

# PERSPECTIVES on Science and Christian Faith

JOURNAL OF THE AMERICAN SCIENTIFIC AFFILIATION

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*"The fear of the Lord  
is the beginning of Wisdom."*  
Psalm 111:10

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3. Use endnotes for all references. Each note must have a unique number. Follow *The Chicago Style Manual* (14th ed., sections 15.1 to 15.426).
4. While figures and diagrams may be embedded within the Word text file of the manuscript, authors are required to also send them as individual electronic files (JPEG or TIFF format). Figure captions should be provided as a list at the end of the manuscript text. Authors are encouraged also to submit a sample of graphic art that can be used to illustrate their manuscript.

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Dirk Willems Saving His Captor's Life

**O**ne cold spring morning in 1569, a Dutch prisoner, Dirk Willems, who had been convicted of a crime, escaped from his jail cell through an upper story window by letting himself down with a rope made of knotted rags. As Willems was running away, a guard saw him and began to chase him. During the pursuit, Willems safely crossed the thin ice of a pond. The pursuing guard broke through the ice and floundered for survival in the frigid water. Hearing the guard's cry for help, Willems stopped running and turned back to pull the guard safely to shore. Following his rescue, the guard grabbed Willems and returned him to his prison cell. Some days later, Willems was taken from his prison cell and burned at the stake.

What was Dirk Willems' crime? He was a heretical Anabaptist believer. Dirk Willems' faith transgressed the 1535 edict of Emperor Charles V against the Anabaptists which prescribed beheading or drowning for heresy. By 1568, the Dutch governor, the Duke of Alva, through the aegis of King Phillip II (successor to Charles V) promoted more severe penalties including death by burning. Official court records contained the following information about Dirk Willems:

Born at Asperen ...at the age of eighteen or twenty years ... was rebaptized and further ... harbored and admitted secret conventicles and prohibited doctrines, and that he also has permitted several persons to be rebaptized in his ... house, all of which is contrary to our holy Christian faith ... and ought not to be tolerated, but severely punished, for an example to others ... therefore ... he shall be executed with fire, until death ensues [Thieleman J. van Braght, *Martyrs Mirror of the Defenseless Christians* (Scottsdale, PA: Mennonite Publishing House, 1951), 741-2].

What motivated Dirk Willems to sacrifice his escape opportunity to save his enemy? While his death added one

## Virtue Ethics and Grace

more person to the more than one thousand Anabaptist martyrs in the Netherlands during the sixteenth and early part of the seventeenth century, Dirk's forfeiture of personal safety in exchange for the safety of his pursuer reflects a personal attribute that appears "superhuman." Saving an enemy at the cost of his life was an instinctive ethical choice for Dirk Willems.

The basis of a chosen ethical system motives an individual's moral decisions. For some, ethics are deontological in nature and thus emphasize rules or duties; for others, ethics are based on consequences of action (utilitarianism). And for still others, Christian virtue ethics flow from righteous character that expresses attributes of love, obedience, and humility. None of these attributes are native to human nature, but rather flow from a nature that has been transformed by God's grace. These attributes are not simply occasional tendencies or whims to do random deeds of kindness, but flow from a deep disposition entrenched within the being of the person. No one has the power to simply choose to be virtuous in this way, rather this virtue flows from the grace of Jesus.

In the Anabaptist paradigm, virtue ethics is the praxis of a transformed life. If one is truly Christian, then the way of Jesus is expressed in one's attitudes and lifestyle. The example of Dirk Willems illustrates the Christ-like virtue of suffering (*agape*) love, a love that gives of oneself for another, even at great cost. Anabaptists believe that the essence of Christ's grace is both substantive and ontological. When a penitent sinner renounces a sinful past and confesses Jesus as Lord, that sinner is changed into a saint by the endowed grace of Jesus. The Spirit of Jesus embodies the believer and transforms a carnal spirit unto a Christ-like spirit. This transformation action is the work of grace, a divine enablement empowering the believer to walk in the power of the resurrected Jesus, revealing a life of virtue.



In response to a query about which commandment was the greatest, our Lord replied:

Love the Lord your God with all your heart and with all your soul and with all your mind and with all your strength. The second is this: Love your neighbor as yourself. There is no commandment greater than these (Mark 12:30-32, NIV).

Initially it may seem that Jesus was focusing on deontological ethics by ordering the importance of two rules from a long list of commandments. Yet a closer examination reveals that Jesus was promoting another way of "doing ethics." The motivation for love of neighbor flows from an all comprehensive love of God. Naturally, our loves are fickle, transient, and competitive. We love beautiful people, financial success, a harmonious symphony, excellent cuisine, and the excitement of a competitive game of football. It is easy for loves like these to become the major motivators of our life instead of our love for God. Authentic love can only happen if we are truly transformed by grace.

In our American contemporary culture, public policy ethics vividly contrasts with this description of virtue ethics. Societal bioethical decision-making is typically based on principlism: personal autonomy, beneficence, non-maleficence, and distributive justice. In specific situations where these principles conflict in application, the greatest value is given to personal autonomy. In contrast our Master calls his followers to deny themselves, take up the cross, and follow Jesus (Luke 9:23). Autonomy and personal rights rank low on the Christological ethical scale, but the virtues of love, humility, and obedience to the way of Jesus are elevated!

Virtue ethics have a practical dimension in that a different type of question is asked when assessing an ethical dilemma. In the secular principlism paradigm, the questions deal with individual rights and privileges. However, in Christian virtue ethics, we ask questions with answers that lead one to respond as Jesus would. What kind of a person must I be to respond in the manner of Jesus? Do I reveal love and humility which gives place to and enhances the well-being of the other person? Do my attitudes respect the image of God embodied in all *Homo sapiens*? Do my decisions value all of God's creation, especially protecting weak and vulnerable persons? Am I a responsible and just steward that values and shares God's precious creational gifts?

Remember the old hymn written by John Newton (1705-1807), the sea captain who spent much of his life transporting slaves from Africa to the Americas?

Amazing grace! How sweet the sound  
That saved a wretch like me!  
I once was lost, but now am found;  
Was blind, but now I see.

'Twas grace that taught my heart to fear,  
And grace my fears relieved;  
How precious did that grace appear  
The hour I first believed.

In the case of John Newton and for many of us, grace, God's divine enablement, is not instantaneous. Newton wrote the above verses following his initial conversion but while still operating a slave ship! However, a couple of years later, he left that career and became a minister of the gospel!

Let's allow grace to transform us,

**Roman J. Miller, Editor**

### **In This Issue ...**

Applied bioethics is the connecting theme of our first three Regular Articles. Bruce McCallum, who argues for a new theological understanding of nature, suggests "cruciform nature" can provides insights into human genetic engineering. Co-authors, Adrian Teo and Donald Calbreath, take up the contentious issue of embryonic stem cells and contend that opposition to embryonic stem cell research is consistent with a Reformed Christian perspective. Next Dennis Sullivan researches the evidence to determine whether oral chemical contraceptives induce abortions and whether using "the pill" should be of concern for persons who are pro-life. In the fourth Regular Article, Robert Schneider blends his understandings of anthropologic evolution and creation in postulating a framework for human origins.

In the Communications section, Thaddeus Trenn declares that a physicalist understanding of humanness cannot discern the "mystery" or core of a person, since the human spirit is sourced in the eternal Christ, which is in essence "God stuff" rather than somatic material.

Three short articles in the News & Views section take on the issue of origin. Michael Everest maintains that Intelligent Design gets too much attention from Christians and thereby other understandings of origins are minimized. New Zealanders, Graeme Finlay and co-scientists, assert that evolution is an aspect of creation rather than the antithesis of creation. And finally David Siemens, Jr. argues that the evidence for theistic evolution trumps the evidence for intelligent design. In the Early Career Scientist section, student Jeff Mino uses "sience" rather than science to describe intelligent design theory.

Finally, our journal issue concludes with eighteen book reviews in eight categories and then with seven letters to the editor from readers commenting on ideas from prior issues of *PSCF*.



