand Rapids, MI: Baker Academic, 2008), chap. 1.

[48]Craig G. Bartholomew and Michael W. Goheen, *The Drama of Scripture: Finding Our Place in the Biblical Story* (Grand Rapids, MI: Baker Academic, 2004).

[49]Marsden, *The Outrageous Idea of Christian Scholarship*, 53.

[50]Lesslie Newbigin, *Foolishness to the Greeks: The Gospel and Western Culture* (Grand Rapids, MI: Wm. B. Eerdmans, 1986), 6.

[51]For example, our work would need to be recognizably excellent according to the standards of the discipline. Yet we also need to acknowledge that scholarship that challenges implicit orthodoxies will likely be resisted, no matter how carefully done.

[52]Newbigin, *Foolishness to the Greeks*, 7.

[53]Myers's *A Friendly Letter to Skeptics and Atheists* is an exception to this rule. However, this book speaks to the secular mainstream but not in such a way to challenge the current practice of psychological science vis-à-vis worldview. In this way, Myers's winsome book, though strongly perspectival, still plays the role of the "moralist" in Newbigin's parlance. See note 13.

[54]Newbigin, *Foolishness to the Greeks*, 7.

[55]An exception to this is Marsden's theme of the self-censorship of Christians in the mainstream. Still, this self-censorship, he argues, arises from the values and practices of the mainstream academy itself, that is, not from broader cultural assumptions.

[56]Newbigin, *Foolishness to the Greeks*, 21. It turns out that the aforementioned fictional Don Gately heard a memorable version of this proverb as well—see Wallace, *Infinite Jest*, 445.

[57]With the explosion of evolutionary psychology, however, a kind of materialistic teleology has returned to psychology.

[58]Goheen and Bartholomew, *Living at the Crossroads*, 9.

[59]Ibid.

[60]Space prohibits the kind of analysis that this framework would imply, so at best I can present a tentative summary of these tensions and their missional resolution here.

	Deeply Engaged/ Weakly Perspectival	Strongly Perspectival/ Disengaged	Missional Approach
Mandate	Creation Mandate	Great Commission	Dual Mandate
Source of data	Book of God's Works	Book of God's Words	Two Books
Apologetic strategy	Evidential	Presuppositional	Evidential Presuppositionalism
Ontological/ ethical emphasis	Structure	Direction	Discerning structure and direction
Approach to non-Christian knowledge	Common grace	Antithesis	Kuyperian Paradox
Theoretical orientation	Proximate	Ultimate	Multileveled
Preferred virtue	"Humility"	"Faithfulness"	Symmetrical virtue
Approach to theology	Ecumenical	Sectarian	"Sectarian" or particular ecumenism
Argumentation	Empirical	Transcendent	Transcendental

Many of these "Reformed and Reformational" polarities are discussed in Kosits, "Whose Psychology? Which Christianity?" For a discussion of structure and direction, see Albert M. Wolters, *Creation Regained: Biblical Basics for a Reformational Worldview* (Grand Rapids, MI: Wm. B. Eerdmans, 2005), chap. 5. An elaboration of the notion of symmetrical virtue may be found in Jonathan Edwards, *Religious Affections*, ed. John E. Smith, vol. 2, *The Works of Jonathan Edwards* (New Haven, CT: Yale University Press, 1959), 365–76. Look specifically at the tenth sign of genuinely spirit-wrought experience: a "beautiful symmetry and proportion" in the virtues of the saints.

[61]Newbigin, *Foolishness to the Greeks*, 4, 8, 19.

[62]Goheen and Bartholomew, *Living at the Crossroads*, 9, emphasis added.

[63]Heie, *Learning to Listen, Ready to Talk*.

[64]Recently, Jamie Smith (JS) and Christian Smith (CS) had a fascinating exchange over this very issue which I will translate into the language employed in this article. JS criticized CS's deeply engaged but weakly perspectival book *What Is a Person?* for failing to be more strongly perspectival. CS replied that we should not "*demand that the Christological implications of every scholarly project be spelled out explicitly in every publication,*" that is, that deeply engaged, weakly perspectival research is legitimate. JS insisted that he was not demanding such a thing, and that he (JS) wants to be "pluralist about the shape and tenor of Christian scholarship." I strongly affirm this pluralist stance, though I also would like to see a broadening of this pluralism through the development of deeply engaged, strongly perspectival research.

The exchange between JS and CS has other important links to this article. JS explained that his desire to do strongly perspectival work was what led him away from mainstream institutions and publishers, while CS's weakly perspectival, mainstream research is animated by "the wide purchase [CS] seeks" for his work. It would seem, then, that the impasse described in this article goes beyond the psychology-Christianity dialogue.

Citing Marsden's *Outrageous Idea*, JS also very briefly raised the possibility of deeply engaged, strongly perspectival research: "it might even be the case that we do not have to choose." Though Marsden's hoped-for "level playing field has not yet arrived," JS cited an issue of the *South Atlantic Quarterly* as "some sign that things might be changing."

I hope that this article persuades some that we *should not* choose, and that there are steps we can take to move from this instinctive but passive posture of looking for signs of hope to a more active posture.

JS's original review: James K. A. Smith, "The (Re)Turn to the Person in Contemporary Theory," *Christian Scholar's Review* 40, no. 1 (2010); CS's response: Christian Smith, "'More Realism, Critically'—A Reply to James K. A. Smith's 'The (Re)Turn to the Person in Contemporary Theory,'" *Christian Scholar's Review* 40, no. 2 (2010); and JS's response: James K. A. Smith, "Natural Law's Secularism?—A Response to Christian Smith," *Christian Scholar's Review* 40, no. 2 (2010). Thanks to Kevin Flatt for alerting me to this exchange.

[65]Angela M. Sabates, *Social Psychology in Christian Perspective* (Downers Grove, IL: IVP Academic, 2012), 26–7.

[66]Though most of the divisions of the APA are thematically organized, some of them are clearly perspectivally oriented, such as Division 32 (Humanistic), 39 (Psychoanalysis), and 35 (Psychology of Women) which self-identifies as a feminist organization. Division 36 (Psychology of Religion), on the other hand, is not perspectivally Christian but rather "strictly nonsectarian."

[67]For a fascinating discussion, see Nicholas Wolterstorff and James K. A. Smith, "Earning Your Voice," *Comment* (March 1, 2013), http://www.cardus.ca/comment/article/3931/earning-your-voice/.

[68]James W. Skillen, "Christian Counseling in the Public Square: Principled Pluralism for the Common Good," *Edification* 3 (2009): 10.

[69]Marsden, *The Outrageous Idea of Christian Scholarship*, 6.

[70]Newbigin, *Foolishness to the Greeks*, 63.

[71]Ibid., 64.

[72]Ibid., 52, 64.

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Noreen Herzfeld

Outsourced Memory: Computers and Conversation

Noreen Herzfeld

Human memory is multilayered, partial, ephemeral, and fallible. Memory stored outside the person, as a photograph or in a computer, is quite different. Human memories change when retrieved, and new memories alter our perception of previous memories. Over time we forget, which can be a good thing. While human memory is a process, machine memory is a place. Its permanence can be an illusion (memory corruption). Its permanence can also become a problem, in that it does not fully allow for forgiveness and change. As we rely on computers more and more to be our external memories, we alter how we remember, what we remember, and our relationship to the past. Due to the differences in human and machine memory, outsourced memory should be seen as an aid rather than a replacement, and we should be wary of what we commit to digital storage.

"Life is … what one remembers and how one remembers it in order to recount it."
Gabriel Garcia Marquez

What is memory? In *À la Recherche du Temps Perdu*, a tea-soaked madeleine takes Marcel Proust back to a world he had largely forgotten, a world of sights, sounds, and experiences that was locked inside his memory, needing the sensory experience of the madeleine, its taste and smell, to unlock the door. Proust implies a conception that is commonly held, that memories are stored in our minds like a series of photographs. He writes,

> As soon as I had recognized the taste of the piece of madeleine soaked in her decoction of lime-blossom which my aunt used to give me (although I did not yet know and must long postpone the discovery of why this memory made me so happy) immediately the old grey house upon the street, where her room was, rose up like a stage set.[1]

Vladimir Nabokov, in his autobiography *Speak, Memory*, adds a detail both ironic and telling:

> I see again my schoolroom in Vyra, the blue roses of the wallpaper, the open window … Everything is as it should be, nothing will ever change, nobody will ever die.[2]

Memory makes the world eternal, unchanging.

Think of an early memory from your own childhood. What does it consist

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of—sights, sounds, smells, feelings, a narrative of what happened when? One of my earliest recollections is my third birthday. My parents gave a party, inviting a couple who were their best friends and who had children close to my age. I do not remember the party. What I do recall is the late afternoon, about an hour before they were to arrive, drifting about the house alone in my party dress. A late summer thunderstorm was being kicked up by a hot south wind, and the sky was slowly darkening with clouds. To this day, I recall the oddly mixed feelings I had of excited expectation and disquiet from the impending storm. But is that disquiet what I really felt that day, or what I have so often felt through the years whenever a storm approaches?

Recently a friend and I recalled our first meeting, more than ten years ago. We both agreed on the basic narrative. Nick was telling a somewhat off-color joke to Steve, another colleague, when I fell in step with them after a meeting. He fell quiet and Steve protested, "Well, don't stop now. What's the punch line?" Nick replied, "Not with a lady present." Steve glanced over at me and said, "But that's not a lady, that's just Noreen!" We both recalled Steve's comment word for word and laughed about it. However, when we moved to more detail of that meeting neither of us remembered the same things. He thought we were going down the stairway inside our Quadrangle building. I vividly recalled us in heavy winter coats, exiting the science hall and crossing a parking lot. He thought it was midday; I thought it was in the early dark of a Minnesota midwinter evening. Our memories were decidedly different, an experience much like that of two old lovers recounted in the musical *Gigi*: "That carriage ride. You walked me home—I lost a glove. You lost a comb. Ah yes, I remember it well."

What do these stories tell us about memory, specifically recollective memory? First, it is multilayered, composed of elements of sensory experience, narrative, and emotion. Second, it is partial. It is ephemeral. Worse, it is fallible. In an effort to remedy the latter, we turn to technology to bolster our internal capabilities. Photos, recordings, books, memorials, memoirs, databases—each provides a way in which we outsource memory. And we rely on outsourced memory more and more in this age of ubiquitous computer technology. I cannot tell you how often I have a student tell me, "I don't need to know that. I can Google it."[3]

Though we have long outsourced memory, starting with the first Sumerian who kept a record on a clay tablet, our current greatest competitor in the memory arena is the computer. Our reliance on Google, on the web, on Flickr, and on social network updates suggests that the computer is interchangeable with our minds when it comes to memory—that it does the same thing, only better. But computer memory is not at all the same as embodied memory. As we rely on computers more and more to be our external memories, we alter not only *how* we remember, but also *what* we remember. And these alterations have ramifications on more than our recollection of the past. They change the present as well, affecting how we relate to one another and how we understand ourselves. In this article, I will explore how embodied human memory differs from digital memories and why these differences matter. While computers make good aids and additions to our memory, they are a poor substitution for it.

Embodied Memory

Computers are the reigning metaphor of our time. So it is natural to think of ourselves in their terms. Beyond popular parlance, scientists too have used the analogy of storage, retrieval, and information processing to describe the functioning of our memories. John von Neumann likened informational memory to a filing cabinet, one that could as easily be virtual as actual, though he noted with frustration that we could not, as yet, locate the position of any given file in the brain.[4]

Molecular biologist Francis Crick goes further with his understanding of a mechanistic brain:

> You, your joys and your sorrows, your memories and your ambitions, your sense of personal identity and your will, are in fact no more than the behavior of a vast assembly of nerve cells and their associated molecules … You're nothing but a pack of neurons.[5]

Daniel Dennett extrapolates:

> If all the phenomena of human consciousness are explicable as "just" the activity of a virtual machine realized in the astronomically adjustable

> connections of the human brain, then, in principle, a suitably "programmed" robot would be conscious, would have a self.[6]

Implicit in what Dennett and Crick write is the conviction that, though emerging out of matter, what constitutes the essence of the human person is information, the pattern of one's neural connections.

Astronomer Robert Jastrow takes this thinking one step further, noting that such a pattern need not remain on a biological platform:

> A bold scientist will be able to tap the contents of his mind and transfer them into the metallic lattices of a computer … liberated from the weakness of the mortal flesh.[7]

Inventor and programmer Ray Kurzweil expects computers to reach this capability by the 2030s. For each of these men we are, in essence, our memories (along with suitable retrieval programs). And these memories are concrete, discrete information entities located somewhere in the neuronal intricacies of our brain.

How good is the computer analogy for memory? Let us return to my story of meeting my colleague Nick for the first time. While we recalled the basic plot of the encounter similarly, our memories of the details were strikingly different. Why would this be so? First, most cognitive psychologists now believe that we do not store memories as complete discrete entities. We store only bits and pieces of an experience, fragments from which we later reconstruct the event. As Ulric Neisser puts it, "Out of a few stored bone chips we remember a dinosaur."[8] Nick and I each remembered Steve's unfortunate rejoinder and that we were coming from a meeting. Beyond that, we reconstructed the rest of the scene the way a movie director might add scenery and blocking to fill in a basic script.[9]

Which bits and pieces we store is largely determined by what is already in our memories. Durable memories have a meaningful association with something already there.[10] This is one reason why I caution my students not to get too reliant on Google. We need mental pegs on which to hang new information. Without such pegs, incoming information tends to land in a heap on the floor of our mental closets. I believe my memory is more accurate than Nick's because I had the advantage of his having recently been introduced at a large faculty gathering, at which I had noted that he seemed an unusual and interesting person, one I would like to get to know. I already had a peg labeled "unusual new colleague" in my brain, whereas, to him, I was a total and unexpected stranger.

According to neurologist Antonio Damasio, there is no single location in the brain where the pieces of a memory are stored. Different aspects of a memory are stored in different locations—sensory data in the posterior cortex, other regions called convergence zones storing code that binds sensory fragments to one another and to preexisting knowledge, the right frontal cortex contributing to the sequencing, etc.[11] Some external cue, like Proust's madeleine, activates each of these regions to produce the final recollection.

In other words, far from being static engrams stored somewhere in our brains in whole-cloth, memories are bits and pieces, stored in multiple places, reassembled and filled out, as needed, to form a narrative. In the process of reassembly lies a second difference from the conventionally held impression of memory as a static file or photo, namely, the pieces are not reassembled in quite the same way each time we fetch them. Daniel Schacter notes the role played by the memory cue.

> The cue combines with the engram to yield a new, emergent entity—the recollective experience of the rememberer—that differs from either of its constituents.[12]

The brain stores information by increasing the connectivity between different neurons. When we recall an experience, the cue itself activates its own set of neurons. Thus the very act of remembering induces a new pattern of activity in the brain. This explains certain experiences. For example, when people are asked to recall an event as if they were a third-party observer rather than a participant, they recall that event with fewer emotional overtones.[13] And this change in the feeling of the memory may be permanent (making such a retelling one method in helping a person lessen the impact of a remembered trauma). Like an image that is traced and retraced, or a story told over and over again, each time we retrieve a memory, we change it slightly, and what we re-store is rarely quite the same. Psychologist Dan McAdams notes:

> The unfolding drama of life is revealed more by the telling than by the actual events told. Stories are not merely "chronicles" like a secretary's minutes of a meeting, written to report exactly what transpired and at what time. Stories are less about facts and more about meanings. In the subjective and embellished telling of the past, the past is constructed—history is made.[14]

The interaction of time and memory adds new layers of complexity. New experiences may interfere with our ability to recall previous ones. At best, they color our remembrance of the past with their own tint. For example, a serious argument with a person alters not just our present interaction but also our recollection of previous encounters. Walter Benjamin wrote, "The work of memory collapses time." He does not mean by this that memory makes the past present, though it does, but that the way our memories function makes the present part of the past.[15]

As experiences recede into the past, we find that fewer and fewer cues are sufficient to bring them back again. We forget. And while this bothers us, particularly those of us who have reached a certain age, forgetting plays a remarkably important role in our thought processes. Jorge Luis Borges illustrates the necessity of forgetting in his story "Funes, the Memorious," in which a young man, due to a fall from a horse, gains the skill of remembering everything, down to the least detail—the shape of every cloud he has ever seen, details of every leaf of every tree he has ever looked at. For such a perfect memory, he pays a very high price. He cannot, so to speak, see the forest for the trees. Because he remembers the details, he cannot categorize or generalize; thus he cannot think, for as Borges puts it, "To think is to forget a difference."[16]

Information that is not frequently accessed loses the strengthening effects of retrieval and re-storage and thus fades over time. This is a good thing. You do not need to know what you had for breakfast a year ago, nor do you need to recall exactly what the clouds looked like yesterday. To see the importance of letting go of detail, consider learning to drive a car. At first you worried about everything—press the accelerator, check the rear-view mirrors, turn the steering wheel, check the mirrors, look at the road, shift gears. After sufficient practice, you ceased thinking about the details—you just drove.