# Evolving Concepts of Nature and Human Genetic Engineering

J. Bruce McCallum

*The US Supreme Court once asked Christian denominations when human life begins so they could accord the rights and protections due persons under the constitution. In retrospect, the Christian tradition could not answer the question because traditional views of human origins took shape long before the details of procreation were known. The discovery of the human genome requires a new concept of nature that gives intrinsic value to human life without reducing personal dignity to chromosomes. The present ecological crisis offers science and theology a new appreciation of nature. Instead of a value-free sphere, nature is now valued as that which sustains life. Holmes Rolston typifies a theological response to the ecological crisis with his notion of "cruciform nature," as the experience of life persisting in the midst of perpetual perishing. The purpose of this paper is to apply his concept of cruciform nature to bioethical issues.*



Bruce McCallum

If twentieth-century scientists worked under the threat of a nuclear holocaust, twenty-first-century scientists must cope with ecological disaster. One hundred thirty-seven species disappear daily, while the boreal forest canopy and permafrost tundra in Canada are threatened by global warming.<sup>1</sup> These threats have disclosed the moral dimensions of science as a human activity. Nowhere is the ecological threat more imminent and less appreciated than in the area of human genetic engineering.

Research on the genetic makeup of human beings coupled with biomedical techniques such as cloning and regenerative medicine using human embryonic stem cells have blurred the boundaries between human and nonhuman nature and promise to radically alter human existence. Meanwhile, ethical reflection lags behind scientific progress in biomedical engineering due to lingering cultural disagreements over the meaning of human dignity and the status of human embryonic life. However, James Watson clearly grasped the moral significance of his discovery of the genetic code. He warned:

[Cloning] is a matter far too important to be left solely in the hands of the scientific and medical communities ...

[I]f we do not think about it now, the possibility of our having a free choice will one day suddenly be gone.<sup>2</sup>

With the sequencing of the human genome, the time for assessing the moral value of our genetic environment draws nearer.

As is often the case with environmental ethics where utilitarian benefit must be balanced against ecological cost, so also in genetic engineering, potential gain to personal well-being must be balanced against potential loss of human genetic diversity. Ethical reflection, including religious ethics, will mislead if nature is relegated to the realm of a value-free resource as it was in the past.<sup>3</sup> On the other hand, cultural and moral values transcend natural values insofar as human beings have loosened the bonds to their genetic niche.<sup>4</sup> Ethics, especially biomedical ethics, must therefore embrace both human and nonhuman nature without collapsing them.

*Ethics, especially biomedical ethics, must ... embrace both human and nonhuman nature without collapsing them.*

**Bruce McCallum** is research scientist in the Department of Anesthesiology at the Medical College of Wisconsin in Milwaukee, WI. He received his Ph.D. in systematic theology from Marquette University. He participates in NIH-funded pain research at the biophysical level with publications in peer reviewed, professional journals. He also proctors in the Biomedical Ethics course for second-year medical students. An ASA member, Bruce lives with his wife Joan in New Berlin, Wisconsin, where he enjoys gardening and bicycling. He can be reached at [mccallum@mcw.edu](mailto:mccallum@mcw.edu).



*Augustine  
transferred  
natural  
theology  
into the realms  
of civic and  
mythic  
theology,  
as his  
philosophical  
contemporaries  
would have  
understood it,  
or he relocated  
nature into  
Christian  
theology.*

## Article

### *Evolving Concepts of Nature and Human Genetic Engineering*

This paper elucidates a concept of nature within the Christian tradition which extends the idea of redemptive suffering beyond the realm of human life to include nonhuman nature. Regeneration in the midst of perpetual perishing accords better with the redemptive suffering of Christ than a notion of nature as static blueprint or impersonal mechanism. An extension of redemptive suffering into the realm of nature suggests that nature is worthy of ethical reflection irrespective of the way it is used. Although this view of nature arises from Christian revelation, it is compatible with scientific findings of purpose in the emergence of increasing biological complexity, diversity, and convergence through evolution.<sup>5</sup> This paper will explore an ethic of natural value through the thought of Holmes Rolston, accredited as the father of environmental ethics, and will apply his view to the troubled issue of genetically-modified human nature.<sup>6</sup>

#### Theological Background

One of the ironies of the twentieth century is that a new concept of nature came through the rejection of natural theology by Karl Barth (1886–1968). As I have argued elsewhere,<sup>7</sup> polemics against natural theology or natural religion, which appeared regularly in the history of modern theology before the notable debate on this subject with Emil Brunner (1889–1966) in 1934, actually represents a re-absorption of the natural into theology. Indeed, regular revisions and retractions in the area of natural theology make it look like a rear guard effort to keep up with the latest understanding of what it means to live in the natural world.

The dilemma of natural theology, however, has much deeper roots. It arises from the juxtaposition of the truth of a particular event in the life of Jesus Christ with a universal claim to truth. All other claims to universal truth are to be judged against the central claim that "God was in Christ reconciling the world to himself" (2 Cor. 5:19). Central to this claim is an unrepeatable, absolute fact with universal benefit. This is why Brunner made the somewhat unexpected claim that the topic of their debate was the Reformation doctrine of *sola gratia*—justification by faith alone through grace alone.<sup>8</sup> The dilemma is far more serious than Gotthold

Lessing (1729–1781) imagined when he made the derogatory remark about the contingency of Christian revelation: "Accidental truths of history can never become the proof of necessary truths of reason."<sup>9</sup>

The Christian assertion of an unrepeatable, absolute fact produces a dilemma, which is the origin of natural theology. On the one hand, natural theology must show the distinction between the truth of Christianity and all other truths, as well as demonstrate the impossibility of unbelief. On the other hand, natural theology has the positive task of providing the necessary conditions for the possibility that truth comes to be at a point of time in the life of one person. To solve this dilemma, natural theology sets forth the distinction between nature and grace as well as the relationship between faith and reason. The success of natural theology is measured by the extent to which it is incorporated into the substance of Christian faith.

The word "nature" in natural theology is an ambiguous term. Hints of this ambiguity are apparent even in the writings of Paul. He borrowed the term from the realm of apologetics to show that Gentiles obey laws "by nature" (Rom. 2:14) and, while equally critical of this tradition, applied the same term to Jewish Christians who had been sinners "by nature" (Eph. 2:3).<sup>10</sup> The ambiguity surrounding the use of "nature" in natural theology arises from the dilemma of divine revelation in Christ and leads to a complex history.

Augustine, who introduced the term "natural theology,"<sup>11</sup> represents the metaphysical tradition of natural theology whereby philosophical arguments for the existence of God were used to show that Christian truth could be reconciled with a universal understanding of truth. Augustine had to revise pagan Greek arguments for Christian use. The "natural theology" of ancient philosophy was theistic in a loose, abstract sense inasmuch as it turned away from religious myth and civil religion to find transcendent ideas governing the relationship between thought and being exemplified in the reliability of geometric axioms.<sup>12</sup> Augustine, with his commitment to a historic religion and sacred texts, introduced Christ as the mediator of knowledge about the final end of human existence,<sup>13</sup> thereby making natu-

ral theology explicitly theistic. For example, after appealing to the metaphysical arguments for the existence of God, Augustine asked "whether sacred rites are to be performed to one God, or to many, for the sake of the happiness which is to be after death."<sup>14</sup> Augustine transferred natural theology into the realms of civic and mythic theology, as his philosophical contemporaries would have understood it, or he relocated nature into Christian theology.

Augustine's synthesis produced an inner tension insofar as it was unclear what, other than sin, distinguished nature from grace. The inner tension between nature and grace was gradually hardened into a distinction between nature and supernature, exemplified by the Dogmatic Constitution of Vatican I as "a twofold order of knowledge, distinct not only in origin but also in object."<sup>15</sup> However, the distinction between nature and supernature was fatal. Insofar as Christian truth presupposes and perfects the knowledge of God acquired through nature, revelation through Christ became less certain, and nature was deprived of grace. John Locke typifies the difficulty of distinguishing between faith and unbelief when supernature somehow completes the deliverance of reason through nature. He states:

*Reason* ... I take to be the discovery of the certainty or probability of such propositions or truths, which the mind arrives at by deduction made from such ideas, which it has got by the use of its natural faculties; viz. by sensation or reflection. *Faith* ... is the assent to any proposition, not thus made out by the deductions of reason, but upon the credit of the proposer, as coming from God, in some extraordinary way of communication.<sup>16</sup>

Certainty, according to Locke, comes through reason and nature, while faith is relegated to the realm of opinion backed by the power of tradition. It is not difficult to imagine that reason, once freed from the constraints of authority through the natural sciences, politics, and economics, found faith to be at best a subjective commodity.