Forgetting plays a second role. With the exception of traumatic events, we forget unpleasant memories more easily than pleasant ones. We also tend to remember our accomplishments or roles in various experiences with an egotistical bias toward the positive. As Nabokov puts it, "I think it is all a matter of love: the more you love a memory, the stronger and stronger it is."[17] Studies have shown that this is good for our mental health; indeed, one symptom of clinical depression is a lack of these positive illusions, a tendency to recall one's failures rather than one's strengths.[18] A certain amount of forgetting is an adaptive trait.

In summary, we store pieces of an experience in various parts of the brain through strengthened neural connections. When a sufficient cue appears, we collect those pieces and use them, together with information present in the cue, to construct a narrative. We re-store the important bits of this new narrative, often with subtle changes. Our memory is a storyteller, strengthening or weakening the story relative to the frequency of its telling, and changing the story as needed to fit the present context. In this, we have a two-way dialectic. Our memories of the past form who we are in the present, while our present selves form and reform our memories of the past.

Outsourced Memory

How does this compare to memory outsourced to the computer? Memory is foundational to the structure of the computer. The first computers had to be rewired for every computation they were to perform. Obviously, this was a clumsy and time-consuming task. The great step forward, envisioned by Turing and achieved by von Neumann, was the move to stored programs, in which the instructions for performing a computation are encoded and stored in the computer's memory in the same way as data. Computers are all about memory—data and programs are stored in memory, and only a very few operations are necessarily wired into the processor (the very smallest processor can get by with two operations—addition and equivalence). Even the most sophisticated tasks accomplished by artificial intelligence are memory based—large databases of facts are quickly searched for patterns and precedents.

When we speak of memory in regard to the computer, we are using the term in a different sense. Computers reduce memory to storage, turning it into a place rather than a process. A computer's memory is closer to von Neumann's filing cabinet than it is to a storyteller. And we want it to be so. Computer memory gains its utility precisely from the two ways in which it differs from embodied memory, namely, that it is both static and large.

That computer stored data is largely static is both a strength and a weakness. Details that would fade quickly from the human mind—complex texts, lists, and processes—are all available at the push of a button. In the words of MIT computer scientist Wendy Chun, with the advent of the computer "the ephemeral has become the enduring."[19] But not so enduring as all that. Computer memory promises to last forever, but unless it is frequently updated, it rapidly becomes obsolete. How many of us have a forlorn stack of disks gathering dust in some corner of our desk? Nor does the data that remains accessible always stay the same. Files can be unintentionally corrupted over time, and multiple transmissions can easily be intentionally corrupted (as I noted with a chuckle on seeing two published pictures of the patriarch of the Russian Orthodox Church; in one, his very expensive gold watch had inexplicably disappeared). But most computer-stored data remains unchanged in nature or content from the moment it was stored until it is overwritten by something else. There is no subtle or incremental change, as with human memory. The present does not influence the past.

Our databases are also much larger than human memory. Large databases and the ability to search them quickly underlie the most recent developments in computer technology—the wisdom of the Jeopardy!-playing program Watson, the cracking of the human genetic code, the uncanny way in which Google or Amazon.com seems to know exactly what you want. Artificial intelligence programs exploit the size of memory and speed of current processors to accomplish human tasks in a very different manner. One factor that helped Deep Blue beat Garry Kasparov was having on hand a record of all his past games, clearly more information than any human could recall. New language-recognition programs, such as the iPhone's Siri, have large databases of phrases and sentences. Cheap large memory underlies many of our recent advances in computing.

Without sophisticated data-mining techniques, computer archives mirror the detailed memory of Borges's Fuentes. Consider the task of backing up the Internet. This is done periodically by the Internet Wayback Machine (IWM). Since it would be both time consuming and controversial to winnow the enduring from the ephemeral, the IWM simply backs up everything, all accessible sites. The sheer volume makes this archive, at least at present, close to useless. But that may soon change, and this change could have major ramifications on our lives.

Implications of Outsourcing Memory

The size and stability of outsourced memory, essentially a new kind of memory, matter. To borrow a phrase from Gregory Bateson, the difference between embodied memory and outsourced memory is a difference that makes a difference.

There is a concept in the Rule of St. Benedict that can help elucidate the implications of this difference. Benedictine monks take three vows when they enter the order. These are not the vows of poverty, chastity, and obedience made popular by the later mendicant orders. Benedictines pledge themselves to stability of place (that they will search for God in this community, with these imperfect people) and obedience to their abbot, and to the Rule of St. Benedict. Their third vow in the Latin of that Rule is one of *conversatio morum suorum*. It does not translate easily. The phrase literally means "the way of life of his behavior." *Conversatio* has been variously described as "conversion of life," "transformation of mind and heart," "continual conversion." Early commentators emphasized repentance, partly due to confusion in medieval editions of the Rule between *conversatio* and *conversio*. Recent commentators describe the vow as "fidelity to the monastic way of life" and see it as a reinforcement of the other two vows of stability and obedience.[20] However, older monks say they understood something much more radical in this vow—a call to a life of continual change. While stability emphasizes finding God in the constant,

conversatio finds God in change. Esther de Waal describes *conversatio* as the recognition that God is not only eternally faithful and dependable but also eternally unfathomable and unpredictable.[21]

An old Irish monk, when asked "What do you guys do in that monastery, anyway?" replied, "We fall and get up, we fall and get up, we fall and get up again." More than one monk has said to me, with a rueful smile, that the monastic life at times seems custom built to underline Sartre's comment that hell is others. But this applies to all our lives, not just the monastic. We fall. Others fall, and in their falling sometimes knock us down. At the center of the Christian life, whether monastic or lay, is the call for forgiveness. *Conversatio* implies that we must recognize change in others. Outsourced memory makes this much harder, both individually and socially.

A memory that is outsourced is no longer ours. We cannot control its availability nor who has access to it. We cannot control its forgetting. For most of us, this lack of control is problematic precisely when the computer forgets something we want remembered. We have all had the frustrating experience of returning to a useful web site only to see the words, "This page is no longer available." Users of "the cloud" may find their data inaccessible at any given moment due to server outages, overload, or even legal issues, as users of the Australian service Megaupload learned, to their chagrin, when the service's servers were shut down due to copyright infringement and racketeering charges. Outsourced memories may be lost.

However, worse than this, they may not be lost. Viktor Mayer-Schönberger suggests that the loss of forgetting is the more dangerous consequence of outsourced memories. He cites the experience of Stacy Snyder who posted a picture of herself as a "drunken pirate" on her MySpace page, only to find that it was accessed by university officials who subsequently tried to deny her teaching credential, citing conduct "unbecoming of a teacher." Andrew Feldmar, a psychologist who wrote about his experimentation with psychedelic drugs in the 1960s in an obscure professional journal, subsequently found himself barred from entry into the United States, though he had broken no law and had not used drugs since.[22] What we cannot forget, we cannot forgive. A person may find himself or herself determined by a single action, as in Snyder's case, or by something committed long ago, with no redress. Mayer-Schönberger worries that our fears of such an occurrence could lead to overly careful self-censorship. Too much data can also lead to prejudice. Until now, forgetting has been the norm, not the exception. Forgetting allows us to see others as they are now, not as they may have once been. It allows us to start again. Internal memories are tempered over time; external ones are not.

Conversatio also implies that we see ourselves as living out a process of continual change. While *conversatio* may speak first and foremost to the monk's habits and behavior, it is the internal narrative surrounding that behavior that shapes one's sense of self. Sociologist Anthony Giddens writes:

> A person's identity is not to be found in behavior, nor—important though this is—in the reactions of others, but in the capacity *to keep a particular narrative going*.[23]

We know ourselves as more than a collection of isolated sensory experiences through the construction of a story that links our memories into a larger whole. This story tells us who we have been and informs who we are now. It is a story that we continually revise as new experiences lead us to reinterpret older memories.

The postmodern world makes keeping a self-narrative going an increasingly complex task. Our lives are no longer lived out in a single normative social context. According to Dan McAdams, the certainties of modernity—

> faith in science and technology, assumptions about objectivity and rational discourse, belief in progress, the assumed coherence of political/economic systems such as capitalism and Marxism—have been severely undermined, leaving a confusing multiplicity of power discourses.[24]

Outsourced memory reinforces these conflicting voices. Information, interpretation, and increasingly, our own history become fragmented in external storage, making us less self-defined constructs within our own minds and in more "locations," where a variety of intersecting forces and interacting voices determines who we are at any given moment.[25]

We come to see ourselves not as a story, with a structured plot and character development, but as a scrapbook filled with disconnected status updates, tweets, and images.

Perhaps one reason the memoir has become the primary literary form of our time is that it attempts to recapture the centrality of narrative as the source of self-understanding, albeit in an externalized form. Madan Sarup writes:

> I have always felt lonely, and, even when I married, ten years later, I continued to have feelings of loss, feelings I have never understood. And now that I think I am beginning to understand, the people that I want to talk to have died. Perhaps it doesn't matter now. But then, why am I writing? Is my writing an attempt to put it all together? Does one have to rewrite the past in order to understand it?[26]

For Sarup, it is the process of writing that gives him insight into his past. It is the process of recollection that enlarges our narrative of the self and helps us make a coherent story of who we are, where we have been, and where we are going. In memory as process, we find the means for *conversatio*.

Once the memoir is written, the process ends—at least for those particular memories. Outsourcing memory makes us all, in a way, involuntary memoirists. Neuroscientist Warren McCulloch writes, "As our memories become stored, we become creatures of our yesterdays."[27] Nowhere is this so true as with computer memory. Expanded memory makes prediction possible, giving Amazon and Google their utility, but it also risks crowding out new experience. In his essay "The Storyteller," Walter Benjamin suggests that the information glut made possible by modern technology causes us to devalue direct experience. He believes that

> the art of storytelling is coming to an end. Less and less frequently do we encounter people with the ability to tell a tale properly. More and more often there is embarrassment all around when the wish to hear a story is expressed. It is as if something that seemed inalienable to us, the securest among our possessions, were taken from us: the ability to exchange experiences.[28]

We labor mightily to exchange experiences electronically. As one student said to me, "If I don't write about it on Facebook, or post a photo, it doesn't seem real." This is a life lived looking backwards, even in the very moment of experience. Yet all that gets exchanged are bits and pieces. The narrative work of our internal memory, the work Benjamin so prizes, is missing.

Each of us must decide how many of the tasks of memory we will outsource. Our current understanding of embodied human memory, not as the past stored, but the past woven into a continually changing narrative, suggests that a total outsourcing of our memories, as Jastrow and Kurzweil dream of, is both unlikely and undesirable. We are more than information. Even were a total downloading of our neuronal patterns possible, it would serve only to freeze us in time. A computer without a human body, and thus without continuing human experiences and physical cues (no madeleines for the computer), would either hold our memories static or begin to alter them in a completely different and nonhuman fashion. You, downloaded, would at that moment cease to be you.

Each of us will continue to use computers as an aid to memory. I, for one, do not want Google to go away. Perhaps the best advice is analogous to that given by Jesus long before the computer age: *"Render unto Caesar the things that are Caesar's and render unto God the things that are God's"* (Mark 12:17). Render unto the computer the things that are the computer's, but no more. Again and again, we make the mistake of conflating mind with computer, of trying to find in the computer a surrogate rather than a partner. I have written elsewhere of the problems this engenders in relation to artificial intelligence.[29] Memory presents a similar case—a database is a poor analogy for memory. An aid to memory—yes, but it is not a replacement for it. ❍

Notes

[1]Marcel Proust, *Remembrance of Things Past,* vol. 1, *Swann's Way* and *Within a Budding Grove*, tran. C. K. Scott Moncrieff and Terence Kilmartin (New York: Vintage, 2002), 48–51.

[2]Vladimir Nabokov, *Speak, Memory* (New York: Vintage, 1989), 77.

[3]A recent study shows that when subjects are told they can find information on the web they are less likely to remember it. See Betsy Sparrow, Jenny Liu, and Daniel M. Wegner, "Google Effects on Memory: Cognitive Consequences of Having Information at Our Fingertips," *Science* 333 (August 5, 2011): 776–8.

[4]Wendy Chun, *Programmed Visions: Software and Memory* (Cambridge, MA: MIT Press, 2011), 160.
[5]Francis Crick, *The Astonishing Hypothesis: The Scientific Search for the Soul* (New York: Scribner, 1994), 3.
[6]Daniel Dennett, *Consciousness Explained* (New York: Little, Brown, 1991), 431.
[7]Robert Jastrow, *The Enchanted Loom* (New York: Simon & Schuster, 1983), 168.
[8]Ulric Neisser, *Cognitive Psychology* (New York: Appleton-Century- Crofts, 1967), 285.
[9]As Walter Benjamin notes in *Berlin Childhood*, "Memory is not an instrument for surveying the past but its theatre."
[10]Daniel Schacter, *Searching for Memory* (New York: Basic Books, 1996), 43.
[11]Ibid., 66–7.
[12]Ibid., 70.
[13]Ibid.
[14]Dan McAdams, *The Stories We Live By: Personal Myths and the Making of the Self* (New York: Guilford, 1993), 28.
[15]Walter Benjamin, *Illuminations: Essays and Reflections* (New York: Schocken, 1969).
[16]Jorge Borges, *Ficciones* (New York: Grove, 1994). The Russian journalist Shereshevskii, described by Alexander Luria, had a Fuentian memory and could recall virtually everything that had happened to him. This did, indeed, prevent him from being able to think on an abstract level.
[17]BBC interview, 1962, http://lib.ru/NABOKOW/Inter02.txt.
[18]Shelley Taylor, *Positive Illusions* (New York: Basic Books, 1989).
[19]Chun, *Programmed Visions: Software and Memory*, 133.
[20]See *RB 1980* (Collegeville, MN: Liturgical Press, 1980), 459–63.
[21]Esther de Waal, *Seeking God: The Way of St. Benedict* (London: Fount Paperbacks, 1984), 70.
[22]Vickor Mayer-Schönberger, *Delete: The Virtue of Forgetting in the Digital Age* (Princeton, NJ: Princeton University Press, 2009), 1.
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[27]Warren McCulloch, "Why the Mind is in the Head," *Dialectica* 4, no. 3 (1950): 192–205.
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[29]Noreen Herzfeld, *In Our Image: Artificial Intelligence and the Human Spirit* (Minneapolis, MN: Fortress, 2002).

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Moral Enhancement as a Technological Imperative

D. Gareth Jones

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The inroads of biomedical technology into what human beings are as people manifest themselves in many ways, one of which is to explore whether and to what extent people can be enhanced, that is, perform better than they would have in the absence of the technology in question. Of the various possibilities discussed, one centers on cognitive performance, improving concentration, memory and the like. It is against this background that suggestions have been made that moral behavior can be, and even should be, improved using technological avenues provided by transcranial direct current stimulation (TDCS), deep brain stimulation (DBS), serotonin, and oxytocin. The drive to augment morality using these means stems from the perception of some writers that current morality is unable to cope with the dire challenges facing humankind in the form of possible nuclear annihilation, the plight of the global poor, and the deep divisions between different cultural groups. This is the world of moral enhancement and moral technology. A theological context is sought by assessing how Jesus's teaching on the greatest commandment, namely, loving God and one's neighbor, might apply to drug treatments aimed at transforming individuals with different moral, mental, and spiritual needs. In this way, the limitations of a mechanistic view of moral technology become apparent.[1]

Heather Looy's survey of the theological frontiers of psychology touches on attempts at becoming more than human.[2] This is one of the most provocative frontiers promulgated by those who wish to transform the dimensions of human nature. While there are many facets to this endeavor, the one that is both best known and also most extreme is that of transhumanism, with its myriad goals of not only dramatically extending human abilities and life span technologically, but also finding ways of overcoming the burden of our mortality.[3] However, there are many nontranshumanists who also have vast agendas for enhancing human cognitive abilities, including some who see it as their task of advocating for the enhancement of specifically moral attitudes.[4] The thrust, in all cases, is to accomplish these ends utilizing the latest developments in biomedical technology. It is this that sets them apart from so much that has gone on in the past, and that is based on the malleable nature of the human body and brain.

While moral bioenhancement has appeared in the bioethics literature in very recent years, it was presaged eighty years ago in Aldous Huxley's groundbreaking novel *Brave New World*.[5] In this, he envisaged a society in which people would carry around their morality in the form of tablets in a bottle. "Christianity without tears—that's what soma is."[6] Far more recently, a well-known bio-

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ethicist, Peter Singer, has proposed a "morality pill." Since moral behavior is in part biochemically determined, he argues that it should be possible to engineer moral behavior with drugs. Consequently, "this pill should be taken by those who do not normally help others."[7] Along similar lines, another bioethicist, Julian Savulescu, has argued that if safe moral bioenhancements prove to be viable, their use should be made compulsory.[8]

The enhancement literature is plagued by confusion about the definition of the term and also in its delineation from therapy. In part, the confusion stems from different conceptions of what constitutes enhancement, the areas of overlap between therapy and enhancement (regardless of definitions), and the extent to which the one blends into the other. My stance is that there is a continuum from unambiguous therapy (removing an appendix that has ruptured) at the one end, to unambiguous enhancement (curing death and creating posthumans to live for a few hundred years) at the other. In between, one can think of the enhancement of healthy people by use of vaccines as prophylactics and the extension of abilities as in enabling people to run faster than they would otherwise run.[9]

Cognitive Enhancement

While the focus of this discussion is the enhancement of morality, the possibilities of a move in this direction have been opened up by the finding that cognitive abilities appear to be capable of being enhanced. Examples abound as drugs originally designed to treat a medical condition are employed by healthy individuals to improve their performance. For instance, up to 25% of American students use psychostimulants,[10] while 5% of the working population in Germany are reported as using pharmaceutical drugs to enhance their cognitive functions. It has also been claimed that up to 80% of students in Germany would use neuroenhancers if assured there would be no adverse effects.[11]

One of the best known of these drugs is Ritalin (methylphenidate) that stimulates the brain and increases levels of the neurotransmitter dopamine. Its use to help people stay awake and alert for longer is nontherapeutic, as opposed to its conventional use for children suffering from ADHD (attention-deficit hyperactivity disorder).[12] Another drug, modafinil, designed to assist individuals with narcolepsy, also appears to be useful in aiding concentration, alertness, focus, short-term memory, and wakefulness.[13] A further drug, Donepezil (Aricept) originally developed as a treatment for Alzheimer's disease, improves recall of training when taken by healthy, but older, pilots in a flight simulator.[14] Yet other drugs like propranolol, a beta-blocker, can be used to block the formation of traumatic memories, or even erase them once established.[15]

These secondary uses (uses for which they were not originally designed for the treatment of specific maladies) of psychoactive drugs take them out of the traditional realm of therapy into a realm that is "Beyond Therapy."[16] Two categories of issues arise when a move beyond the therapeutic is contemplated. The first is the simpler of the two, and this is the safety of the drugs being employed. The second is the nature of what is being done in ethical and theological terms.

The major query over safety pertains to whether these cognitive-enhancing drugs have side effects. The answer is that they do. The most promising drugs currently used for cognitive enhancement can be addictive. For instance, the mechanisms in the brain for learning and memory are closely connected with mechanisms implicated in addictive behavior.[17] Of all the neuroenhancers, modafinil is quite definitely addictive. Consequently, there is a major distinction between technological innovations external to the body, such as cell phones or computers, and the use of drugs that intervene directly in the neurobiological basis of one's personality.[18] The difference lies respectively in the transitory nature of the former, as opposed to the more profound and longer-lasting effects of the neuroenhancers. This difference also emerges when considering deep brain stimulation (see below).

The second issue raised by the use of cognitive enhancers concerns the nature of the transformation. It may be transforming a shy person into a vivacious one, a risk-averse person into a risk taker, or an irresponsible individual into a responsible one. In each of these cases, the approach adopted lies in the severity of the former state (shyness, risk averse, and irresponsibility) and whether it is considered in need of intervention. In other words, is therapy urgently demanded? If so, one is probably dealing with cognitive therapy rather than cognitive enhancement, although the borderline between the

two may be debatable. Perhaps there is a moral obligation to exploit the technologies available in some instances, on condition that the people concerned are not harmed and experience substantial benefit. If these conditions are not met, the use of these enhancers becomes suspect.

Moral Technology

Any moves in the direction of attempting to improve morality and moral behavior using technological approaches are based on one proviso, namely, that the methods employed actually do improve morality, and that they are more effective than available conventional approaches. Any claims that they are more effective should be open to scientific scrutiny, since what is being conducted is a scientific experiment. This should apply to any new treatment, and there is no reason why moral enhancement procedures are excluded from stringent analysis and critique. In clinical practice, we do not accept the validity of new treatments based on the positive responses of patients or the unsubstantiated claims of clinicians. Publication of results, peer review of the publications, and openness to testing and retesting are seen as basic requirements. These stipulations are just as important when approaching moral bioenhancement as in any other area where current approaches are regarded as inadequate.

The scientific basis for thinking in these ways encapsulates a variety of approaches. The first of these is transcranial direct current stimulation (TDCS). It has recently emerged that TDCS can be used to improve language and mathematical abilities, memory, problem solving, attention, and even movement. In TDCS, weak electrical currents are applied for about twenty minutes to the head via electrodes placed on the scalp. The currents pass through the skull and alter spontaneous neural activity. They are thought to increase neuroplasticity, making it easier for neurons to fire and form the connections that enable learning.[19] It is thought that the effects of TDCS can persist for up to twelve months.[20]

Experiments in humans have found that following TDCS, there are changes in the local concentration of the neurotransmitters GABA and glutamate, both of which are important in synaptic mechanisms implementing learning and memory.[21] These characteristics of TDCS make it an attractive tool for manipulating neurobehavioral plasticity, and it may be useful in enhancing psychological functions.[22] Like all technologies, TDCS will probably come with costs as well as benefits. Enhancing some capacities may lead to deterioration of others. What this means is that highly developed capacities in some cognitive domains may be accompanied by reduced functioning in others.[23]

While TDCS is a form of cognitive enhancement, some use it as a launch pad into the moral realm. This is, of course, speculative but some argue that certain biochemical interactions "might stimulate our moral imagination, increase our empathy towards others, … improve our powers of moral judgment and reasoning."[24] What one detects here is a tendency commonly encountered in the bioethical literature, and this is that tentative data are viewed in an unreservedly positive light. The deficiencies and possible drawbacks to a procedure are downplayed in favor of what are seen as its positive aspects, no matter how tentative some of these may be.

The second approach uses deep brain stimulation (DBS) that has been discussed principally in connection with treatment for Parkinson's disease rather than in the moral bioenhancement arena. However, it does influence general cognitive domains besides motor ones. When used in patients with Parkinson's disease, electrical signals generated in a subcutaneously placed unit are sent to electrodes implanted in the motor region of the brain. In an attempt to control motor activities, the aim of DBS is to stimulate the function of the motor regions that have been detrimentally affected by the loss of the neurons producing the neurotransmitter, dopamine.[25] It is used when routine treatments have become ineffective, although there may be negative side effects, including personality changes.[26] Worldwide, more than 80,000 patients have been provided with these implants. DBS is also used as an experimental treatment for intractable depression and obsessive compulsive disorder.[27] While not all patients respond to the treatment, the primary symptoms are substantially improved in many, with rare adverse effects.

A range of post-operative neuropsychiatric symptoms has been reported when DBS is used for Parkinson's disease, including depression and apathy, though most are transient and treatable.[28] If side effects of this nature are minor, the alleviation of the crippling motor deficiencies will be welcomed. The balance between the positives and negatives will

weigh strongly in the positive direction, and will be assessed as clinically acceptable. The underlying assumption is that there are no noticeable effects on the patient's identity. The change is strictly therapeutic, and equates with any other form of therapy to alleviate the troubling symptoms. Overall, DBS is an example of a relatively successful neural prosthesis, and illustrates a melding of brain and machine.[29]

It is the broader applications of DBS that may prove of interest in enhancing people's lives, whether the alleviation of chronic pain, major depression, Tourette syndrome, and even Alzheimer's disease, minimally conscious state, obsessive compulsive state, and epilepsy.[30] Most of these treatments are experimental and the manner in which DBS works is incompletely understood, while the neuropsychiatric side effects should not be downplayed.

The third approach is the one generally quoted in reference to the possible enhancement of moral behavior. This is the potential contribution of neurotransmitters and neuropeptides. There appear to be brain circuits active during moral judgment that are linked to pro-social emotions such as empathy, guilt, and pity.[31] In connection with this, it is not unusual to encounter papers with titles such as "Serotonin Selectively Influences Moral Judgment and Behavior through Effects on Harm Aversion"[32] and "Oxytocin Increases Trust in Humans."[33] These direct our attention to the two compounds on which most attention is paid in the moral bioenhancement literature: serotonin and oxytocin.

Serotonin is being put forward as the neural substrate of ethical decision-making.[34] There is evidence that serotonin selectively influences moral judgment and behavior through increasing subjects' aversion to personally harming others. Administration of a serotonin reuptake inhibitor (SSRI) modulates decision-making in moral dilemmas. Consequently, enhancing serotonin makes subjects more likely to consider that harmful actions should be forbidden. Enhancing serotonin levels changes decision-making in a test known as the "ultimatum game," in that it makes subjects less likely to reject unfair offers. Additionally, this has a stronger effect on people who self-identify as being more empathic.[35]

This is one side of the story regarding serotonin, but there is another and this is that serotonin is associated with self-harm in those who are depressed and inclined toward suicide. Those studying morality do so on healthy subjects, whereas patients with dysfunctional attitudes point to a different facet of serotonin's effects on behavior. For the latter patients, disruption of the serotonin system is consistently associated with nonsuicidal self-injury and suicide in adults,[36] and low levels may explain pessimistic dysfunctional attitudes associated with major depression.[37] However, there is a complex interrelationship among biological, psychological, and social systems, including in adolescents.[38]

There seems little doubt that serotonin is influential in human social behavior, both in health and in illness. Consequently, one has to be exceedingly careful in thinking that it can be used with impunity to alter moral decision-making in healthy individuals. It is important to ensure that any social dysfunction is principally the result of neural characteristics, let alone neural abnormalities. Contributions from dysfunctions originating in the environment and in the network of relationships of which the individual is a part should never be peremptorily dismissed.

While the serotonin story is a powerful one, it is impossible to divide the brain into distinct functional compartments. Augmentation of serotonin not only affects behavior, it is also involved in cardiovascular regulation, respiration, sleep-wake cycles, appetite, pain sensitivity, and reward learning.[39] Even within the morality area itself, the enhancement of moral cognition may be accompanied by an increased willingness to allow cheaters to go unpunished. Not only this, there is evidence in mice that enhancing aspects of memory also results in higher sensitivity to pain.

In the case of the role of oxytocin, a neuropeptide, in moral enhancement, the literature is again highly dependent upon the results of role-play studies. For instance, the administration of an oxytocin nasal spray increases trust, in that subjects playing the role of an investor appear to be more generous in their investment to a trustee. However, it does not appear to affect an individual's willingness to accept social risks.[40] In another series of studies, it was concluded that oxytocin creates intergroup bias since it motivates in-group favoritism, an important ingredient in cooperation within groups.[41] This suggests it has a role in the emergence of intergroup conflict and violence. This relationship between oxytocin and trust has created intense interest and has ele-

vated oxytocin to celebrity status, although whether all the results should be accepted as uncritically as they have remains an open question.

The Perceived Need for Moral Enhancement

Over recent years, a debate has been raging in the bioethics literature between a number of prominent bioethicists. This revolves around the following proposition by Persson and Savulescu:

> We claim that human beings now have at their disposal means of wiping out life on Earth and that traditional methods of moral education are probably insufficient to achieve the moral enhancement required to ensure that this will not happen. Hence, we argue, moral bioenhancement should be sought and applied … it is a matter of such urgency to improve humanity morally to the point that it can responsibly handle the powerful resources of modern technology that we should seek whatever means there are to effect this.[42]

What we have here is a mixture of despair at the plight of the world brought about through the possibilities opened up by scientific and technological prowess, and at the limitations of traditional moral education and discernment. But the irony is that in order to rectify the latter, they look again to technology, this time in the guise of moral bioenhancement.

For Persson and Savulescu, further developments in cognitive enhancement will only make matters worse, since a few people or groups of people will abuse the powers made available to them. Consequently, the priority is to find a way out of the current morass, and for them this is via genetic and other biological means of improving moral status. Not only this but, as they argue in other places, this enhancement should also be perfected and then made mandatory.[43]

This gets to the core of some of the problematic aspects of the debate: the potential perfectibility of moral enhancement technologies. While one dare not say that this will never be achieved, it is so unlikely as to be close to zero. The complexity of the brain is such that it is well nigh impossible to restrict interventions to just one emotion, let alone to one moral response. To think otherwise is neuroscientifically naive. In making a similar point, John Harris writes:

> The only reliable methods of moral enhancement, either now or for the foreseeable future, are either those that have been in human and animal use for millennia, namely socialization, education and parental supervision or those high tech methods that are general in their application. By that is meant those forms of cognitive enhancement that operate across a wide range of cognitive abilities and do not target specifically "ethical" capacities.[44]

And then there is the question of personal liberty; to modulate one's moral responses, if it could be done, would necessitate the imposition of the beliefs and mores of others. What becomes of freedom, even if the intention is to overcome what are generally regarded as moral evils? And what becomes of Christianity? If freedom of choice has disappeared, there is no freedom at all—a deeply disconcerting prospect for Christians but also for a liberal society. The fundamental guiding principles of contemporary bioethics, namely, autonomy and beneficence, let alone justice, look as though they would have been sacrificed to a technological imperative.

The intentions of writers like Savulescu, Douglas, and Persson[45] are, to quote their own illustration, to elevate people's responses to the plight of the global poor, or to decrease the harm being caused by a serial philanderer. With these I have much sympathy, and yet the means employed, that of some form of direct emotional modulation, is disconcerting. The second of these examples is probably dysfunctional behavior, and has to be treated as such. The first is quite different, since it illustrates a lack of empathy with the poor and disadvantaged. Altering emotions such as sympathy, psychologically or even biologically, may leave one's level of practical commitment untouched. That requires moral decision-making based on altruism and siding with the victim. It is a desire to live the good life, and in Christian terms, to live for one's neighbor, for the deprived and downtrodden, and for those unable to help themselves. There is a rational basis to moral responsibility, one that involves the whole person and many interrelated regions of the brain.

For Persson and Savulescu, there is "a widening gap between what we are practically able to do, thanks to modern technology, and what we are morally capable of doing, though we might be somewhat more capable than our ancestors were."[46] For them, the drive behind moral bioenhancement is

improvement in the powers of reason, impelled by the moral dispositions of altruism and a sense of justice, dispositions that these writers claim have biological bases in evolution. They accept that "moral bioenhancement worthy of the name is practically impossible at present and might remain so for so long that we will not master it … "[47] They also accept that traditional means of improving moral wisdom are also necessary. Their realism is to be welcomed, and so it is surprising to read in another place that they consider that there would be no serious crime in the world of moral technology, in part, because criminals and potential criminals would be morally improved using whatever technology was available.[48] Notwithstanding this idealism, it is extremely difficult to see in what ways people's altruism, concern for the poor, and reduced aversion to those of other racial and cultural groups can be so readily ameliorated using technological means of any description, let alone the means likely to be available in the foreseeable future. Additionally, a high level of moral awareness by the "haves" will be necessary to avoid exploiting the "have nots."