Barth's challenge to natural theology must be understood against this background. An often-overlooked passage in his response to Brunner indicates that Barth's reason for rejecting natural theology was the inherent assumption that divine grace applied to moral justification alone. Barth explained:

"[T]he practical non-existence of St. Thomas in the sixteenth century has had even graver consequences in that the reformers could not clearly perceive the range of the decisive connection which exists in the Roman Catholic system between the problem of justification and the problem of the knowledge of God [in nature], between reconciliation and revelation." The extrinsic connection between natural proofs for the existence of God and supernatural revelation of divine grace gave rise to "the possibility

of an intellectual work-righteousness in the basis of theological thought," which the Reformers did not perceive as clearly as "the possibility of a moral work-righteousness in the basis of Christian life."<sup>17</sup>

As this paragraph indicates, Barth's denial of natural theology was not a restriction of grace to Christian revelation as much as it was an expansion of grace from the realm of human moral salvation to include humankind's understanding of God through nature.

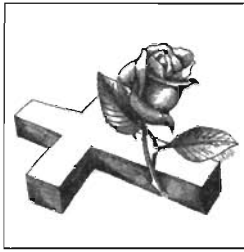
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*Barth re-absorbed nature by equating grace and revelation in such a way that all revelation must be explained in terms of divine grace, including nature and nature's laws.*

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Barth re-absorbed nature by equating grace and revelation in such a way that all revelation must be explained in terms of divine grace, including nature and nature's laws. Bruce McCormick has shown how Barth came to reject natural theology long before his debate with Brunner by working through the pattern, enshrined in scholastic Reformed federal theology, of a covenant of works followed by a covenant of grace after the Fall. Barth criticized this pattern because it made grace an external relationship between God and the creature and introduced the doctrine of works back into the Reformed tradition.<sup>18</sup> For Barth, grace is an intra-Trinitarian event whereby God the Father graciously turns toward the Son, Jesus Christ, in self-revelation. Barth therefore abandoned the scheme of supra-, infra- or postlapsarian grace in favor of an analogical view of nature and grace, which he subsequently called the analogy of faith. The correctness of Barth's interpretation of the Reformers is not the point of this paper.<sup>19</sup> So far as the order of nature and grace is concerned, for Barth, grace no longer presupposes and completes nature; instead, nature presupposes grace. Furthermore, the pattern of the history of salvation from Creation, through the Fall, to Redemption is changed to Creation, Redemption, Reconciliation.

In *John Calvin Versus the Westminster Confession*, Holmes Rolston takes aim at the same separation in Calvinism between a covenant of works and a covenant of grace. Rolston is concerned not only with the history of salvation, but even more with the law that "is written immutably and non-negotiably into creation."<sup>20</sup> Rolston knows that the language of covenants in the *Westminster Confession*



## Article

### *Evolving Concepts of Nature and Human Genetic Engineering*

*Rolston's  
concept of  
nature  
is firmly rooted  
in Darwinian  
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guided by  
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He proposes  
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between  
nature and  
grace  
in which  
nature is  
"struggling  
through to  
something  
higher."*

is archaic, but in this case, the product outlasted the label. In the notion that autonomous humans are responsible to the law of nature, and grace is called in to assist them in its fulfillment, the substance of federal theology lives on. This residue is resistant to historical criticism of the literal interpretation of Genesis and therefore more dangerous because it leads to a legalistic interpretation of nature. Rolston's reforming temperament comes through in his early theological work, but it remains central to his subsequent philosophical work on the concept of nature.

#### Cruciform Creation

Although nature has different meanings in science and religion, for the Christian tradition, it remains an ambiguous but useful term. The root of this ambiguity lies not in nature but in Christian revelation given through a unique event in the life and death of Jesus Christ. If Christians start from the assumption that the Cross discloses the purpose and meaning of nature, they must show how Christianity is consistent with the truth in nature and yet unique and different. While Augustine and Barth examine nature in their own ways, Rolston engages nature more specifically as a cruciform prelude to the passion of Christ. He finds more in nature than the fact that all humans are sinners; he also claims that all humans and nature itself are objects of grace without compromising the freedom of divine grace. Unlike Barth who took an agnostic position with respect to Darwinian natural selection, considering it irrelevant to his theological program,<sup>21</sup> Rolston's concept of nature is firmly rooted in Darwinian biology guided by divine transcendence. He proposes a loose correlation between nature and grace in which nature is "struggling through to something higher."<sup>22</sup>

Rolston explores controversial aspects of biological evolution in order to propose a concept of bioscience compatible with Christian faith. In Rolston's view, the most controversial elements of evolution are the emergence of complexity and diversity over time. These two aspects of natural history exhibit an unavoidable tendency toward biological progress. The modestly incomplete account of natural history given by biologists provides no explanation for progress in evolution.<sup>23</sup> Even if life on earth evolved, nothing in inorganic chemistry

makes biological life either necessary or predictable. Growth in complexity and diversity, therefore, raises a new metaphysical question. Whereas physics prompts the question, "How does something come from nothing?" biology elicits the question, "How does more come from less?" Rolston answers this question by emphasizing the most important characteristic of biological life: the ability of living organisms to learn, reproduce, and defend a way of life through genetic duplication.<sup>24</sup>

The genetic code bears a remarkable resemblance to communication in that information contained in the code defines a normative set of conditions for survival in a specific environmental niche. Rolston equates genetic information with natural value. He avoids the naturalistic fallacy of reading value into a natural state of affairs by arguing that natural value can be good for a plant even if no conscious subject is there to whom natural value is important.<sup>25</sup> Natural value is also creative. Genes search out new solutions in a prescribed way, resembling the cybernetic power of computers, and new solutions build "axiological" resources for future generations.<sup>26</sup> However, natural value is acquired at a fearful cost. The same Darwinian science that discovered intrinsic value in the genome also bequeathed an almost tragic sense of tinkering and waste in nature. Indeed, evolution guided by chance survival was the hardest element to accept in the mechanistic and optimistic system of natural theology before Darwin.<sup>27</sup> Yet suffering is not the end of the story. Out of trial and error comes growth in complexity and diversity. Growth against a background of suffering is the image nature holds forth for contemplation, and Rolston identifies the value in nature as "struggling through to something higher."<sup>28</sup> Whether this view of nature obscures or enhances grace is another question.

Rolston's argument for natural value is best judged by how well it integrates into the substance of Christian faith without collapsing nature and grace. God in Rolston's natural theology is neither an intelligent designer nor a part of the process. While Rolston holds biology distinct from matter-energy and culture distinct from biology,<sup>29</sup> he does not invoke a Creator God as the intelligence active in the gaps. Instead, he



calls upon biology in support of an inherent creativity, which evokes a sense of caring concern for survival. The biological root of concern for survival is transformed into religious truth with the insight that human consciousness transcends natural environment. Rolston draws from the vocabulary of Process Theology to argue for divinely enhanced "possibility spaces" as an explanation for the appearance of human consciousness out of biological information.<sup>30</sup> But he retains a distinction between human consciousness and genetic information embedded in DNA.

Rolston affirms "transcientific theism" where the freedom and love of God are hidden within the interplay of chance and necessity in nature.<sup>31</sup> The inner logic of this interplay is suffering. Only with the appearance of natural value in biology is suffering possible. Rocks do not suffer, but organisms do. With suffering, causality is transformed into meaning because suffering is both the cause of evolution and its outcome. "Bio-logic" has a narrative structure where nature becomes the history of individuals surviving by incorporation into larger wholes, where life is regenerated out of death. However, "bio-logic" is incapable of interpreting the meaning of suffering. The moral redemption of human beings through Christ's sacrifice on the Cross brings to light the hidden meaning of regeneration in nature. The suffering required to achieve adaptive fit is "a botanical analogy to the passion of Jesus."<sup>32</sup> The passion of Christ, says Rolston, "[is] ... survival of the fittest at an emergent level."<sup>33</sup> The connection between nature and grace is a loose integration necessary to explain the intrinsic value of the genome but insufficient to explain the sanctity of human life.