Inherent within this whole endeavor is an assumption that a scientific approach to improving morality is able to determine what is desirable morally, or simply what is good as opposed to what is evil. It is one thing to argue that criminals will be prevented from continuing to act out their criminality, but who determines what constitutes the scope of criminality? One imagines it will be those with power in society, and even if these happen to be scientists, in what way will their science provide a guide to altruism, to appropriate behavior on the battlefield or in business, or to resources to be devoted to the elderly? In the absence of such guidance, there will be no way of determining how technological prowess is to be utilized.

Finding a Theological Context for Neuroenhancement

In normal life, we look favorably on enhancement. We routinely enhance someone's work or life prospects; it is far better to be provided with opportunities than to be denied them. It is far better to have an adequate diet than an inadequate one; to have good living conditions than poor ones; to live a moral life as opposed to an immoral one. Christians as much as anyone else welcome enhancement in any of these senses. Why then may we be dubious about morally enhancing an individual or even a whole population technologically? What is it about technological intrusion that worries us, or is it only certain technological intrusions that raise concern? We freely accept numerous intrusions into the human body: vaccines, surgery, and drugs to control blood pressure, elevate mood, regulate heartbeat, and control movements. Evidently it is not these that worry us, even though some of them influence brain activity, and even though many of them are accompanied by unwanted side effects. We accept them because we believe that they will assist us to live our own lives as the people we know ourselves to be.

In delving into the moral area, consider the response given by Jesus to a lawyer who wanted to know which was the greatest commandment:

> "You shall love the Lord your God with all your heart, and with all your soul, and with all your mind." This is the greatest and first commandment. And a second is like it: "You shall love your neighbor as yourself." On these two commandments hang all the law and the prophets.[49]

Is there a place for moral technology in bringing about love like this? Is there any way in which we could envisage using technology to enable people to love God and those around them? Imagine the following individuals.

Individual P is committed to loving God and her neighbor but suffers from bipolar disorder. She cannot escape either the frenzied states or the depressive ones, although treatment is proving helpful. There are times, sometimes lasting for weeks on end, when her functioning is very restricted, and during these periods, she has little thought for her commitment as a Christian. However, on other occasions, she is energetic and excitable and is highly productive, and it is during these times that she appears to relish her commitment and is loving toward all around her. However, she is deeply troubled by the black episodes and by what she perceives as her lack of concern for others at those times, as well as her lack of interest in anything spiritual. She is treated with mood stabilizers, including lithium and sodium valproate. She is very grateful for this, and within a year her condition has improved markedly.

This is an illustration of a disabling, pathological condition that is often successfully treated using

drugs. The pharmaceuticals enable P to function relatively normally, and in this way assist her to love others and hence improve the moral framework of her life. They have assisted her to live in the way she wishes to live.

Individual Q is also committed to loving God and his neighbor but has become addicted to viewing porn on his computer. This does not touch every aspect of his life, unlike the case of the previous individual. Neither is this usually viewed as a diseased state, but it leads to serious questions considering the extent to which he loves God in every facet of his life. It also throws doubt on whether he loves all those around him when, in his thinking, he perceives some as objects to satisfy his lust. He is deeply concerned about this and does not wish to continue to be subject to this addiction. Currently, treatment involves counseling and the assistance of support groups. But what if it proves possible to utilize drugs that act on the brain reward circuits, and counteract this form of addiction? What role might there be for them against the background of Jesus's teaching?

One has to ask what it was that led Q initially into viewing porn, since if this had not occurred the addiction would not have kicked in. The moral problems commenced here. And so, even if drugs to counteract the addiction become relevant and can be advocated, there is no hint that they would have had any relevance prior to the start of the viewing. Once again, as with individual P, their role will be in treating what has become a pathological process. Useful as this might be, the moral questions lie beyond their use. The drugs do not make Q more moral; they simply help him cope with the immorality to which he has become addicted. This is far removed from the moral technology advocated by some writers.

Individual R, by contrast, has no interest in the precepts of loving God and loving one's neighbor. He lives for himself and his own welfare. His aim is to build his own empire of wealth and privilege. He gives no thought to social issues, whether poverty or climate change, or the plight of refugees or ethnic cleansing. These are never allowed to intrude into his world of riches and contentment. How are we to approach this behavior if we consider it suspect and highly questionable morally? Where might technology enter the picture? On the premise that drugs will be found to improve moral precepts, it can be hypothesized that one could transform this individual into someone who now appears to love God and those around him: that is, he is changed from an atheist into an apparent believer. In the unlikely event that such a change could be effected, would the end result be any different from the changes that can be wrought using psychological conditioning or possibly torture?

The resulting individual, R transformed, may give the appearance of conforming to certain external expectations but would not be a more moral individual. The moral technology would have failed to improve the stock of moral behavior. It may even resemble the results of classic psychosurgery of the 1940s and 1950s, when aggressive patients were transformed into placid conformists—without the aggression but without any interest in life or in the activities that had once been central to their existence.[50] The central queries are how moral is the use of such technology, and who is to determine that love of God and love of neighbor (as opposed to love of the state and conformity to its dictates) should be dominant characteristics of the lives of those in society? The contentious and dubious nature of such a proposal is all too obvious.

It is also worth returning to Jesus, who was well aware of the contrast between external appearances and inner motivations. Toward the latter part of the Sermon on the Mount, he explicitly pointed out to his listeners that they were to beware of practicing their religiosity before others.[51] Giving to assist others and providing for others were always to be done secretly and without fanfare. If ways will ever emerge of improving the response of people in giving altruistically to help others, these procedures will also have to ensure that there is no desire on the part of the modified individuals to demonstrate to others how generous they are being. This goes well beyond simply "doing the right thing"; it includes both knowing why one is acting in this way and wanting nothing in return.

The attempt to transform people mechanistically is a manifestation of a quasi-religious faith that scientific knowledge is the only legitimate form of knowledge. The message of moral bioenhancement is that everything about human life is confined to the physical, including moral behavior. The realism of any religious approach is discounted, and yet the realism is not to be readily dismissed. The apostle Paul encountered numerous difficulties and much

strife in radically transforming his priorities and attitudes.[52] For him, the only way out of his predicament lay in the power and direction provided by the risen Christ. The contemporary question is whether taking appropriate drugs would have assisted him in his inner battle.

Even posing this query highlights a confusion of domains, one that has much in common with retail therapy. Buying clothes or a new house or a more expensive car in order to fill the void in one's life is the answer of retail therapy. Replacing a part of one's brain or modifying brain circuits in order to overcome moral struggles and act more morally is the answer of moral bioenhancement. This is what one might term "existential neural therapy." Attempts to "inject" morality into an individual are flawed since moral behavior develops and matures with time, as struggles are overcome and tensions are resolved. The wise individual has thought long and hard about ways of resolving moral predicaments, about means of approaching moral quandaries, and has learned from mistakes and errors of judgment. It is a process that builds on experience and that takes note of wise counsel from across many fields of human endeavor. Instantaneous answers have no part to play in establishing a moral repertoire, which for those working within a Christian framework will rely heavily upon the Christian scriptures and the writings of Christian scholars through the ages.

In writing to the Christians in Galatia, Paul outlined the contrast between two ways of living:[53] the one uninformed by a spiritual dimension (the desires of the flesh) and the other based upon spiritual imperatives (the fruit of the Spirit). There is no suggestion that this is an easy path, but it is presented to his readers as the preferable path and one that is available to them. The moral instructions are clear, but individuals have to choose. They are treated as adults, with responsibilities to both themselves and others within their community. The contrast between this and the quasi-scientific, technological approach is marked, and is an important consideration when assessing the attractions of moral bioenhancement.

The answer is not to reject outright technological interventions in the brain, since some are helpful and assist an individual to live as he or she seeks to live. These are to be welcomed. By the same token, there is no simple way of transforming an immoral individual into a moral individual by manipulating that person's brain. Treat whatever is clouding that person's thinking and responses using technological means, thereby enabling the person to be a whole person. One may wish to call this moral biotherapy, but it is far removed from moral bioenhancement with its theoretical capability of providing a person with a pre-set moral repertoire. This is an abrogation of the responsibility built into those made in the image of God and with God-like attributes.[54] ○

Notes

[1]This is an expanded and modified version of a talk given at a Christians in Science residential conference at Cambridge in July 2012, under the title, "Ethical Issues Raised by Cognitive and Moral Bioenhancement."

[2]H. Looy, "Psychology at the Theological Frontiers," *Perspectives on Science and Christian Faith* 65, no. 3 (2013): ???–??.

[3]J. Garreau, *Radical Evolution: The Promise and Peril of Enhancing Our Minds, Our Bodies—and What It Means to Be Human* (New York: Doubleday, 2005).

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[5]A. Huxley, *Brave New World* (1932; reprint, Harmonsdsworth, UK: Penguin Books, 1958).

[6]Ibid., 185.

[7]P. Singer and A. Sagan, "Are We Ready for a 'Morality Pill'?," *New York Times*, January 28, 2012, http://opinionator.blogs.nytimes.com/2012/01/28/are-we-ready-for-a-morality-pill/?_r=0, 2.

[8]I. Persson and J. Savulescu, "The Perils of Cognitive Enhancement and the Urgent Imperative to Enhance the Moral Character of Humanity," *Journal of Applied Philosophy* 25, no. 3 (2008): 174.

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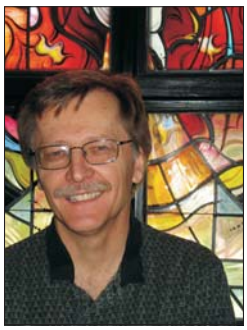
[54]This paper will appear in modified form as chapter 6 of my book *The Peril and Promise of Medical Technology: Christian Insights*, to be published by Peter Lang.



Denis O. Lamoureux

Communication

I Sleep a Lot

Denis O. Lamoureux

"Can you prove to me that the resurrection actually happened?" This was the very first question that was launched at me in September 1997, during the first minute of my first class teaching science and religion at St. Joseph's College, University of Alberta. Of course, the question caught me off guard because it was completely out of context. I mumbled and stumbled and cannot remember what I said. But I do recall thinking to myself that if this is what teaching theology is going to be like, then I want to cross the street and return to the faculty of dentistry where I had been a clinical instructor for the previous six years. Teaching students how to pull teeth is a lot easier!

Fifteen years later, I am sitting in a campus pub across from the student who asked that very first question, sharing a good laugh about how my theological teaching career began. This is one of the most blessed aspects of being a university professor. A number of our students become life-long friends. Not only that, the irony of teaching such talented young men and women is that they end up teaching their professors as much as their professors teach them.

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In that inaugural class, I knew intuitively that this young man was special. And indeed he was. He was incredibly bright, and he was being pursued by the university to go to graduate school in his specialized scientific discipline. But instead, he went off to seminary to study theology. There were more pressing and larger questions that needed to be answered.

Eventually the reality of having to make a living caught up to him. He became a very successful businessman, making six figures a year and working only a few hours a week. Yet, as the theme of the Book of Ecclesiastes reveals, he had come to see the vanity of it all. And he reminds me that I had predicted that he would return to the academy because it is the pursuit of those questions about the meaning of life that beckon the human soul. Sure enough, here we were in a campus pub, where all great decisions are made, and he was exploring the possibility of graduate school in philosophy.

And then in the midst of our conversation, he said it. "I sleep a lot." For most people, these four words mean very little. But for me, they shout out. It is because I suffer from depression, and the classic sign of this medical condition is that patients sleep a lot. Cautiously, I asked him more about why he slept so much. I revealed to him that this was the main symptom that led to my diagnosis. As he slowly opened this dark region of his life, I felt comfortable asking another question, one that few of us ask our friends, "Ever think about ending it all?"

Yes, the "s" word that no one wants to talk about, let alone admit having pondered seriously, *especially* if you are a Christian. I further disclosed that I had thought about suicide and often yearned that my life would end. In fact, I knew exactly what I would write on the suicide note: "I'm tired of being tired." But despite the power of these feelings, taking my life was only a thought and never a reality. My faith was my rock. I knew well that if I ever took my life, I would soon be standing in front of Jesus, with absolutely no excuse. Besides, I could not do that to those I love—my family, my friends, and my students, such as this former student in front of me. And then I said to him what I believe needs to be said from the pulpit in every church, "It's OK to get psychiatric help, and it's OK to use medication. It is not against God's will."

One of the most enlightening aspects of being treated for depression is that a doctor takes an inventory of your life. It is here where I realized that for years I had been doing things that were not healthy for my brain. Though there is a history of depression in my family that few ever talked about, the primary etiological factor of my condition was that I simply had not taken time off from school or work. In graduate school, I earned two masters degrees in twenty-four months and two doctoral degrees in eighty months. To finance my education, I practiced dentistry. So I went from the library or laboratory to the dental clinic and back again without any holidays, assuming that a change was as good as a break. Wrong. The chronic stress in both grad school and dental practice are well known. My brain needed a break. And since beginning my teaching career in 1997, I had never taken a holiday. I had assumed that going to a conference such as the annual American Scientific Affiliation meeting was the same as taking a break. Wrong again. As much as I love being with my pals, Terry Gray, Paul Seely, Kirk Bertsche, and others, we spend most of our time debating the issues of science and religion. And with these guys, you have to be at your academic best … or else!

The greatest revelation of my psychiatric evaluation was identifying my weekly habits. I will admit that there is a bit of righteous pride in saying that I work for six days and then take Sunday off. But is Sunday really a day off for me? It is not. I might be sitting quietly in a pew listening, but my brain is in overdrive thinking theologically. This became painfully evident when I looked at my written notes for my book *Evolutionary Creation* (2008). I have pages upon pages of stapled offering envelopes from my church with penciled-in ideas for the book. And this is a problem for many of us in ministry. Sunday is not a day off, and we need to find a day to rest both our soul and our brain. So here is the bottom line: I started graduate school in September 1984, and up until about two years ago, I had not taken a real holiday or observed the Sabbath in any restful way.

Something had to snap. But depression is not like a broken leg. Many times it slowly creeps up on you. There is not a specific day that I can identify as the day I became depressed. I knew that I was tired when I finished graduate school, but I thought that this was normal and assumed that the tiredness would go away. But it did not. The stress also continued: first, in establishing the first tenure-track position for Science and Religion in Canada, and then, in competing for tenure at a research university. Sleeping during the day began around this time. It started with a twenty-minute nap at lunch. Then it extended to an hour, then two hours, and then up to four hours—and I was also sleeping eight to nine hours at night. The breaking point came when I began to sleep for an hour after supper. That hit me hard. I knew that there was something terribly wrong. My parents are in their mid-80s, and they only needed a one-hour nap after lunch. But I was in my mid-50s, and I needed to sleep twice a day to function. And even after all this sleeping, I still felt tired.

Having many friends in medicine, I went to them and was tested for everything that they could imagine (seems like they drew gallons of blood!). But all the tests came back negative. Then my general practitioner (GP) suggested that I might be depressed. I quickly wrote off that diagnosis by insisting that I was not unhappy. I was just always tired. Nevertheless, he told me that when I was ready to accept that possibility he would refer me to a psychiatrist. As a former clinician, using medication is, in principle, not a problem for me. Yet I had reservations about psychiatric drugs; I did not want to become addicted to pills. Besides, I did not for a second believe that I was depressed. I was living my professional dream—teaching and researching science and

religion in a public university. But, in fact, I was depressed, and worse, I did not know it, despite being told that it was probably the cause of my tiredness.

So how did I end up in the psychiatrist's office? It was the personal testimony of friends who had suffered from depression and who have been and are being successfully treated by medication. It is worth underlining that all of them are wonderfully committed Christians. Looking back now, I believe that the Lord started sending messengers (angels) my way. The first was a university professor in the medical school who seemed to be one of the happiest people I knew. This person shared stories of not being able to function without medication. Another was a professor whom I met at an ASA meeting who revealed to me that their family tree was dotted with suicides. A third was a personal friend, one of the most stable individuals I have ever met. She is a clinician who was put on medications following graduate school and who told me that they saved her marriage. Lastly, a dental classmate, who was instrumental in my coming to Christ, came forward. He is also one of the most energetic people I have ever known. But his story of depression, reducing him to a shadow of a man, hit close to home, because at the time that he shared his story with me I was working no more than four or five hours a day. It was at that point that I phoned my GP and asked him for a referral to a psychiatrist. And I have never regretted that decision.