### Ethical Implications

Rolston's concept of natural value has important ethical implications for assisted reproductive technologies, genetic engineering, and restorative medicine, but he has not specified them. Any responsibility for the conclusions drawn in this paper will therefore be indirect. What is clear from the above is that the integrity of the human genome must be preserved as the bearer of natural value, but the increase in value for human persons takes precedence as the bearer of moral value. However, human well-being is not limited to the survival of autonomous human persons so much as it is rooted in the natural inducement to struggle through to something higher. It can be surmised that destructive human embryonic stem cell research should be regulated so as to preserve the integrity of the human genome and the survival value of human sexual reproduction, while all cloning or genetic engineering should be prohibited unless it can be demonstrated that increased value is equally distributed.

Some clarity about terms is helpful. Assisted reproductive technologies consist primarily of *in vitro* fertilization (IVF) and genetic counseling. IVF typically requires the injection of fertility drugs followed by the *inter utero* har-

vesting of 12-20 female oocytes. The eggs are then fertilized to become embryos with a protective trophoblast layer that sustains freezing. Up to four embryos are implanted in the donor at one time to increase chances of pregnancy. Genetic counseling often accompanies the selection of embryos for implantation. Human embryonic stem cells (hESC) are derived from human embryos at the fourth day after fertilization. Derivation destroys a human embryo and gives rise to an amorphous colony of cells that reproduce continuously through asymmetric cell division.<sup>34</sup> Cloning technology must accompany hESC therapies to overcome compatibility conflicts between the histology of cultured and host cells.<sup>35</sup>

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*An ethic of natural value would encourage us to preserve the integrity of the human genome and the survival value of sexual reproduction from the environmentally destructive practices of genetic engineering because the human genome is a good-of-its-kind with intrinsic value.*

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Somatic Cell Nuclear Transfer (SCNT) or therapeutic cloning involves enucleation of a female ovum and injection of DNA from a mature cell, followed by electrofusion to promote cell division. Therapeutic cloning enables the generation of new embryos from which stem cells that are compatible to the individual can be derived. Reproductive cloning uses the same techniques to produce an embryo for implantation and eventual offspring with identical genetic makeup as the donor. For the purposes of this paper, a human embryo is an organism that possesses all the genetic and epigenetic information for self-directed growth and maturation through the stages of human development.<sup>36</sup> Human embryos are not analogous to any other somatic cells inasmuch as these cells do not have the genetic information required to mature through all the stages of human development without being transfected into a female gamete.<sup>37</sup>

An ethic of natural value would encourage us to preserve the integrity of the human genome and the survival value of sexual reproduction from the environmentally destructive practices of genetic engineering because the



*An ethic of natural value is not absolute. Human values trump natural values under circumstances where natural value is unsustainable. Surplus embryos destined for destruction from IVF clinics can be used for hESC research. Destructive use of surplus embryos is the cost of suffering through to something higher.*

## Article

### *Evolving Concepts of Nature and Human Genetic Engineering*

human genome is a good-of-its-kind with intrinsic value. Examples of environmentally destructive practices include human/animal chimeras and human cloning. Chimeras refer to the experimental technique of injecting human stem cells into animals to determine how they differentiate into specialized tissues.<sup>38</sup> The practice takes its name from Greek mythical creatures with bodies from different species. Although genetic differences between species are minimal and have evolved over time, an ethic of natural value would provide grounds for species integrity.<sup>39</sup> Since genomes are selected to produce an organism that is an adapted fit in a niche in an ecosystem, intrinsic value is located in a species. Chimeras destroy intrinsic value to the extent that these new species are destined for destruction.

Another practice that violates natural value is human cloning. Destructive human and animal cloning confers identical genetic information from one individual to another. While this practice benefits individuals, it destroys species. Species survive and adapt to ever changing environmental circumstances by diversifying the gene pool. Analogues to destructive cloning exist naturally in the form of identical twins or inbred strains, but they are either rare or prone to extinction. Destructive cloning defaces natural value insofar as it places benefits to individuals above the species, and insofar as the benefits of cloning cannot be equally distributed among the genome. Destructive cloning is different from restorative medicine in that it produces duplicate organs or organisms for the benefit of individuals, whereas restorative medicine identifies genes or gene products that benefit entire species. Widespread use of destructive cloning would reduce biodiversity among species and potentially lead to their extinction.

An ethic of natural value is not absolute. Human values trump natural values under circumstances where natural value is unsustainable. Surplus embryos destined for destruction from IVF clinics can be used for hESC research. Destructive use of surplus embryos is the cost of suffering through to something higher. However, human values can be preserved in so far as they are exercised with respect for natural values. The human genome is a good-of-its-kind and should not be used as a means to other ends.

Destruction of excess human embryos does not mean complacency about embryonic or intrauterine life. Creation of embryos for destructive research turns human life into a commodity. Indeed, IVF practices should be regulated to limit the number of female eggs and embryos to those necessary for implantation. Research on cryoprotection for female zygotes should be encouraged.

The ethic of natural value gained by struggling through to something higher suggests a further distinction between restoring function and improving the genome. Exploiting mechanisms of repair restores function to an individual organism, while modifying genetic traits incorporates changes that survive in the entire species. Engineered genetic improvements preclude gain through suffering unless it can be shown that particular point mutations will benefit the entire population without risk, and genotypic variants remain the property of all. An example of restoring function is the use of adult stem cells in bone marrow transplants.

Examples of improving the genome are speculative at this point, but they would include therapeutic cloning to prevent genetically inherited diseases such as cystic fibrosis. Functional genomics is barely recognized as a scientific discipline, yet even genetic screening practices have not prevented this maladaptive genetic disease. Cystic fibrosis patients carry one of twenty-five mutations of an amiloride sensitive channel that mediates sodium flux. Although genetic screening for phenotypic carriers is greater than 90% effective, the likelihood that a carrier will give birth to a child with cystic fibrosis is only a 40% risk factor due to pleiotropism and unequal penetration.<sup>40</sup> Given this risk factor, is it not likely that some birth parents will elect to implant?

Does genetic information constitute a pre-existing condition? How does gene replacement therapy influence environmental triggers in, for example, genetic predispositions to alcohol sensitivity? Is a genetic counselor liable for undetected genetic abnormalities? These questions emphasize the priority of our genetic ecology and the integrity of human suffering over the utilitarian benefits of genetically engineered "improvements" to human nature.

In sum, human nature is at stake in the debate over genetic engineering. Ethical reflection guided by respect for the regenerative powers of nature may guide us past the cultural impasse left over from the abortion controversy of the last century. Rereading the famous case of *Roe v. Wade* forty-two years afterward, one is struck by the way the term "person" is used to determine at what point the fetus is accorded full protection under the constitution. Is the term "person" itself not a social construct growing out of the human rights tradition of the West? Indeed, the use of that term in *Roe v. Wade* is self-referential inasmuch as the word is derived from the constitution without further explanation. The case is then settled by asking when personal life begins and answered with the concept of viability. If personhood is identical to viability, then an aborted fetus is equivalent to disposable human tissue. This result of *Roe v. Wade* codifies a person/body dualism strangely reminiscent of the mind/body dualism of ancient Greek philosophy and incapable of guiding ethical reflection in the age of the human genome where so many facets of human personality are genetic.

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*Human nature is at stake in the debate over genetic engineering. Ethical reflection guided by respect for the regenerative powers of nature may guide us past the cultural impasse left over from the abortion controversy of the last century.*

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One is also struck by the inability of religious communities to answer the court's question of when personal life begins. In retrospect, Christian denominations could not reach agreement on the answer because traditional views of human origins took shape long before the details of procreation were known.

As I hope I have argued, questionable views of nature rather than a consensus on the sanctity of human life have led some Christian denominations to a sterile ethic equating human personality with the human genome.<sup>41</sup> ❀

### Acknowledgment

My deep gratitude to Dr. Bradford Hinze, my advisor at Marquette, for reading a revised version of this paper.

### Notes

- <sup>1</sup>Scientific American Frontiers Program #1404 (Transcript), "Hot Times in Alaska," airdate: June 15, 2004.
- <sup>2</sup>James D. Watson, "Moving Toward the Clonal Man," *The Atlantic Monthly* 227 (1971): 53.
- <sup>3</sup>G. E. Moore, who dominated ethical thinking in the twentieth century after the publication of his *Principia Ethica* in 1903, criticized natural law ethics as a naturalistic fallacy. "The naturalistic fallacy," wrote Moore, "consists in the contention that good means nothing but some simple or complex notion, that can be defined in terms of natural qualities" (Section 44, p. 73). The argument that many find convincing appears in section 11 of *Principia*: "When they say 'Pleasure is good,' we cannot believe that they merely mean 'Pleasure is pleasure' and nothing more than that." Moore came to define the good as a nonnatural, indefinable property of judgments about relationships that pertain to the world.
- <sup>4</sup>Debates about the extent to which culture is free from genetic restraints are beyond the scope of this paper. For Christian ethics, the natural bonds of food laws and Promised Land have been shattered as frameworks for natural law ethics. Cf. Mark 7:20; Matt. 8:20; Luke 9:58. The Christian is bound to the body of Christ.
- <sup>5</sup>Cf. Simon Conway Morris, *Life's Solution: Inevitable Humans in a Lonely Universe*, rev. ed. (Cambridge: Cambridge University Press, 2004).
- <sup>6</sup>A similar shift of emphasis toward a Christological concept of nature is exemplified in "Lumen Gentium," *Documents of Vatican II*, ed. A. P. Flannery (Grand Rapids, MI: Eerdmans, 1975), 350-1. The Papal Letter, *Truth Cannot Contradict Truth*, accepts evolution "as something more than just a hypothesis" (*L'Osservatore Romano*, Oct 30, 1996).
- <sup>7</sup>J. Bruce McCallum, "Modernity and the Dilemma of Natural Theology: The Barth-Brunner Debate, 1934" (Ph.D. diss., Marquette University, 1994).
- <sup>8</sup>Brunner established the topic of their debate when he wrote: We are not concerned with Luther nor with Lutheranism, but with that hard truth and message of Luther's concerning *sola gratia*, which is so greatly opposed to the thought of our time—with Christ crucified as the only salvation of the world and with justification by faith alone. Emil Brunner, "Nature and Grace: A Contribution to the Discussion with Karl Barth," in *Natural Theology*, trans. Peter Frankel (London: Centenary Press, 1947), 18.
- <sup>9</sup>"On the Proof of the Spirit and of Power," *Lessing's Theological Writings: A Library of Modern Religious Thought*, trans. Henry Chadwick (London: Adams & Charles Black, 1956), 53.
- <sup>10</sup>*Theological Dictionary of the New Testament*, vol. IX, s.v. "φύσις."
- <sup>11</sup>Augustine, *City of God* VI, 5-8, citing Varro, writes: They call the *mystical* which the poets chiefly use; *natural*, that which the philosophers use; *civil*, that which the people use.
- <sup>12</sup>Plato, *Republic*, 509d-511c adopted the famous analogy of the line from Pythagorean geometry and applied it to the idea of the good.
- <sup>13</sup>Augustine, *Confessions* VII, 9. Cf. *City of God* VII, 31, indicates the transition to historical revelation through Christ as mediator of divine knowledge with the famous "nevertheless."
- <sup>14</sup>Augustine, *City of God* VIII, 12.
- <sup>15</sup>"Faith and Reason," in *Documents of Vatican Council I, 1869-1870*, trans. J. F. Broderick, SJ (Collegeville: Liturgical Press, 1971), 46.
- <sup>16</sup>John Locke, *Essay Concerning Human Understanding*, ed. A. C. Fraser (New York: Dover Publications, 1959), 2:416.
- <sup>17</sup>Karl Barth, "No! Answer to Emil Bruner," in *Natural Theology: Comprising "Nature and Grace" by Professor Dr. Emil Brunner and the Reply "No!" by Dr. Karl Barth* (London: Centenary Press, 1947), 101-2, *passim*.
- <sup>18</sup>Bruce L. McCormack has documented topic by topic how Barth changed Federal Theology from his earliest work at Göttingen in "A Scholastic of a Higher Order: The Development of Karl Barth's Theology, 1921-1931" (Ph.D. diss., Princeton Theological Seminary, 1989).

# Article

## Evolving Concepts of Nature and Human Genetic Engineering

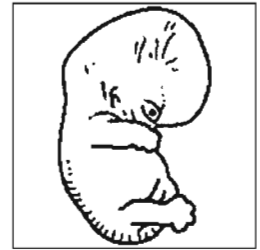
- <sup>19</sup>Cornelis P. Venema, "Recent Criticisms of the Covenant of Works in the Westminster Confession of Faith," *Mid-America Journal of Theology* 9 (1993): 165-98.
- <sup>20</sup>Holmes Rolston III, *John Calvin Versus the Westminster Confession* (Richmond, VA: John Knox Press, 1972), 114-5.
- <sup>21</sup>Karl Barth, *Church Dogmatics* III, 2: 79-90.
- <sup>22</sup>Holmes Rolston III, "Does Nature Need to be Redeemed?" *Zygon: Journal of Religion and Science* 29 (1994): 217.
- <sup>23</sup>Rolston relies on the thought of the late biologist John Maynard Smith for the inadequacy of evolutionary theory. Smith famously said: "There is nothing in neo-Darwinism which enables us to predict a long-term increase in complexity" (as cited in Rolston, *Genes, Genesis and God: Values and Their Origins in Natural and Human History* [Cambridge: Cambridge University Press, 1999], 15).
- <sup>24</sup>Rolston, *Genes, Genesis and God*, 1-53.
- <sup>25</sup>Holmes Rolston III, "Value in Nature and the Nature of Value," in *Philosophy and the Natural Environment*, Roman Institute of Philosophy Supplement 36 (Cambridge: Cambridge University Press, 1994), 17-8.
- <sup>26</sup>Rolston, *Genes, Genesis and God*, 24-37. Indeed, Rolston finds the roots of the ecological crisis in the "anthropocentric fallacy" of finding value only in conscious human beings or sentient animals. Cf. Holmes Rolston III, "Respect for Life: Counting What Singer Finds of No Account," in *Singer and His Critics*, ed. D. Jamieson (Oxford: Blackwell Publishers, 1999), 265-7.
- <sup>27</sup>Holmes Rolston III, "Disvalues in Nature," *The Monist* 75 (1992): 250-78.
- <sup>28</sup>Rolston, "Does Nature Need to be Redeemed?" 215-8.
- <sup>29</sup>Rolston has a running debate with sociobiologists about the relationship of genes and culture. See Holmes Rolston III, "Natural and Unnatural: Wild and Cultural," *Western North American Naturalist* 61 (2001): 267-76 and *Genes, Genesis and God*, 108-59.
- <sup>30</sup>Holmes Rolston III, "Evolutionary History and Divine Presence," *Theology Today* (Princeton) 55 (1998): 415-34. Rolston refers here to God as the "Ground of Information" (p. 429).
- <sup>31</sup>Holmes Rolston III, *Science and Religion: A Critical Survey* (New York: Random House, 1987), 327.
- <sup>32</sup>Holmes Rolston III, "Kenosis and Nature," in *The Work of Love: Creation as Kenosis* (London: SPCK, 2001), 58.
- <sup>33</sup>Rolston, *Science and Religion*, 327.
- <sup>34</sup>Each stem cell produces both an exact copy of itself and a new type of cell that will differentiate into specific tissue. Cf. H. Lin, "Stem Cells: To Be and Not to Be," *Nature* 425 (2003): 353-5. James Thomson of UW Madison first isolated and cultured stem cells from discarded human embryos in 1998. Cf. J. A. Thomson, J. Itskovitz-Eldor, et al., "Embryonic Stem Cell Lines Derived from Human Blastocysts," *Science* 282 (1998): 1145-7. John Gearhardt of John's Hopkins isolated and cultured stem cells from the gonadal ridge and mesenteries of aborted fetuses. Cf. M. J. Shambloot, J. Axelman, et al., "Derivation of Pluripotent Stem Cells from Cultured Human Primordial Germ Cells," *Proceedings of the National Academy of Science* 95 (1998): 13726-31. Geron Corporation of Menlo Park, CA, supported both labs in exchange for patent rights to any techniques developed by these investigators.
- <sup>35</sup>V. Brower, "Human ES Cells: Can You Build a Business around Them?" *Nature Biotechnology* 17 (1999): 139-42.
- <sup>36</sup>R. P. George, "The Ethics of Embryonic Stem Cell Research and Human Cloning," At the Podium, Family Research Council (2003) ([www.frc.org/get.cfm?i=PD02D5&v=PRINT](http://www.frc.org/get.cfm?i=PD02D5&v=PRINT)) accessed Dec. 7, 2003.
- <sup>37</sup>R. Bailey, "Are Stem Cells Babies? Only if Every Other Human Cell Is, Too," *Reasononline* (2001). <http://reason.com/rb/rb071101.shtml>: accessed Dec. 7, 2003. But some labs are coaxing human cells back to an embryonic state. Cf. Carina Dennis, "Developmental Reprogramming: Take a Cell, Any Cell ..." *Nature* 426 (2003): 490-1.
- <sup>38</sup>Maryann Mott, "Animal-Human Hybrids Spark Controversy," *National Geographic News* (January 25, 2005), accessed online at [news.nationalgeographic.com](http://news.nationalgeographic.com). Jamie Shreeve, "The Other Stem-Cell Debate," *The New York Times*, April 10, 2005. Accessed at [www.nytimes.com/2005/04/10/magazine/10CHIMERA.html](http://www.nytimes.com/2005/04/10/magazine/10CHIMERA.html).
- <sup>39</sup>Holmes Rolston III, "Duties to Endangered Species," *Bioscience* 35, no. 11 (1985): 718-26.
- <sup>40</sup>A. M. Hedgecoe, "Expansion and Uncertainty: Cystic Fibrosis, Classification and Genetics," *Sociology of Health & Illness* 25 (2003): 50-70; and E. Lyon and C. Miller, "Current Challenges in Cystic Fibrosis Screening," *Archives of Pathology and Laboratory Medicine* 127 (2003): 1133-9.
- <sup>41</sup>Of all the theological arguments in favor of equating personal life with the human genome, perhaps the best is the case of the Incarnation. If the chronology in Luke is to be believed, Mary was no less than one and no more than fourteen days pregnant when Elizabeth recognized her as "the mother of my Lord" (Luke 1:43). Yet, here the argument is most vulnerable because the human contribution of the Virgin Mary was only twenty-three chromosomes and not the full compliment of forty-six. The confusion is exemplified in an otherwise penetrating argument against cloning by Robert W. Evans, Ph.D. posted at [www.veritasministries.com/positions/human\\_cloning.html](http://www.veritasministries.com/positions/human_cloning.html):  
Furthermore, it may well be that the reason that Christ was able to take up residency in one of Mary's fertilized ovum is her fertilized ovum was already image-bearing in and of its own nature.  
It is confusing because Joseph obviously did not fertilize "Mary's fertilized ovum" if we believe in the Virgin birth. Of course, Mary's fertilized ovum would not only bear the image of God, it would also be God Incarnate. On the other hand, a fertile ovum is no longer an ovum but rather an embryo. It suggests that the female gamete bears the image of God. The confusion is inevitable if the *humanum* as bearer of the image of God is equated with the human genome.