I think that it is worth sharing a bit about my experience with the medications, and, of course, this is only *my* experience because people react differently to them. It took eight months and seven different drugs before finding one that worked. Some of them made me incredibly nauseous and gave me pounding headaches. I was within three weeks of handing in my resignation at Christmas 2010, before a drug started to have a positive effect. The change was gradual and very subtle. The naps in the afternoon became shorter and shorter, until after one month, they stopped completely. It is worth noting that I had no sense of feeling "high" or "jacked up." Surprisingly—and this may seem hard to believe—I had forgotten what it was to feel rested. This is the main "feeling" I have experienced while on medication.

About eight months into the treatment, I slipped a bit, and the psychiatrist placed me on a second medication. This often happens. Now my only restrictions are that I have to take the drugs on schedule and be in bed about the same time every night. This past summer I was slowly removed from one of the antidepressants, and this coming summer, we will try stopping the second. But my psychiatrist thinks that I will probably be on this one for the rest of my life. So be it. At least I have my life back.

One of the most revelatory moments of my battle with depression came when my pharmacist replied to a comment I made after the first drug had started to work. I told him that I probably should have been on antidepressants ten to twelve years ago. He said, "You have no idea how many people say this the first time a medication works." Then he added, "It's the stigma of depression within our culture that stops us from seeking treatment."

Roughly 20–25% of us will suffer from depression requiring medication, but regrettably many will suffer without knowing help is near. And this is the reason that I wrote this short testimonial. The stigma about depression needs to be destroyed. And those who have benefited from antidepressants need to stand up and be heard.

For me, it was the testimony of Christian friends that was critical in my seeking treatment. I am quite passionate about this topic. In my science and religion class, there is a point when I put my antidepressants on an overhead and tell the students that I would not be teaching if it were not for the medication. It gets pretty quiet in the classroom. It is a poignant and holy moment. Thankful emails from students on mediation quickly arrive. Most are from Christians who feel "guilty" and "damaged" for being on medications. I assure them that it is not against God's will. Rather, we should praise the Lord that we live in a time when the blessing of psychiatric science can help heal our brains and our souls. ○

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Kevin S. Reimer

Unexpected Communion: Purpose, Vocation, and Developmental Disability

Kevin S. Reimer

L'Arche is an international federation of Christian communities for the developmentally disabled founded by Jean Vanier. This communication briefly explores the purpose and vocation found in these communities, including association with the development of compassionate persistence. In a remarkable inversion, purpose and vocation are sharpened to the extent that we are able to embrace hidden disability and brokenness.

I am seated at a long table with a developmentally disabled individual named David. We are in the dining room of his home in the American West. The day is blistering hot and the room is without air conditioning. David is doing a puzzle. It is a ghastly affair with thousands of microscopic pieces all roughly the same color. I detest puzzles. But this is a kind of nirvana for David. He murmurs to himself, making soft grunts of approval. He carefully arranges similar pieces in the center of the table. Unlike other puzzle masters, he makes no attempt to outline the work with edge pieces first. He does not consult the picture on the cardboard cover of the puzzle box. I ask him how things are going. He looks up and smiles a twisted leer that might frighten a small child but entirely lacks malice. He rocks back and forth in his seat, holding himself with short wheezing noises that are pure happiness. I look up and notice that the "paintings" on the dining room walls are actually completed puzzles of intricate design. David, who cannot dress himself, is a puzzle prodigy.

Sherry is a young caregiver assistant from Cornwall in England. She comes in the front door and joins us at the table. It turns out that Sherry and David are close friends. She tells me about David's history and his remarkable penchant for puzzle art. The conversation turns to his disabilities which result from traumatic brain injury in childhood. David was accidentally dropped on his head as an infant. Sherry acknowledges the tragedy but then tells a story that again reveals the great secret of compassionate love in L'Arche communities for the developmentally disabled:

> There was a day when I was running around like crazy and all that stuff. Like I told you before, David would stop to make me sit down to give me a gift or give me a blessing or whatever. This was when I was brand new to L'Arche, so I hadn't really experienced it before. He sat me down, and I think that I was pretty emotional and flustered. He gave me this blessing, I have had so many since then but this was the first, and his favorite song was "How Great Thou Art." So he sings this, but it was a medley of "How Great Thou Art" mixed with his own songs and then he would come back to the final refrain of "How Great Thou Art." He sings this song and he was saying,

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Communication

Unexpected Communion: Purpose, Vocation, and Developmental Disability

> "thank you God for this, thank you God for that, thank you God for Sherry that she's back from the store." I was floored by the whole thing. I could *feel* God in the room. Then at the end of it, he put the sign of the cross on my forehead. [eyes filled with tears] I was completely stunned because that was something my dad always would do before we went to bed at night growing up. But it was like, how did you know what that would do for me? I am home even though I am not. I belong here. I am home. I am beloved.
>
> Sherry turns her attention to David, tenderly conversing in a muted whisper. Their easy love and familiarity are elements of an unexpected communion. In the economy of the moment they are my teachers. At the puzzle table, there are no requirements for vocational achievement. The opinions of others do not matter. Possessions are irrelevant. The communion sacrament is the free gift of compassionate love found in broken fragments miraculously reconstituted through the intuition and generosity of the poor.[1]

L'Arche, French for *the Ark*, is an international federation of Christian communities for the developmentally disabled established by renowned humanitarian Jean Vanier. Located in some thirty-five countries worldwide, L'Arche defies convention for compassion, love, and vocation. In L'Arche, caregiver assistant and disabled core member live together in community. Many form relationships characterized by deep and profound respect. Vanier writes about this unexpected communion, where the poor (disabled) become teachers, mirroring elemental humanity and modeling deep, authentic faith in Christ.[2] Cognitive and developmental asymmetries are incidental, Vanier notes, to Jesus's essential concern for the downtrodden, marginalized, and wounded. This is nowhere more evident than in the fourth chapter of John's gospel, where Jesus risks the public credibility of his ministry for the sake of a financially and relationally impoverished Samaritan woman.[3] In a similar manner, relationships like the one shared between Sherry and David consolidate purpose and vocation in discovery of God's unfolding Kingdom marked by the reconciliation and healing of persons.

L'Arche is a place of erudite theological implication. It is also a flashpoint in behavioral research and psychology. Caregiver assistants like Sherry work for nearly nothing. Retirement benefits are nonexistent. Hours are long and emotional demands taxing. Quite a number of caregivers persist in L'Arche for years and decades, sometimes leaving six-figure incomes to live with people like David. L'Arche caregivers are considered by some contemporary behavioral researchers to be living altruists. An equal number would offer a spirited refutation, making L'Arche a lightning rod for debate. Scientific controversy notwithstanding, L'Arche provides an astonishing context for the study of moral action—a movement of compassionate exemplarity in the tradition of Mother Teresa. Sherry and David participate in an unexpected communion framed by the redemptive potential of the cross. But they are hardly saints. L'Arche communities are populated with everyday individuals who get head colds and hurt feelings. These are ordinary homes that struggle with earthy concerns. What animates compassionate love when conflict abounds and emotions are charged? What biological, developmental, and ecosystemic variables are implicated in the persistence of compassionate love? How might we create a rigorous scientific program to study compassion in L'Arche without "reducing" it away?

These questions frame the past decade of research on L'Arche. Four grants have made the work possible. The Fetzer Institute supported initial studies (2001–2003). As L'Arche was a newcomer to the scientific community, the work focused on qualitative interview data eliciting baseline motivations for caregiver compassion. Of interest were *novice* (less than one year of service) and *expert* (greater than three years of service) caregiver assistants. Relative to novices, experts constructed sophisticated goal frameworks, suggesting a capacity for mature self-reflection along with the application of Christian commitment in the difficult circumstances routinely experienced as part of community life.[4] The work continued with analysis of the interview response narrative using a computational knowledge repre-

sentation model known as *latent semantic analysis* (LSA). This afforded opportunity to probe implicit semantic associations in narrative with respect to moral action (i.e., justice, bravery, caring). Expert narratives made implicit associations with regard to caring trait vocabularies. This was particularly evident in expert construction of future-oriented simulations involving compassionate and caring behavior. Experts were better able to envision themselves sticking with compassionate goals despite the turbulence of everyday community life.[5] These and other findings were compiled in a book entitled *Living L'Arche* (2009).

The Center for Theology and the Natural Sciences generously funded second and third L'Arche project installments (2007–2011).[6] These studies responded to critique that exemplarity in L'Arche is idiosyncratic—unfit for generalization regarding the biological, developmental, and ecosystemic underpinnings of compassionate love. To address this concern, we used economic games (i.e., public goods) to identify compassionately charitable exemplars in the laboratory setting. These *behavioral paradigm exemplars* (BPEs) were subsequently administered the same interview used with both novice and expert L'Arche caregivers. Without giving away findings still in stages of dissemination, we found noteworthy similarities between BPE and L'Arche caregiver narratives. Emboldened, we designed a novel economic game to simulate the perils confronted by Holocaust rescuers—individuals in Nazi-occupied Europe who compassionately sheltered Jews in their homes at tremendous personal risk. BPEs played this *rescuer paradigm* game while undergoing functional magnetic resonance imaging (fMRI) of the brain. Future work will involve scanning L'Arche caregivers playing the same rescuer paradigm game, in order to establish a durable association between laboratory and real world exemplarity. We expect the work to confer an improved understanding of neurological recruitment associated with compassionate love.

The fourth project installment recently garnered support from the John Templeton Foundation (2013–2015).[7] In addition to fMRI scans linking BPEs to real world exemplars, the current work will consider the persistence of compassionate love in expert L'Arche caregiver assistants. The protocol is mostly experimental, whereby caregivers will participate in economic games (i.e., public goods, rescuer paradigm) while undergoing electroencephalography (EEG) and measurement of skin conductance. Taking a cue from recent studies of empathy in social neuroscience, caregivers will participate in an eye-tracking paradigm. Visual fixation will be measured while L'Arche caregivers perceive scenes involving people or contingencies evoking compassionate care. Sampling will be conducted in late 2013 and early 2014. The work is capstone for an enduring partnership with L'Arche USA, which has warmly and enthusiastically embraced the project. For the sake of community members such as Sherry and David, L'Arche is cautious about providing access to behavioral scientists with admittedly strange equipment, questions, and concerns. We are deeply indebted to these extraordinary communities for their good faith and humor.

L'Arche is more than a convenience sample. It is an example of divine grace in my research career. Some years ago, the famed developmental theorist John Bowlby argued for primacy of trust in developmental trajectories characterized by attributes such as compassion. Trusting children who enjoy secure attachment relationships with caregivers will explore more confidently, share more readily, and love more profoundly.[8] They are able to empathize with others, taking on different perspectives and celebrating the contributions of community. Trust comes with security; security comes with love. Many arrive in L'Arche with wounds and developmental gaps associated with insecure attachments—myself included. We struggle to authentically give and receive love. We discover ourselves to harbor unrecognized impairments. Not coincidentally, this recognition traces growing relationships with people like David. In a startling paradox, we learn that all are disabled and yet worthy of unqualified respect. We differ from the core members of L'Arche only in terms of practiced capacity to hide our disabilities from public view.

God uses L'Arche to redeem difficult hope. Attachment insecurities can be healed. Trust can be reclaimed. Love can flow freely in relationships characterized by mutuality, respect, and genuine affirmation. Sherry and David celebrate an unexpected communion, making space for what Bowlby called a *goal-corrected partnership*.[9] Goals are fixed at the center of identity, purpose, and vocation. Relationship permits these goals to be shared and

discovered in a secure, safe environment. The benefits of this exchange are hardly limited to immediate partners in the relationship dyad. The great secret of L'Arche is readily transferable, even to incipient developmental scientists such as myself. Sherry, David, and many others in L'Arche reveal my deepest inadequacies and potentialities. Over and over again, they show me grace in God's purposes for my work. Happily eroding the dogma of objectivity conferred through scientific training, they have become my friends. Because of their compassionate example, I am empowered to study, with scientific integrity, research questions that might otherwise have been relegated to academic backwaters. Because of their compassionate example, I am afforded the privilege of announcing to a broken world the immanent and agentic work of God. ○

Notes

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[6]Project co-investigators included Warren S. Brown (Graduate School of Psychology, Fuller Theological Seminary), Gregory Peterson (South Dakota State University), Michael L. Spezio (California Institute of Technology and Scripps College), and James Van Slyke (Fresno Pacific University). We are grateful for Science and Transcendence Advanced Research Series (STARS) awards from CTNS.
[7]Project co-investigators include Warren S. Brown (Graduate School of Psychology, Fuller Theological Seminary), Steven R. Quartz (California Institute of Technology), and Michael L. Spezio (California Institute of Technology and Scripps College). We are grateful to the John Templeton Foundation for generous project support.
[8]John Bowlby, *Attachment and Loss,* vol. 1, *Attachment* (New York: Basic, 1969). Also, L. Alan Sroufe, Byron Egeland, Elizabeth A. Carlson, and W. Andrew Collins, *The Development of the Person: The Minnesota Study of Risk and Adaptation from Birth to Adulthood* (New York: Guilford, 2010).
[9]Bowlby, *Attachment and Loss,* vol. 1, *Attachment*.

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Just launched!

Christian Women in Science (CWIS)

Who are we?

We are a new affiliate group of the American Scientific Affiliation (ASA), formed to encourage Christian women to consider careers in science, technology, engineering, and math, and to support them in those careers.

What are we doing?

We are in the process of forming a CWIS Board to provide direction to the group and to organize volunteers to lead the initial activities. The first-year activities will include these projects:

- Setting up a web-based system for bringing potential mentors and mentees together
- Developing and posting personal stories of Christian women leaders in science to provide role models
- Using a blog and forum to discuss questions and to offer insights
- Organizing women-centered activities at the 2014 ASA/CSCA/CiS Annual Meeting

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Share this link via your own email lists and organizations, and encourage women to get involved. We will be adding more content soon.

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ENGINEERING

PRISONERS OF HOPE: How Engineers and Others Get Lift for Innovating by Lanny Vincent. Bloomington, IN: WestBow Press, 2011. 252 pages. Paperback; $19.95. ISBN: 9781449728267.

Something inexplicable keeps happening to me: friends and colleagues bring a steady stream of significant books to my attention, usually at *kairos* times when the subject matter is germane to something I have been grappling with. In this case, I was asked by Arie Leegwater to review the book, *Prisoners of Hope*, by Lanny Vincent. My current grapple is a three-year effort to bring a technology start-up into being. The background is my thirty-year career in engineering R&D and education. I wondered how Vincent's account would stack up with my experience.

Many books have been written on innovation—what it is or is not, how the process works, whether it can be taught, and how to stimulate it. Vincent was an ordained Presbyterian minister before he went into industry, so we might well expect a cross-disciplinary (or even cross-realm) perspective. Building an analysis of innovation from scripture, however, makes *Prisoners of Hope* unique—and probably controversial. Innovators become *prisoners of hope* (Zech. 9:12) when their innovations are first introduced to the customer. Whether an invention, a new solution, a better value, or a more elegant design, the innovation "is an offer, sacrificed on the altar of customers' opinions" (p. 184).

Innovators differ from inventors, Vincent explains, in that innovators are more oriented toward business considerations, while inventors are more focused on technical issues (p. 132). Innovators must appreciate the innovation's economic context and conditions, whereas inventors must appreciate the invention's *Sitz im Leben*, the surrounding physical and technical ecosystem. Thus innovators may see potential where even the inventor may not (p. 159). Successful innovators are often "T-types": people with deep expertise in one or more areas of a specialty and at the same time have experience with a breadth of connections in other areas (p. 13).

Vincent asserts that the desire for fame, fortune, or career advancement seldom proves sufficient for successful innovation. Instead the biblical qualities of faith, hope, love, trust, humility, gratitude, awe and wonder, perseverance, and forgiveness are required in full measure. Each of these qualities is introduced and illustrated with scripture passages. The youthful David is described as an experienced shepherd who had repeatedly given himself permission to try and to fail. The account of David and Goliath becomes a parable for innovators (chap. 1), for example, because every element of the innovation process is portrayed: conditions of necessity, positioning for serendipity, atmospheres of fear, reframed experience, permission to fail, motivations of love, and emergence. Successful innovators do not succumb to the fear that surrounds them; they are able to give themselves permission to fail. The Good Samaritan demonstrates *agape* love for the customer, in contrast to the priest and the Levite who are parts of an incumbent administrative hierarchy. The parables of the prodigal son, the talents, and the landowner illustrate forgiveness, persistence, risk-taking, sacrifice, and assessing information from the market. Abraham and Isaac illustrate how introductions (to the market) are sacrificial altars upon which innovators submit their offering (p. 181). The account of Jonah illustrates risk avoidance; Moses at the burning bush illustrates awe and wonder; and Ezekiel's vision of the dry bones illustrates inspiration.