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# Embryonic Stem Cells and a Reformed Christian World View: A Response to Robert Boomsma

*Adrian Teo and Donald Calbreath*

*The use of embryonic stem cells for medical research raises difficult ethical questions for many Christians. Robert Boomsma's article in the March 2004 issue of PSCF presents one popular perspective for justifying its use. This paper is a critical response to that view and attempts to show that there are sound reasons for opposition to embryonic stem cell research. The arguments presented are shown to be consistent with the Reformed Christian world view which recognizes the significant worth of the human being because of God's will. Human beings are to be respected and protected in their life and dignity at all stages in their development from conception to natural death for the reason that we are predestined by God for his purposes and also are created in his image. To allow such research that requires the destruction of human embryos, however noble the purpose may be, is to treat the human person as merely a means to serve ends unrelated to the well-being of the embryos in question. We argue that such actions would be disrespectful, which in essence, constitute a direct attack on human worth and dignity and therefore, on God's image and will.*



Adrian Teo

**T**he controversy over the appropriate and moral use of human embryonic stem cells (hES) is of particular concern among Christians, primarily because Christians remain divided on the question of the beginning of human life and its corresponding worth. Robert Boomsma's article in the March 2004 issue of *PSCF*<sup>1</sup> makes the claim that, from a Reformed Christian perspective, the issue is one of "alleviating disease" in order to assist in the redemption of the "brokenness of creation."<sup>2</sup> The proper application of hES technology is, according to Boomsma, a way of fulfilling the "stewardship responsibilities of developing, caring for, and helping redeem the creation."<sup>3</sup>

In this paper, we will show that there is an alternative and opposing perspective that places the moral status of the embryo as the prime issue and the value of human life in God's plan as foundational. Furthermore, it is a perspective that is just as firmly rooted in the Reformed tradition which insists upon the lordship of God before all other consid-

erations, including our call to be stewards of creation and transformers of culture.

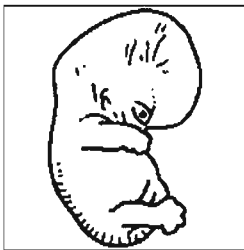
## The Purpose of Human Life

The idea that all human life is valuable is rooted in what has been described by the late renowned theologian John Leith as "a special mark of Reformed theology" – predestination.<sup>4</sup> The doctrine of predestination, among other things, proclaims that human life, and therefore human personhood, is rooted "in the will and intention of God."<sup>5</sup> While it is beyond the scope of this paper to engage in an in-depth examination of this

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*[We offer]  
a perspective  
that is ...  
rooted in the  
Reformed  
tradition which  
insists upon  
the lordship  
of God  
before all other  
considerations ...*





*While few Christians would argue against the great value of human life in God's eyes, many, however, are uncertain about whether valuable human life extends into the womb.*



**Donald Calbreath**

**Donald F. Calbreath** is currently an associate professor of chemistry at Whitworth College (Spokane, WA) where he has taught for twenty-two years. Prior to that time, he directed a clinical chemistry laboratory for Durham County General Hospital in Durham, NC, and taught laboratory medicine as an adjunct faculty member in the Duke University Medical School program for physicians assistants. He has had a long-standing interest in biochemical aspects of mental illness and the relationship between biochemistry and behavior. Other recent work includes a collaborative project on autism with a faculty member from the School of Education, a presentation on neuroscience and the law at a national ASA meeting and a developing project in medical ethics from an evangelical perspective. In his spare time, Calbreath is a devotee of traditional Southern music and (along with his wife Sandy) enjoys spoiling his four grandchildren. He can be contacted by email at [dcalbreath@whitworth.edu](mailto:dcalbreath@whitworth.edu).

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### *Embryonic Stem Cells and a Reformed Christian World View: A Response to Robert Boomsma*

complex doctrine, it is worth noting that a belief in predestination implies an acceptance of the truth that our origin and destiny is from God, and therefore, from God we derive our purposes and absolute value. The value of every human being, then, is there only because God sees every human being as valuable and designed for his purposes.

Human value is further affirmed by the revelation that we are created in the image and likeness of God.<sup>6</sup> This means that human life is set apart from the rest of creation<sup>7</sup> by God for his purposes and *not* ours. The image of God also endows a certain value on the creature that prohibits the deliberate and unjust destruction of its life, as affirmed in the commandment against murder.<sup>8</sup> To directly will and act in violence toward human life constitutes, in essence, an attack on the image of God, and on his purpose and will.

#### The Beginning of Human Life

While few Christians would argue against the great value of human life in God's eyes, many, however, are uncertain about whether valuable human life extends into the womb. Historically, there is evidence that Christians since the late first or early second centuries already recognized the significant worth of the unborn, as can be found in early documents such as the Epistle of Barnabas<sup>9</sup> and the *Didache*, a first-century manuscript that conveys the teaching of the early Church: "Thou shalt not slay the child by procuring abortion, nor, again, shalt thou destroy it after it is born."<sup>10</sup> By the seventh century, this recognition of the unborn as a human person was of such significance that the killing of the unborn was condemned by the Quinisext Council at Constantinople.<sup>11</sup>

At the time of the Reformation, this view of the unborn was again affirmed by John Calvin, who, in keeping with the deep-rooted biblical belief in sanctity of human life, commented:

... the unborn, though enclosed in the womb of his mother, is already a human being, and it is an almost monstrous crime to rob it of life which it has not yet begun to enjoy. If it seems more horrible to kill a man in his own house than in a field, because a man's house is his most secure place of refuge, it ought surely to be deemed more atrocious to destroy the unborn in the womb before it has come to light.<sup>12</sup>

In our modern era, the great twentieth century theologian, Karl Barth, went on record to declare that:

The unborn child is from the very first a child ... it is a man and not a thing, not a mere part of the mother's body ... Those who live by mercy will always be disposed to practice mercy, especially to a human being which is so dependent on the mercy of others as the unborn child.<sup>13</sup>

Given that the identification of the unborn with the human being appears to be a common understanding among Christians historically, is there also reason to believe that all unborn, at any stage in prenatal development, should be accorded the same respect as human persons who have been born?

In his article, Boomsma raised the question of whether embryos, because they are early entities in prenatal development, are in fact human persons and hence should be respected as such, or are they different from "fully developed humans."<sup>14</sup> The answer to this question, according to Boomsma, depends upon knowing the precise point of the beginning of human life. Boomsma then proceeded to argue that fertilization is itself a process, thereby implying that there is no precise point at which one can determine the moment at which life begins. This argument essentially builds upon that of Ronald Green, Chair of the Religion Department and Director of the Ethics Institute at Dartmouth College, who had served as a member of the National Institutes of Health's Human Embryo Research Panel in 1994. In his book, *The Human Embryo*

*Research Debates: Bioethics in the Vortex of Controversy*, Green persuasively argued that biological events, including conception, are better described as continuous processes rather than point-in-time occurrences.<sup>15</sup>

The argument about fertilization as a process, however, does not in any way prove that the embryo that comes into being at the completion of fertilization<sup>16</sup> is not a human life because the precise moment during the process of fertilization which marks the beginning of life is irrelevant to the central question of the moral status of human embryos used in research. It is also important to note that hES cells are harvested well after the process of fertilization is complete. Citing Josefson, Boomsma wrote: "Embryonic stem (ES) cells typically originate from blastocyst stage embryos that are formed approximately six days after fertilization in the human."<sup>17</sup> Thus, regardless of the observation that fertilization is a process and regardless of one's reasoned conclusion about the precise point in fertilization at which human life begins, the blastocyst embryo is not in the process of fertilization, but is rather in the subsequent process of cell division. Therefore, the fertilization-as-process argument fails to resolve the issue of the moral status of the embryo.

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*Every living human embryo is a full member of the species Homo sapiens by virtue of its heritage and genetic constitution.... a "zygote" possesses a genome that on the one hand distinguishes it from the parents, but on the other hand identifies it as a member of the same species as the parents.*

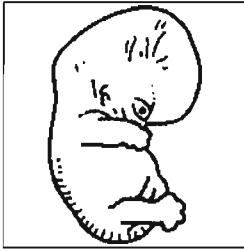
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If the precondition for human personhood is human life, then the initial question has to do with whether the embryo is a human life or not. The way to resolve this question is to first recognize that every living human embryo is a full member of the species *Homo sapiens* by virtue of its heritage and genetic constitution. Upon the completion of the process of fertilization,<sup>18</sup> what is now referred to as a "zygote" possesses a genome that on the one hand distinguishes it from the parents, but on the other hand

identifies it as a member of the same species as the parents. Therefore, a living human embryo is a human life. It is a genetically-distinct organism, separate but dependent upon the mother, and fully capable of internally-directed growth and active self-integration. The point of the embryo being capable of internally-directed growth and active self-integration is necessary to distinguish it from other organized groups and types of human cells that may also share the same heritage and genetic constitution, but are not distinct organisms in their own rights.

Boomsma, however, argued that genetic composition alone cannot define personhood, citing as support the phenomenon of twinning that can occur up to fourteen days after fertilization.<sup>19</sup> While it is true that genetic makeup cannot fully describe what a person is, however, given that it sufficiently indicates the presence of a human life, we argue that therefore it also sufficiently reveals the presence of at least one human person. Does the phenomenon of early twinning "clearly argue against the genetic view?"<sup>20</sup> as Boomsma claims? No, it does not. Just because cells can be detached from an embryo to become a monozygotic twin may or may not mean that there was more than one individual to begin with. There is no way of knowing for sure but there is in fact no need to resolve this question because the relevant issue is not about the genetic uniqueness of individuals, but rather the heritage and genetic commonality across all human individuals (i.e., *all* humans share the heritage and genetic code that sufficiently identifies them as members of the human species). We agree that genetic uniqueness alone cannot *fully* define the person, but the genetic constitution of the organism is a sufficient indicator of the status of the individual in question. In other words, it is not necessary to know whether an individual in question has a unique genetic constitution in order to decide if he or she is a human being, because all that is required is to know whether the individual<sup>21</sup> has the genome of *Homo sapiens*, regardless of the fact that he or she may share the same genetic makeup with a twin.

It is important to note that others, such as Green, have argued that there is really no single criterion to determine the moral status of the embryo, and instead, we (as individuals and as a society) choose the point at which the embryo becomes worthy of moral respect through a process of weighing multiple considerations.<sup>22</sup> Among the considerations included in this deliberation process, there is little doubt that one of the highest priorities for many people would be the potential benefits of a successful hES research program. We are thus led down a path in which the likely destination is a capitulation to utilitarian reasoning where the ends of research outweigh the morally-questionable means of embryonic destruction. Such is this pragmatic approach that places much confidence in the reliability of fallen human judgment and perhaps, even more so, in the nobility and transparency of fallen human motivation.



*There is precedence within the Reformed Christian tradition to assume that human life begins at conception [or to state it more precisely, human life begins immediately after the completion of the fertilization process] and therefore, the embryo is also to be regarded as a human life.*

## Article

### *Embryonic Stem Cells and a Reformed Christian World View: A Response to Robert Boomsma*

In describing the theology of the Reformed tradition, Leith wrote: "No human life is ever the simple result of the forces of biology or history. Every human has its first source in God's intention."<sup>23</sup> If, in fact, as we have argued, the embryo is a human life that began at the completion of the fertilization process, then we would recognize that every embryo is created by God for his own purposes.

Reformed Christians have traditionally embraced the assumption that human life, uniquely created for God's own purposes, is valuable and is to be protected from undue violence from the point of conception. This is evident in official statements adopted by a number of churches within the Reformed tradition. One example comes from the 1972 Synod of the Christian Reformed Church, which condemned "the wanton or arbitrary destruction of any human being at any stage of its development from the point of conception to the point of death."<sup>24</sup>

Another noteworthy example is found in the Constitution of the Reformed Presbyterian Church of North America which declares:

Unborn children are living creatures in the image of God. From the moment of conception to birth, they are objects of God's providence as they are being prepared by Him for the responsibilities and privileges of postnatal life. Unborn children are to be treated as human persons in all decisions and actions involving them. Deliberately induced abortion, except possibly to save the mother's life, is murder.<sup>25</sup>

Similarly, the Associate Reformed Presbyterian Church published the following statement in 1981:

We believe that the Scriptures clearly and plainly testifies to the infinite worth of human life by virtue of man having been created in the image and likeness of God, and that decisions about life and death are God's prerogatives and not man's, and that even in the case of rare exceptions such as judgments by medical personnel about highly technical medical problems, human judgement should always stand in submission to the divine judgement and wisdom of God.

We also believe the Scriptures point up a unique relationship between God the Creator and the unborn child. And, therefore, regarding the divine mysteries of the conception and development of human life, we dare make no other inference than the conclusion that it is not for men basically to be the determiners of life and death, even for the unborn child. Therefore, in all instances, one should seek to preserve the life of the unborn child.<sup>26</sup>

The independent, nonprofit corporation Presbyterians Pro-Life, which consists of members and pastors of the Presbyterian Church (USA), has also called for "the protection of innocent human beings—all of them made in the image of God—from conception to natural death."<sup>27</sup> Furthermore, in their statement supporting President Bush's decision on restricting the federal funding of hES research, the group unambiguously declared: "Each one of us began our lives as a fertilized ovum."<sup>28</sup>

It seems that the common, but implicit basis for each of these *declarations* is that human life begins at the point of conception or, to state it more precisely, human life begins immediately after the completion of the fertilization process. These quotations serve to demonstrate that there is precedence within the Reformed Christian tradition to assume that human life begins at conception and therefore, the embryo is also to be regarded as a human life.