Vincent's descriptions are consistent with my experience with innovation. Many years ago my capstone engineering design professor taught us to saturate our conscious minds with information and then sleep on it, letting the subconscious mind work on the problem. According to Vincent, that method is a key to innovation, and I can report that it has worked for me. On a more recent note, the book has been very helpful for sorting through the complex psychological and legal issues associated with the technology venture that is presently demanding much of my time and energy. Vincent explains how risk, unknowns, and uncertainties are more socially acceptable stand-ins for what really is fear, fear of failure in particular.

Vincent's definitions are heavily market oriented—not surprising in view of his background at Kimberly-Clark, Hewlett-Packard, Sony, and other corporations. "No matter how clever the inventive solution may be," he writes, "if it can't be reduced to practice and made marketable, it will remain disconnected, 'in a distant country,' unable to benefit from an initial failure." But Vincent's faith in the market approaches the religious when he asserts that "the response from the market is trustworthy and purifying" (p. 46). The market perspective is not sufficient, in my opinion, for dealing with technologies not intended for commercialization—as are

many for national security, public safety, emergency response, or creation care. In fact, "green tech" per se is dead on arrival these days. Finding investors for technology that does not show a profit in five years or less is nearly impossible. Unless driven by a government mandate, the market is not interested in reducing greenhouse gases, displacing fossil fuels, producing more food, or saving threatened species.

Surely innovation is part of our earthly mission. God directed humans to continue his work of (or in) creation, to cultivate it for human flourishing; he equipped us to carry out the mandate. Nonetheless, I have no doubt that biblical literalists will struggle with the author's use of scriptures. By *faith*, Vincent means "a nonreligious, a-spiritual capability available to all humans … the belief the innovator has in an idea for an innovation without any real proof that it will work, at least to begin with" (p. 27); it is "potential energy residing in the human system waiting to be released in concrete action" (p. 37). Vincent's faith seems to be in faith itself rather than in a benevolent Creator God. *Righteousness* is equated with meeting the customer's needs (p. 200) and insubordination—going against the employer's directive—may sometimes be necessary. The latter point is problematic for the field of engineering ethics, and in conflict with the principles of accreditation for engineering schools.

Prisoners of Hope is a unique and useful book. I highly recommend it to innovators who are not biblical literalists. The book contains several typos; finding them is left as an exercise for the reader.

Reviewed by Jack C. Swearengen, Professor of Engineering (Retired), Washington State University, Vancouver, WA 98686.

Ethics

THE SACREDNESS OF HUMAN LIFE: Why an Ancient Biblical Vision Is Key to the World's Future by David P. Gushee. Grand Rapids, MI: Eerdmans, 2013. xvi + 423 pages, bibliography, indices. Hardcover; $35.00. ISBN: 9780802844200.

The United Nations Universal Declaration of Human Rights regards "the recognition of the inherent dignity" of all humans beings as foundational for "freedom, justice and peace in the world." But what, precisely, grounds and sustains this belief in the special worth of human beings? It is not simply a self-evident rational deduction. Nor is it something verifiable by empirical observation. Nor is it universally believed and practiced. In fact, throughout most of human history, and in many places in the world even today, humans have *not* typically recognized the special worth of other human beings outside of their own particular society, tribe, class, or group. As David Gushee puts it, "indifference toward most members of our fellow species, with special hatred for a few and special reverence for a different few, seems the common human experience" (p. 25). So where did this important idea come from? And can it be sustained today, along with the conviction to press its implications—even when those implications are inconvenient, costly, or threatening to one's own comfort or security?

In his groundbreaking book, *The Sacredness of Human Life: Why an Ancient Biblical Vision Is Key to the World's Future*, Christian ethicist David P. Gushee sets out to answer these and other important questions concerning the special value of all human life. Gushee has thought long and hard about such issues, and his knowledge and experience as a scholar and activist well qualify him to write such a book. His earlier research sensitized him to the horrors of human life and rights violations, specifically those committed by the Nazis during World War Two (see his *Righteous Gentiles of the Holocaust*; St. Paul, MN: Paragon, 1994). As an activist, Gushee has served on the Committee on Ethics, Religion, and the Holocaust of the US Holocaust Memorial Museum since 2008. He has also served as the president of Evangelicals for Human Rights, has helped to found the New Evangelical Partnership for the Common Good, and is currently involved in the Two Futures Project and the Matthew 5 Project (both peacemaking initiatives).

Gushee's stated aim in *The Sacredness of Human Life* is to contribute "clarity and depth to the moral vision of the church and, perhaps … something constructive to national and global struggles to secure a livable human future" (p. 1). He is motivated by the conviction that "a moral norm called the sacredness of human life *should be* central to the moral vision and practice of followers of Christ" (p. 7; italics original), and he seeks to offer a constructive account of that norm. His method is to recount the origins and historical development of the concept of the sacredness of human life, from its roots in the Bible, through its budding and blossoming in Christian tradition and history (even while acknowledging its neglect and withering in certain times and contexts), to its meaning and implications for the present.

Gushee begins in chapter 1 by clarifying what it means to say that life is sacred. Through conceptual analysis, he defends his preference of the term "sacredness" as carrying theological meaning and depth that rival terms lack. "Sacredness" is "precisely the idea that all human beings have been *consecrated* to a *special status* by *the agency of God*" (italics added). Thus, human beings do not possess sacredness as an inherent quality. They are sacred because God regards and declares them to be so. Other terms, such as "sanctity" and "dignity" are acceptable but not sufficient to account for all that "sacred" includes. Etymologically and conceptually, "sanctity" has moralist connotations (within the domain of words like purity, holiness, and virtue) while "dignity" has roots outside of the Christian tradition, originally associated with the concept of rank in ancient Greco-Roman culture (the term "dignitary" still carries this meaning). After presenting a number of influential Christian definitions of sacredness, Gushee provides his own and then explains and develops it throughout the book.

Chapters 2–4 cover the development of the sacredness of human life in the Old Testament, New Testament (NT), and the early pre-Constantinian church. Gushee's treatment of the biblical texts is thorough and enlightening, covering well-known concepts such as the *imago Dei* (and its christological development in the NT), but also pointing to the broad biblical narrative and to significant theological themes (e.g., creation theology, liberation themes, covenant/legal material, the prophetic vision of *shalom*, the life and teachings of Jesus, and the significance of Christ's incarnation, cross, resurrection, and ascension). Gushee does not ignore "texts of terror" within scripture that could potentially undermine its overarching affirmation of life's sacredness (e.g., God-sanctioned violence, patriarchy, slavery, and anti-Jewish sentiments in the NT). Such texts must be interpreted in light of the life, character, and teachings of Jesus Christ. The early church demonstrated its commitment to this overarching biblical theme through its rejection of war, abortion and infanticide, judicial torment and killing, and through its stress on love without partiality.

Chapter 5 narrates what Gushee calls "the fateful transition to Christendom." Gushee's treatment is refreshingly balanced here. Resisting the popular tendency to place all the blame for the wrongs of the church on Constantine's shoulders, he argues that the post-Constantinian church retained the biblical emphasis on life's sacredness, but also introduced factors that simultaneously undermined that emphasis. Notably, Christianity lost its marginal status and its cultural distinctiveness; this opened the doorway to compromise (e.g., from affirming nonviolence and suffering persecution to sanctioning state violence and the persecution of others). In chapter 6, Gushee provides three case studies that juxtapose a tragic period of Christian history with representative examples of Christians who remained faithful to the biblical-theological vision of the sacredness of human life (the crusades, St. Francis of Assisi; colonialism, Bartolomé de Las Casas; antisemitism, the early Baptist minister Richard Overton).

In chapter 7, Gushee discusses the Enlightenment era, in which belief in the sacredness of human life took on new forms and became grounded in new ways. Though there was a shift away from religious language, much of the substance of the religious tradition survived, and its implementation actually improved through developments in law and politics. Gushee provides a very interesting discussion of John Locke, highlighting the explicitly Christian foundations of his political thought, and of Immanuel Kant, who carried forward the emphasis on human dignity but severed its epistemological basis from its theological roots (probably unsuccessfully, as philosophers such as Nicholas Wolterstorff have argued).

Chapters 8–9 track the rejection of the Christian emphasis on the sacredness of human life in Nietzsche and Hitler. Without demonizing either figure and with due consideration to their biographical and historical contexts, Gushee examines their writings to uncover explicit contempt for human life and the disastrous consequences that ensued.

In chapters 10–11, Gushee considers the implications of the sacredness of human life for several contemporary issues such as abortion, biotechnological innovation, the death penalty, human rights, nuclear weapons, women's rights, and the relationship between human sacredness and the value of nonhuman life and care for the earth. While the latter issue receives a chapter-length treatment, Gushee's engagement with the other contemporary issues is brief and leaves much for consideration, critical questioning, and debate. Chapter 12 provides a helpful summary and conclusion.

The Sacredness of Human Life is comprehensive, highly nuanced, well informed by diverse and relevant interdisciplinary scholarship, and is biblically and theologically thick in its description, argument, and ethical vision. Although not specifically

about science, it is a book that can deeply clarify and strengthen one's understanding and theological convictions concerning why and how one practices science as a Christian. Science can serve the glory and pleasure of the Creator by endeavoring to safeguard and advance the flourishing of all human life. I highly recommend it to the readers of *PSCF*.

Reviewed by Patrick S. Franklin, Providence Theological Seminary, Otterburne, MB R0A 1G0.

Health and Medicine

HEALTH, HEALING AND THE CHURCH'S MISSION: Biblical Perspectives and Moral Priorities by Willard M. Swartley. Downers Grove, IL: IVP Academic, 2012. 268 pages, bibliography, name index and scripture index. Paperback; $24.00. ISBN: 9780830839742.

The United States healthcare system is burdened with overwhelming expectations. Patients expect high-quality care, but at reduced cost. Providers want to deliver high-quality care, but they find themselves increasingly burdened by administrative and regulatory limitations, which increase cost. The result is decreasing job satisfaction among doctors and an unsatisfied patient population. Professor of New Testament at Anabaptist Mennonite Biblical Seminary, Willard Swartley, has written *Health, Healing and the Church's Mission* to bring fresh perspectives on these very concerns.

This book is broad in its coverage, being broken down into three parts. Part I, Healing, describes biblical and theological perspectives on healing, including the role of the church as a healing community. Part II, Health Care, addresses how health care is delivered currently in the United States, with critique from a biblical perspective, and an introduction to the role the church can play in health care. This section gives a brief history of the role of health care in church and missions history. The last chapter in this section on disability is well written, but seems out of place. Part III, Toward New Paradigms, evaluates health care reform in the United States, including recommendations for the role of the church in providing health care services as an expression of *shalom*. Two appendices introduce ways in which Mennonite and Brethren churches are actively involved in health care.

Despite my enthusiasm for the importance of this issue and the excellent material Swartley has brought together, the book has two significant shortcomings. The author uses poor diction and the organization of the book is inconsistent. Words are used incorrectly and many sentences are awkward. The author uses several Venn diagrams (Figure 2.1, 2.2, 7.1), none of which are clear or used correctly. Errors like this are frequent in this book and interrupt the flow of thought. Furthermore, the book lacks an integrative intellectual argument. For example, in some places the author endorses miracle healings as normative, but he does not explain how to reconcile this position with a more scientific description of healing.

The flow of the material is also inconsistent. For example, on page 160 the author jumps from the founding of the Christian Medical and Dental Society (founded in 1931), to Roman Catholic medical missions in the nineteenth century and then on to Protestant medical missions in the twentieth century. The entire book is rich with excellent information, but it is not well organized. Its literary niche is probably as a course textbook. The author uses footnotes and a bibliography to good effect, and opens up discussion on extremely important issues.

Few would dispute that the church has stood by and done relatively little to make its unique contribution to health care in recent decades. Swartley's burden to see churches reengage and do their part to care for the health needs of people in their communities is long overdue. This book gives the church at large a much-needed challenge to get more involved in health care as an extension of its ministry, and provides practical examples of how to do it.

Reviewed by Mark A. Strand, North Dakota State University, Fargo, ND 58103.

History of Science

NUCLEAR FORCES: The Making of the Physicist Hans Bethe by Silvan S. Schweber. Cambridge, MA: Harvard University Press, 2012. 575 pages. Hardcover; $35.00. ISBN: 9780674065871.

Nuclear Forces is the "official" biography of the eminent physicist Hans A. Bethe. Asking Silvan Schweber to write his scientific biography (p. 2) was an excellent choice. Schweber's in-depth and well-documented work goes far beyond a simple biography. In his Introduction, Schweber states his broader objective: to use a thorough biography *"as a vehicle for narrating the history of science"* (p. 3, italics mine).

He notes that although Bethe was an "off-scale" physicist, his lifework, when appropriately seen, "would aid understanding of the field at present and explain how we came to be where we are" (p. 4). As expected, Schweber carefully reviews Bethe's major scientific contributions, but he also examines the significant episodes of Bethe's life and the social, political, religious, and intellectual contexts that shaped them. When helpful, he presents a "mini-biography" of an influential friend, teacher, or other individual, all of which combine to expand the work greatly. Much of this is accessible to the interested reader and well worth a careful reading. The number of truly outstanding scientists and mathematicians that directly or indirectly shaped Hans Bethe is utterly overwhelming, as is the magnitude of his influence on the international physics community. In my opinion, Schweber has succeeded in unpacking the complex relationships among several exceptional physics communities of the previous century, giving us a better understanding of their methodologies, beliefs, and social structures.

I will first outline *Nuclear Forces* and then focus on several issues. Schweber begins with Bethe's childhood in a nominally Christian household with a Jewish mother, Anna, who had converted to Christianity, and a scientist father, Albrecht (p. 36). In his early years he experienced the enormous hardships of life in the Weimar republic (p. 42). Many of the family's friends and colleagues had Jewish roots, and some had converted to Christianity (typically German Lutheranism). There seem to have been open and constructive relationships among Jews and Christians during Bethe's early lifetime, until the Nazis' rise to power. Friendships were extremely significant, both in Bethe's formative years and throughout his life. Schweber suggests that the Jewish notion of "*bildung*," which he sees as sharing sympathies with a "liberal" form of Christianity, provided the moral and intellectual perspective for assimilated Jewish communities and motivated the formation of such friendships (pp. 80ff, 362ff, 386ff). In considerable detail, Schweber describes Bethe's education and mentoring, often sketching the political tensions and the philosophical perspectives in vogue at the time. The early influence of Bethe's father, Privatdozent at Strassburg and later Rektor at Frankfurt University, was very significant. Schweber identifies

> the most valuable lesson that Albrecht Bethe taught his son concerning doing research was that the enjoyment of the search and the satisfaction and gratification from the search are to be valued more than the knowledge gained. (p. 62)

The heart of the book (three detailed chapters, 3–5) carefully describes and analyzes Bethe's doctoral and post-doctorate activities, first in Germany, then in England in the mid-thirties at the Cambridge and Manchester institutes, and on two occasions with Enrico Fermi in Rome. Due to his incredible ability, Bethe was mentored and shaped by many of the outstanding scientists of the early twentieth century. His graduate research professor, Arnold Sommerfeld, was a lecturer so respected that even Einstein wished to attend to perfect his "mathematical-physical knowledge" (p. 104). His list of graduate students reads like a *Who's Who* of the new (quantum and sub-atomic) physics. Remarkably, Sommerfeld would later inform Bethe that he was his best student, and would eventually offer his Munich theoretical physics chair to him (p. 382). Critical roles played by exceptional friends and working colleagues are described, often in fascinating detail. Examples include Rudolf Peierls (Bethe's dearest friend and working colleague at Manchester, who stimulated Bethe's interest in nuclear and stellar physics), Edward Teller (Bethe's "closest friend" from 1935–1943 and a member of Bethe's wedding party), and Eugene Wigner, who would constructively critique Bethe's models. In 1935, needing a new home following his eviction from German universities, Bethe would join the Cornell University physics department. Schweber insightfully unfolds the significant impact Bethe was to have on both theoretical and experimental physics in America.

Schweber also explores Bethe's more human side. His social backwardness during his youth was evidently somewhat extreme, and continued, with significant consequences, well into his younger adulthood. (See chap. 6, "Hilde Levi," concerning Bethe's broken engagement that emotionally wounded Levi and infuriated Niels Bohr as well.) A question of moral insensitivity also came to light during a 1969 interview by Charles Weiner. Weiner asked him about his awareness of organized efforts to aid Jewish refugees during the turbulent years 1933–1935. Bethe himself had just fled to England (with Sommerfeld's help) to escape the Nazis. Bethe responded, "Yes, I was aware of them. I did not do much about it. I'm embarrassed that I didn't help much, but I knew of the effort" (p. 264). The more senior Bethe shares regrets rather similar to those we all harbor due to our own inexcusable inactions. The importance of Bethe's wife, Rose Ewald Bethe, in contributing to his moral stance is also significant. Unfortunately, the chapter that focuses on Rose does not probe these important topics more deeply (chap. 9).

Schweber does note that in 1995 Bethe appealed to scientists not to work on weapons of mass destruction, because "... individual scientists can still influence this process by withholding their skills" (p. 21).

In my opinion, Schweber has succeeded admirably in achieving his goal of narrating the history of science, having covered the rise of the "new physics" with its formation of new concepts and models to describe the molecular, nuclear, and stellar domains. In his analysis, key philosophical and metaphysical issues related to the nature of the scientific endeavor also surface. Furthermore, he colorfully illustrates the divergent "styles" found within prominent research communities of the time. I will attempt to illustrate four of these issues.

Schweber emphasizes that for Bethe the empirical was to be the benchmark over the theoretical, and that good theories must be consistent and engaged with empirical givens. Yet the empirical is not itself theory independent. Schweber describes his view as being somewhat similar to Poincare's: "Science is built up of facts … but an accumulation of facts is no more a science than a heap of stones is a house" (p. 155). This is also related to Thomas Kuhn's position on paradigm shifts. After underscoring the lengthy and intense engagement among research communities, even through many often radical changes, Schweber comments that there must exist a "much greater continuity in the models and the mathematical methods used when 'paradigms' are replaced" than suggested by Kuhn in *The Structure of Scientific Revolutions"* (pp. 12, 222).

As Bethe moved from the German institutes to those in England and Italy, his approach to science and his social consciousness were profoundly transformed. Schweber identifies the distinctive style, methodology, and social structure of the prominent research communities that influenced Bethe (p. 166). At Sommerfeld's institute in Munich, Bethe embraced the intensely competitive and rather rude Germanic style of the time (but remarkably not characteristic of Sommerfeld). To illustrate: while working with Paul Ewald (later to be his father-in-law), Bethe gained a critical insight from him. But in the 1921 paper, he gave no acknowledgment of Ewald's significant contribution (p. 166). Schweber attributes this significant lack of common courtesy as being rather typical of the Germanic style. In James Conant's words, it was a "coldhearted, insensitive, merciless demand for excellence … no-holds-barred, inhuman academic world that had been created" (p. 167). However, after spending time with Enrico Fermi at his Rome institute in 1930, Bethe acknowledged that he had been "very rude" to Ewald (p. 172). Furthermore, he embraced Fermi's emphasis on transparency and simplicity and stated that Fermi's method helped free him from Sommerfeld's own absolutely rigorous and exhaustive approach (p. 194). In fact, Schweber notes that Bethe actually combined these contrasting experiences so that

> Bethe's craftsmanship as a physicist became an *amalgam* of what he learned from these two great physicists and teachers, combining the best of both: thoroughness and rigor of Sommerfeld with the clarity and simplicity of Fermi. (p. 196)

Guided by outstanding mentoring, Bethe's strengths, coupled with an incredible mind and mathematical ability, allowed him to become, in Freeman Dyson's words, "… the supreme problem solver of the twentieth century" (dust cover).

In chapter 7, Schweber covers Bethe's move to Cornell University and the events that followed. He first presents a brief, but theologically interesting, history of Cornell's founding. The university's mission was shaped by Andrew White and based on an "enlightened liberalism" (p. 285). In 1935, Cornell wanted to excel in scientific research and hired Bethe as an assistant professor. He soon found himself interacting with many of his German Jewish physics friends who had also fled to American institutions, along with many outstanding American physicists already on the scene (pp. 302–7). From Schweber's detailed historical description, one can see how the very open interaction among many institutions contributed significantly to helping American physics flourish. It took on a collegial character all its own, and Bethe was at the center of its activity and growth.

As questions concerning the structure and age of the universe are of interest to *PSCF* readers, let me highlight the rich historical analysis related to the stellar energy problem (chap. 7). Schweber's presentation is somewhat noteworthy in that he is unconcerned with biblical or theological agendas. He first underscores how radically our view of the natural world had changed by the late nineteenth century. Schweber quotes Robert Ball, who in 1902 identified the most astonishing discovery of the nineteenth century as being the discovery that

> the materials of the sun, of the stars, and of the nebulae are essentially the elements of which our own earth is formed, and with which chemists had already become well acquainted. (p. 499, note 37)

Ball recognized that this new view presented its own host of problems, one being the energy source of the sun needed to account for the earth's presumed

older age. Schweber captures the intense drama and open engagement of physicists in searching for solutions. Bethe was uniquely gifted and poised to solve the stellar energy problem, placing it on a solid foundation, both for the CNO cycle in massive stars (for which he is better known), as well as for the proton-proton cycle in lighter stars (the first step having been suggested by Carl von Weizsäcker). Following the 1938 Washington Conference on Theoretical Physics, at which his interest in the problem had first been kindled, Bethe solved it in short order during a busy year at Cornell. He was awarded the Nobel Physics Prize in 1967 for this work. Schweber ends his in-depth analysis of Bethe's work and life at this point. A few pages are devoted to his subsequent work on quantum electrodynamics and to the war years, during which Bethe served as theoretical physics director at Los Alamos. This book includes several appendixes and some hundred pages of detailed notes and references.

My own impression of Bethe, gained at Cornell while being his final graduate student, is certainly consistent with Schweber's picture. I highly recommend a careful reading of this in-depth presentation of the life of Hans Bethe and the challenging times that shaped him. Do not the greatest works of humankind lend great praise to our Lord of the heavens?

Reviewed by Robert Manweiler, Professor Emeritus, Department of Physics, Valparaiso University, currently residing in Nathrop, CO.

Origins & Cosmology

MAPPING THE ORIGINS DEBATE: Six Models of the Beginning of Everything by Gerald Rau. Downers Grove, IL: IVP Academic, 2013. 236 pages. Paperback, $18.00. ISBN: 9780830839872.

Although the public debate on origins is typically expressed as two diametrically opposite viewpoints, we in the American Scientific Affiliation recognize multiple viewpoints, such as the four Christian views found in the ASA's Creation Commission report from 2000 (http://www.asa3.org/ASA/topics/Evolution/commission_on_creation.html). In *Mapping the Origins Debate*, Gerald Rau takes a similar approach, using the distinctive steps of carefully defining science, discerning six models along a spectrum of viewpoints, and applying these six models to a scientific description of four areas of origins. In doing so, he offers more than another book on the variety of viewpoints. His book adds a unique analysis by exploring the assumptions and conclusions of the entire range of viewpoints, and by probing the implications in connection to the scientific evidence. All along, Rau states that he will do so objectively, and his success in evaluating these viewpoints objectively is one of the key achievements of this book.

In describing worldviews and the nature of science in the first chapter, Rau does the important work of laying a framework of differing worldviews. He helpfully describes the distinction between naturalist and supernaturalist worldviews in the ultimate terms of the existence of a creator God. His thesis is that the origins debate will continue as long as people hold different worldviews, since they interpret the evidence in the context of their own worldview. Similarly, Rau does a very good job of describing the variety of ways we can discern something in regard to science, including experimental, observational, historical, and theoretical modes of scientific inquiry. He deals with these topics of metaphysics and epistemology in a manner that is accessible to the general reader.

Chapter 2 contains the heart of the map, in which Rau describes six models that fit along a continuous spectrum from which to interpret the scientific evidence: naturalistic evolution, nonteleological evolution, planned evolution, directed evolution, old–earth creation, and young–earth creation. Each model is described by discerning its distinctive features, which are also included as a table in the appendix. With six models, he uses five sets of dichotomous distinguishing features as well as further basic propositions and underlying philosophical features of each position. Rau achieves a remarkable amount of clarity in distinguishing key features of each model in a manner that is at least internally consistent, although he admits that this description could be improved. I find it particularly helpful that this six-model approach contains numerous topics that are at issue, since this helps to capture some of the complexity of deciding among the models. It provides a great starting point for further study or discussion, something which I have already used in the context of teaching, by using this book with biology majors at Wheaton College.

Of the six positions, four would be generally considered as orthodox positions within historic Christianity. Of these, the "directed evolution" position is the most novel position, and Rau describes this position as one that is distinct from other forms of "theistic evolution." In addition, Rau does not include intelligent design as a separate model, but as

an idea that could fit within three of the six models. Again, Rau shows a great deal of objectivity here, fitting intelligent design into his system in a way that both its proponents and critics can appreciate.

Chapters 3–6 deal with the scientific descriptions of four "origins": the origins of the universe, life, species, and humans. For each origin, he considers how each of the six models would interpret the evidence. As he does so, Rau is careful to distinguish between evidence and inference, which is a distinction that is often lost in arguments over origins issues. Again, this is a very useful way in which to discern positions, since often evidence and inference are conflated, especially when arguing for one position over others. After a presentation of the evidence, Rau discerns how the evidence would be interpreted using the assumptions that define each of the six models. For each origin, two to four different interpretations are discernible among the six models, since often several models will agree on how certain origins are described scientifically.

The chapter on the origin of the universe does a fair job of describing the observable evidence that supports the inference of Big Bang cosmology, although this description could be improved. This origin could be considered to be the least controversial of the four, since the evidence observed from the light of stars and galaxies looks directly into the past. The origin of life is the most speculative because of the paucity of observable evidence, and Rau ably summarizes key parts of the work in this field. The chapter on the origin of species contains the strongest description of evidence, as Rau describes sixteen lines of evidence taken from the study of fossils, genetics, and patterns of similarity. Similarly, his discussion of how the evidence is interpreted within the six models provides a helpful framework for considering these issues. The topic of human origins is covered very objectively, considering evidence of differences as well as similarities in regard to comparisons with other primates, particularly with chimpanzees. This chapter also deals with particular theological issues regarding human origins.

Wrapping up the book, Rau next considers what each model has added to the endeavor of understanding origins. It could be argued that he is being too charitable in some cases, but this chapter shows the value of considering alternative interpretations. This practice is often lost in the arguments surrounding creation and evolution, as each side attempts to win the argument, sometimes minimizing the holes in their own position. This is particularly true in the dichotomous approach of using either creation or evolution. His multi-model approach helps to illuminate the gaps of knowledge that some might try to plug with unquestioned answers.

In the final chapter, Rau gets back to the heart of the debate, emphasizing the importance of defining the nature of science. Rau gets it right that differences in how science is understood have resulted in much of the conflict regarding these issues. In some ways, this is reminiscent of the ASA statement on teaching evolution as science (ASA Executive Council, "A Voice for Evolution as Science," *PSCF* 44, no. 4 [1992]: 252). Even though the nature of science can be difficult to define and describe, and even harder to understand without practicing science, this does seem to be the heart of the matter in regard to the origins debate.

It is my hope that this excellent book would be read by many for formation of personal perspective and as a resource to communicate with others. It is written at a level that is accessible to the lay reader, and it would be an excellent book for college students and educators at the secondary and college levels. It has been recommended by the National Science Teachers Association (http://www.nsta.org/recommends/ViewProduct.aspx?ProductID=21528). Moreover, Rau makes some real contributions to the origins topic by engaging the topics of metaphysics and epistemology in the nature of science. This is helpful for the general reader, and could be strengthened by scholars specializing in these areas. Even as Rau mentions in the epilogue to this book, there is not yet a model with which he fully agrees, but he has provided a helpful framework by considering fundamental issues that should be helpful for continuing the discussion on origins in a way that makes real progress.

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ORIGINS: Christian Perspectives on Creation, Evolution, and Intelligent Design by Deborah B. Haarsma and Loren D. Haarsma. Grand Rapids, MI: Faith Alive Christian Resources, 2011. 315 pages, appendix, index. Paperback; $14.99. ISBN: 978-1592555734.

> I have been waiting for a book like this for a long time. I have wanted a book that clearly lays out the options in a textbook like fashion at the introductory level, one which allows the reader to come to his or her own conclusions without a sense of

> coercion, and one which provides a balance between theological and scientific considerations. This comes as close as any I have seen to being that book. I recommend it highly.[1]

So said former President of the BioLogos Foundation, Darrel Falk, in his *PSCF* review of the first edition of this book (previously titled, *Origins: A Reformed Look at Creation, Design, and Evolution*). The second edition of the book is no different in quality; in fact, the updates and title change have only made it better and more accessible to the Christian church at large. The only major differences are the addition of the last chapter ("Wonder and Worship") and the removal of two appendices, the 1972 Statement on Biblical Authority and the 1991 statement on Origins, both by the Christian Reformed Church in North America. The authors made these and other minor updates in order to bring their perspectives on the scientific and theological stories of origins to a broader Christian audience.[2]

Authors Deborah Haarsma (currently president of the BioLogos Foundation) and Loren Haarsma are professors in the Department of Physics and Astronomy at Calvin College and are well versed in matters of science and faith, having written numerous articles and spoken in many venues on the intersection of Christianity and science. It is clear in all of their writing, but especially in this book, that the Haarsmas see bridging science and faith as their ministry, and they pursue it with pastoral hearts. They are to be commended for their efforts and have no doubt helped to strengthen the faith of many.

Origins is an excellent introductory resource for Christians who are interested in what modern or mainstream science has to say about origins and how it fits with biblical and theological accounts. The authors begin with an introduction to the two "books" (i.e., God's "Word" and God's "World"), the interaction of science and worldview, and the process of science. The inclusion of the latter is a plus as many who are not scientists are unaware of the diversity of methods (experimental, observational, historical) that legitimately make up the scientific enterprise. Next, the authors discuss concordist and nonconcordist positions on Genesis and science before moving to a thorough and concise presentation of the basis of origins from the sciences of geology, cosmology, astronomy, biology, and genetics. The authors then compare intelligent design theory with the intelligent design movement, providing nuance that is often lacking in treatments of intelligent design. The book next introduces scientific and theological issues of origins (including Adam and Eve) and provides responses to common questions that arise in discussions of origins. The book ends with a chapter commending science to the reader as leading to reverence and praise of the Creator God. The Haarsmas reflect personally on how understanding the natural world leads to worship and provide practical resources to help church congregations integrate modern science with worshiping God. Most authors of books in this vein share this sentiment but often do not write about it; kudos to the Haarsmas for doing so!

Each chapter ends with a list of additional resources and discussion questions. The questions make the book ideal for small groups or introductory courses in Christianity and science (I will be adopting this book in a future class) and will also encourage deeper reflection by individual readers. Throughout the text, there are links to additional resources and many short articles on the book's website that provide more detailed content.[3] This is an excellent idea as it is freely available to all visitors and potentially enables the authors to expand and update the book without having to expand and reprint the book!

I highly recommend this book. It has a great pace and is written with a caring and gentle spirit. Also, the authors are thorough and systematic in their treatment of the issues. For example, in the chapters on interpretations of Genesis, no fewer than nine interpretations are presented, each with its weaknesses and strengths. A similar treatment is provided for five potential "scenarios" for Adam and Eve. Throughout, scientific evidence, biblical hermeneutics, and theology are presented collectively, and the authors do not force a particular interpretation on the reader. That said, they are faithful to the scientific data and range of biblical scholarship, pointing out those models and scenarios that are incompatible with science or traditional biblical interpretations. The tone is outstanding and the authors' passion for the material and their desire to help Christians reconcile science and faith leaps from the pages.

A strength of the book lies in its concise presentation of various topics. That said, because it is written at an introductory level, those looking for greater exploration might be disappointed. I do not believe this is a mistake or oversight by the authors, as they are not writing for an academic audience. Nevertheless, I found myself wanting more specific examples in their scientific exploration of origins. In addition, in multiple instances more nuance would have

improved the book as certain atheist positions were at times misrepresented or oversimplified. I appreciate that the book has an intended audience in mind and that one cannot include everything; however, a key issue in discussions of science and faith is misrepresentation of others' positions. Furthermore, it is likely that for the most conservative readers the treatment of theological issues at stake in the discussion of origins (the image of God, the human soul, original sin, human mortality before the Fall) will not be satisfactory. The authors make a great effort to balance the discussion with both theology and science, but because they are scientists it is only natural that they would spend more time on the science. For those readers that believe one must start with the Bible, their attempts may not be sufficient.

Even with its limitations, the book is excellent and is one of the best available for its intended Christian audience. It is concise, easy to read, broad in scope, systematically organized, and grounded in grace. The authors present a variety of interpretations and models and allow the evidence and biblical scholarship to guide the reader. This is the type of book that Christian professors and pastors will keep near to them (and want multiple copies of) as we/they will often reference it in conversations with our students and parishioners. Very highly recommended.

Notes

[1]Darrel Falk, "Origins: A Reformed Look at Creation, Design, and Evolution" review, *Perspectives on Science and Christian Faith* 60, no. 2 (2008): 134.

[2]The only limitation mentioned by Falk in his review of the first edition was that the book was focused on addressing issues of science and faith from the Reformed perspective. The second edition addresses this limitation while also maintaining the strengths of the first.

[3]http://www.faithaliveonline.org/origins/. The site also has a sample chapter available for download.

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PSYCHOLOGY

THE PSYCHOLOGY OF PERSONHOOD: Philosophical, Historical, Social-Developmental and Narrative Perspectives by Jack Martin and Mark H. Bickhard, eds. New York: Cambridge University Press, 2013. 241 pages. Hardcover; $99.00. ISBN: 978-1107018082.

Psychology's quest to be taken seriously as a science has included a reliance on empirical approaches to studying human behavior, a pervasive focus on the physiological factors of persons, and a reductionist view of personhood. Martin and Bickhard's book attempts to critique this reductionist view of persons as objects and seeks to invite the reader into the efforts toward a "more holistic, integrative, and methodologically open psychology." The text accomplishes some of its aim, but neglects important considerations of personhood.

The Psychology of Personhood is divided into four sections. The first discusses philosophical perspectives of personhood. Chapter one traces the varying grammatical meanings of the words "person" and "personality," and makes a strong case for the integral role that history and culture play in these considerations. The second chapter discusses how psychology's view of persons is influenced by multiple layers of historical understandings of personhood, beginning with ancient ideas. The author makes a strong case that psychologists' relative ignorance regarding historical influences on ideas of personhood leads them to think that their current ideas of humans are objective and enduring.

Part Two deals with psychology's view of persons from an historical viewpoint. This was at first confusing, because it seemed redundant with Part One. Yet the authors in this section focus more on specific theorists/philosophers of personhood. The first chapter reviews the history of the word "person" and ends with a discussion of how psychology developed a "dissected" view of persons, one that is fragmented rather than holistic. The second chapter reviews Foucault's heirs, Hacking and Rose, and their views of the historical ontology of personhood. The author makes a good point that psychologists think of personhood as a fixed concept rather than one based on the influences of a particular time and place. Yet, these two chapters were at times hard to follow due to the complexity of some of the wording. In addition, a lengthy description of human agency in the second chapter neglects to consider important new research in psychology regarding self-regulation. The third chapter reviews the tenets of "critical personalism," which assumes an enduring sense of personal qualities and characteristics without being deterministic in that it allows for "potentialities" that can go in different directions. This chapter also provides a good critique of psychology's overreliance on the empirical approach to studying humans and its neglect of philosophical perspectives of humans.

Part Three explores social-developmental and evolutionary perspectives on personhood. The first chapter discusses the development of the human

sense of self and others, and presents an evolutionary view that this ability to identify the you-me distinction emerged from our primal ancestors' reciprocal altruism. Given the antireductionist aim of the book, this view is ironically reductionist and is based on naturalist accounts of humans. The next chapter reviews person exchange theory, which emphasizes that we understand ourselves and others as a result of the different positions we play in different social exchanges. Thus our impressions of self and others are not mental acts, but social processes that are a result of our evolutionary past. This chapter seemed to overemphasize the directionality of cause, assuming that social position *causes* our perception of self and others; it does not take into account how our sense of self (and others) may also lead to taking a different position. The authors briefly attempt to address this at the very end of the chapter, noting how social structures that do not enable people for a full range of positioning are destructive (e.g., apartheid). But this seems a weak argument for the dignity and worth of humans based on the authors' preceding discussion. The final chapter reiterates some of the main points of a transformative activist stance of personhood. This emphasizes social interaction as the most important factor in our fluid sense of self, where people "collectively create their own lives and their own nature." This chapter neglects to consider the commonalities in humans found across cultures. The author makes it seem as though our identity is infinitely malleable.

The last section of the text follows and expands upon narrative theories of personhood. Its two chapters focus on how life stories and narratives create and re-create our sense of self and others.

I applaud the editors' efforts to look critically at psychology's reductionist stance of personhood and to consider alternate ways of studying humans besides the empiricist approach. They make clear that one's assumptions of personhood are not inconsequential. Yet, the book is often hard to follow due to complex wording and long sentences. This complexity obscures what sort of audience the editors have invited to participate in the conversation about personhood. For undergraduate personality classes, this would be too difficult a text. The text seems to offer no middle ground for psychologists who are empiricists and might be interested in studying personhood from a broader perspective. The intended audience seems to be those theorists who support a more postmodern, narrative approach to understanding the human condition, so the potential influence of this book is limited.

There also are no non-Western scholars represented in the text. This is of special note, given the more communal understandings of persons that such cultures tend to embrace.

One of the most glaring omissions in this text is a neglect of theological perspectives of personhood in any substantive way. While the editors claim to be antireductionists, their overwhelming focus on social-cultural determinants of personhood without considering possible spiritual factors is itself reductionistic. The authors never mention well-known Christian scholars who have developed robust models of personality based on enduring scriptural principles, many of which contradict psychology's reductionist views. This omission of theological perspectives also applies to the emerging Islamic psychology, which offers a substantive, nonreductionist view of persons.

The editors note that there is no unifying idea of personhood that emerges from their text. This much was clear and fair enough. Yet, this reader was not left with the impression that the text made any clear case for the dignity and worth of humans either, and it is the case for the dignity of persons that will be, in my humble opinion, the most compelling argument against psychology's reductionism.

Reviewed by Angela M. Sabates, Department of Psychology, Bethel University, St. Paul, MN 55112.

Letters

Types of Atheism

I read with interest the article by Eugene A. Curry on the topic, "Do the Polls Show That Science Leads to Atheism?" (*PSCF* 65, no. 2 [2013]: 75–8). I agree with his analysis that more often than not, atheistic scientists, "far from being pushed to atheism by science, generally arrive at their atheism for reasons unrelated to their science and then persist in their atheism despite their science."

In my experience with scientists who claim to be atheists, whether in the West or in the former Soviet Union countries, their claim is based on a prior commitment to materialism, as confessed by Richard Lewontin. In fact, Eugene Peterson in his book, *Where Your Treasure Is,* identifies several types of atheists.[1] Below I have adapted Peterson's classifica-

tion to what I have learned in my own long association with atheist colleagues:

1. Atheists whose beliefs develop out of protest and who are angry with what is wrong with the world. Ivan Karamazov, from *The Brothers Karamazov*, is an example. "He carried around a notebook in which he copied down every instance of innocent suffering that he heard of … The accumulated anecdotes served up an unanswerable indictment against the existence of God: because this is the way the world is, there cannot be a God."
2. Atheists who struggle with intellectual honesty. It usually begins with an idea of God that is formed from bits of reading, misinformation, movies, talk shows, and perhaps professors with certain agendas. So an intellectually discriminating atheist can be accepted as an ally in skeptically rejecting all the popular, half-baked stupidities named "god" that abound in our time and invited into conversations that explore what the best minds thought, and think, about God. Failure of Christians to live out Jesus's ideal, contribute greatly to his type of atheist.
3. Atheists who say in their hearts, there is no god. (Ps. 14:1: The fool says in his heart, "There is no god.") These are people that may even appear religious, go to church occasionally, participate in ritual, and so forth. But they live their lives centered on self: independent, autonomous, lord of all reality, manipulating people to achieve their desires, power hungry. A subset of this category would be atheists who can be classified as people of *acedia,* those with spiritual apathy, who do not care if God exists.
4. Atheists who have chosen to deny God because of a moral issue. Often the issue is a secret habit, desire, sexual sin, or betrayal, and rather than acknowledge one's sin and confess, it is easier to block the source of morality, the God who has given a universal moral standard by which to judge ourselves. Another reason for their atheism could be the absence of a good father in their formative years.[2] Often these people become militant, as if shouting and posturing will eliminate the conscience—which it often does. It is more appropriate to call such atheists, antitheists or god haters.

Notes

[1]Eugene Peterson, *Where Your Treasure Is* (Grand Rapids, MI: Eerdmans, 1985), chap. 8.

[2]Paul C. Vitz, *Faith of the Fatherless: The Psychology of Atheism* (Dallas, TX: Spence Publishing Company, 2000).

Kenell Touryan
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Clapping with One Hand

Articles and letters on methodological naturalism and uniformitarianism in the March and June 2013 issues of *PSCF* have been very helpful. I see clear consensus that a Christian can do science without adopting metaphysical or philosophical naturalism (nor materialism, agnosticism, or atheism), can believe in miracles that preclude scientific investigation, can believe that "natural laws" display God's order, and can believe that all of the world's things and events—regular or exceptional, designed or not—ultimately depend on the Creator.

Bruce Gordon ("In Defense of Uniformitarianism," *PSCF* 65, no. 2 [2013]: 79–86) notes that quantitative science can help distinguish cases of design from nondesign, but I agree with Jordan Mallon and Kathryn Applegate (Letters, *PSCF* 65, no. 2 [2013]: 144) that this works only when the designer, though unidentified, is constrained by natural laws. Why? One cannot estimate the probability of something without assuming that it is subject to the natural laws of the universe. Therefore, the likelihood of explanations involving supernatural design cannot be compared quantitatively to alternative explanations. One is left trying to clap with one hand.

Well, can we clap our one hand against a wall? Gordon cites suggestions from intelligent design (ID) theory proponents that natural explanations can be compared instead to some minimum threshold probability. The suggestion is that if all nondesign explanations are currently deemed less probable than the lowest conceivable "universal probability bound" based on the number of particles and/or events in the universe, then we should scientifically conclude that intelligent design must have been involved.

There remains a problem with this proposal, however. Even if we grant that a universal probability bound can be estimated to some meaningful degree of accuracy, we cannot presume that we have already even imagined all natural (nondesign) explanations, let alone assessed their true probabilities. Highly tentative probability estimates for preliminary explanations are useful in science, but only when compared to estimates *for competing explanations*.

Those probability estimates are likely to change by *many* orders of magnitude as additional evidence accumulates, but comparing them at least provides "checks and balances" against our ignorance, similar to how independent governmental branches limit the damage that misguided officials might otherwise do in civic life. We might lack any good (reasonably probable) explanations at this time, and might simply need to keep patiently searching!

Paleoanthropologists *compare* the probabilities that curious stones could have been shaped without design (through erosion, tumbling, fracturing, etc.) to the probabilities that humans could have designed them for some purpose. Forensic scientists *compare* the probabilities of a nondesigned death (by accident or illness) to the probabilities of the particular individual dying by design (suicide or murder). These scientists reach a conclusion only when the estimated probability of one scenario becomes sufficiently high.

Even the search for extraterrestrial intelligence (SETI) works the same way. Just as currently unexplained functional or "specified" complexity in living cells is not yet—by itself—positive evidence of intelligent design, an unexplained pattern in radio waves apparently coming from deep space would not be—by itself—positive evidence of extraterrestrial intelligence. The probabilities that any known natural (pulsars, etc.) or terrestrial (human-designed) source could generate the mysterious waves might be vanishingly small, yet SETI researchers would still compare those, not to a universal probability bound, but to an actual estimate of the extraterrestrial design scenario's probability. They would calculate the latter by assuming that intelligent embodied extraterrestrial agents would have to evolve and generate the waves within reasonable energy constraints, and that the waves would have to travel from the distant source at the known speed of light within reasonable time constraints given the known age of the universe.

Science is limited indeed, but it is not the only way of knowing. One may have reasons from beyond science, for example, to believe that the sex of one's next child will be predictable (or even designed) from God's perspective, while still accepting that from a scientific perspective such individual events are nondesigned and random, predictable only in the aggregate by the laws of probability. Likewise, ID theory's unidentified designer(s) certainly can be supernatural, but only if such unconstrained ID theory is understood as metaphysics rather than science.

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Seeing with Both Eyes

I thank Charles Austerberry for his comments, and *PSCF* for allowing me to respond.

Austerberry finds arguments for transcendent design problematic because "one cannot estimate the probability of something without assuming that it is subject to the natural laws of the universe." I agree that relevant natural regularities must be held fixed for probabilistic calculations to be made, as would all ID theorists.

What ID theorists are assessing is *not* the probability of God having done something, but the probability of undirected nature having produced a complex specified structure given a fixed backdrop of natural regularities. When and if this probability can be demonstrated to be effectively zero using the undirected causal resources of the material universe, other explanations must be sought. And, barring a presumptive metaphysical naturalism, they are available. Dropping naturalistic vocabulary and stating things theistically, design inferences distinguish between God's ordinary providential activity (maintaining natural regularities) and certain extraordinary providential activity (discrete injection of complex specified information).

More precisely, if we partition the sample space of causal explanations into mutually exclusive and jointly exhaustive classes of nonintelligent (undirected material) causes and intelligent causes—or, isomorphically, ordinary versus extraordinary providence—then if the probability of undirected material explanation is sufficiently close to zero, the probability of intelligent causation is close enough to one to be embraced. We do not distinguish between embodied and transcendent intelligent causes because design mathematics is *indifferent* to this distinction, just like the calculation of quantum probabilities is indifferent to metaphysical interpretations of quantum theory.

Moreover, calculating the universal probability bound is uncontroversial, with results ranging from a stringent $1/(2.6 \times 10^{92})$ through $1/10^{120}$ to the quite

liberal $1/10^{150}$. But even by the most *liberal* standard, certain complex specified events lie beyond the undirected causal capacity of the observable universe. This universal probability bound provides an *absolute* basis on which to establish a rejection region for undirected material causes of specified events. In short, the relevant statistical methodology is Fisherian and *eliminative*, not Bayesian and comparative, as Austerberry asserts. Significance testing like this is widely used in the sciences. Furthermore, as William Dembski has shown, Bayesian statistical rationality is parasitic on the Fisherian approach for design inferences (see http://www.designinference.com/documents/2005.06.Specification.pdf).

Nonetheless, ID theory *still* fits the framework of multiple competing hypotheses and abductive inferences characteristic of historical sciences (geology, paleontology, evolutionary biology, etc.). Probabilistic elimination of competing causal explanations for instances of specified complexity and the comparative adequacy of intelligent causation will point to ID as the best explanation for the phenomena. If one is intractably devoted to comparing epistemic probabilities for different hypotheses, however, one might try adapting to biology Robin Collins's rigorous likelihood argument for the superiority of theistic design over multiverse explanations of cosmological fine-tuning. Either way, making design inferences is not clapping with one hand; it is removing the conceptual obstacles to seeing clearly with both eyes.

I must also address Austerberry's appeal to naturalistic explanations yet to be imagined. This "naturalism-of-the-gaps" is a faith-attitude rooted in false narratives of the inexorable march of materialist explanations in the history of science. Setting such narratives aside, we are left with the best explanations science currently can offer, no more and no less. Lobbing empty "what ifs" from the bleachers may cheer up your team (which all sides can do), but it does not move the ball down the field. The fact is that design inferences have always been possible in science and have expanded in number, quality, and methodological precision in the modern era. Neither ID nor the reputation of theism rests on the fate of particular instances, and science would never get anywhere if everyone remained silent for fear of being wrong.

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Canadian Scientific and Christian Affiliation, PO Box 63082, University Plaza, Dundas, ON L9H 4H0. Website: www.csca.ca.

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"Upholding the Universe by His Word of Power" Hebrews 1:3

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