## Human Life and Human Personhood

The next significant question to address is whether and when a human life is also a human person who is endowed with the full privileges and rights of personhood? For Boomsma, the "gradualist" approach is preferred. Human personhood does not emerge at any one point, but rather, develops over time, attaining greater and greater ability to fulfill the role of imaging God.<sup>29</sup> From this premise, it is reasoned that there is a meaningful distinction between those entities that are "potential persons" and those that are "persons with potential." Embryos, being unable to exercise the stewardship responsibilities requiring some level of "capacity, task, and relationship inherent in the image of God" are therefore not complete persons.

Before examining the major problems with this line of reasoning, it should be noted that this gradualist interpretation serves one primary purpose: to justify the destruction of embryos by somehow defining them as less-than-complete persons. It is reasoned that the end of medical research (and the potential benefits it brings) does in fact justify the means of defining embryos as entities different from the rest of us. What we have here is yet another attempt to create a separate class of human beings: the human sub-person or partial-person. This unfortunate entity is one who does not yet possess the full rights and privileges of full personhood and therefore whose life can be legitimately denied and deliberately destroyed to serve the interest of other complete persons. In fact, the very reason for the creation of such a class of human beings is to legitimize their destruction for use in research.

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*The main problem with the gradualist approach is that it basically adopts a functionalist view of personhood. The individual is a person only to the extent that he or she is able to accomplish a list of functions ...*

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This line of reasoning, however, carries with it a very dangerous implication. If the basis for defining personhood status depends on the benefits attainable for the service of others (whether in medical research or to serve some other valuable ends) rather than on a totally independent criterion, then there is no longer any objective and absolute grounding for human rights and dignity. We can always redefine personhood and create new classes of beings to suit our purposes, as long as they are deemed to have some utility. Such a view is clearly utilitarian and inconsistent with the biblical truth about the nature of humans as made in the image and likeness of God, and whose identity rests absolutely upon God's will and design.

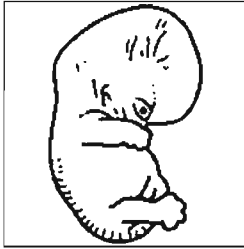
The main problem with the gradualist approach is that it basically adopts a functionalist view of personhood. The individual is a person only to the extent that he or she is able to accomplish a list of functions, which are gradually attained over the course of development. In this case, it is the ability to play the role of stewards of creation. The book of Genesis does describe this mandate given to humans,<sup>30</sup> but it is important to notice that the ability to

fulfill a biblical mandate does not form the basis of human worth. Human worth (and dignity) is firmly rooted in the fact that God created humans for his own purposes<sup>31</sup> and in his image and likeness, as we have shown. There are, in fact, many people who are unable to exercise stewardship due to age, congenital defects, disease, and accidents. No reasonable person would argue that these are incomplete persons with limited rights to life that may be justifiably forfeited if their body parts could be used to serve the interests of others. The functionalist view of personhood effectively destroys the very foundation for the defense of basic human rights (i.e., the right to life) upon which all other rights are based. Furthermore, the functionalist perspective does not tell us at what stage a human life becomes fully persons. For example, how would one decide on what additional rights and privileges fetuses, or neonates, or toddlers are entitled to that embryos are not? At which point do they become possessors of the same privileges and rights that you and I enjoy?

It is also important to note that the biblical basis for a gradualist understanding of personhood is weak, especially when the relevant passages are read in context. Instead, there is perhaps a stronger suggestion in Scripture of an assumption of personal continuity linking the present individual to the time when he was in the womb. For example, in Jer. 1:5, God revealed that he knew Jeremiah even before he was formed in the womb and that he set the prophet aside for his purpose even before he was born.<sup>32</sup> Although it is true that the primary message in this verse is the certainty of the plan and wisdom of God,<sup>33</sup> nevertheless, what is stated is that the very person of Jeremiah himself was formed, known, and chosen by God prior to his birth, for the purpose of God.

In Boomsma's article, he recalled Ps. 139:13-16 to show that the Bible fails to confirm that personhood begins at fertilization. What he failed to notice is that, in these verses, David showed that he viewed himself to be the same person at the time of writing as when *he* was knitted together in his mother's womb.<sup>34</sup> Theologian James Peterson, whom Boomsma cited,<sup>35</sup> has argued that this verse primarily conveys the intimate involvement of God in the psalmist's life prior to birth and in no way does it indicate the point at which the thing in the womb becomes the psalmist.<sup>36</sup>

In contrast, the report of the committee to study the matter of abortion of the 38th General Assembly of the Orthodox Presbyterian Church specifically chose this verse to support the argument of personal continuity.<sup>37</sup> It is significant to note that Peterson's point was that the verse does not clearly indicate a precise point in time for the beginning of personhood, which we agree, but he did not consider that the underlying assumption of the biblical writer was his own personal continuity. In Ps. 51:5, we see once again that personal continuity is assumed as David



*Given the  
substantial  
unity of body  
and soul,  
it is  
therefore  
reasonable  
to conclude  
that where  
there is  
a living  
human body,  
there is a  
human person.  
Conversely,  
there is  
no such entity  
as a living  
human body  
that is not  
also a human  
person.*

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repented of his sinfulness: "Surely I was sinful at birth, sinful from the time my mother conceived me."<sup>38</sup> What came into existence at conception was the same sinful baby at birth and the same David who sinned in adulthood. There may not be any clear teaching in Scripture of the precise moment at which personhood begins, but neither is there any suggestion of a gradual development from potentiality to actuality of personhood in Scripture. Instead, what we see taken for granted in these Scripture passages is the continuity of the person from conception to life after birth.

So at what point does human personhood begin? To resolve this question we must first recognize that every living human embryo is a full member of the species *Homo sapiens* by virtue of its heritage and genetic constitution. There are no partial members in this discrete category. One either is or is not a member of the species *Homo sapiens*. In parallel, the metaphysical and moral status of the embryo is also discrete. It either is or is not a human person. The determination of its status is based on a historical and biblically-rooted view of human personhood as a substantial unity of body and soul<sup>39</sup> in contrast to the radical dualism of Gnosticism and Manichaeism that the early church fathers vehemently opposed.

In this view of personhood, the body is not merely a vehicle with instrumental value, extrinsically related to the person residing inside, but rather is an intrinsic and irreducible part of the personal reality of the individual. In Scripture, the apostle Paul called the body a member of Christ<sup>40</sup> and the temple of the Holy Spirit,<sup>41</sup> thereby highlighting, not only its dignity and worth, but also its personal quality. Given the substantial unity of body and soul, it is therefore reasonable to conclude that where there is a living human body, there is a human person. Conversely, there is no such entity as a living human body that is not also a human person.

It has already been shown earlier that the embryo is a human life (which, of course, entails a human body) by virtue of its heritage and genetic constitution. Hence, the reasonable conclusion is that the embryo is also a human person. The same is also true of the zygote and the fetus. While none of these entities in the prenatal stages of human

development look or act like any adult human being, nevertheless, they look and act exactly the way they should at the particular stages of their development. We can also recognize that the embryo possesses both potentiality and actuality, but it is important to remember that potentiality is always in reference to that which is in a state of actuality, because potentiality cannot exist without actuality. The embryo's potential is not to develop into a human person but to mature and grow as the kind of being he or she already is (actuality)—a human person. In the simple, and yet profound words of Robert George, McCormick Professor of Jurisprudence at Princeton University:

The being that is now you or I is the same being that was once an adolescent, and before that a toddler, and before that an infant, and before that a fetus, and before that an embryo. To have destroyed the being that is you or me at any of these stages would have been to destroy you or me.<sup>42</sup>

### Respect for Human Embryos

As we have already noted, the functionalist approach to determining personhood is fundamentally flawed and dangerous. To Boomsma's credit, he proposed that the potential person, i.e., the embryo, should be treated with respect. He argues that to respect the embryos is to not treat them "casual-ly," but to speak of and handle them respectfully in the lab, and "minimizing harm wherever possible."<sup>43</sup> However, this requirement of respect is wholly inconsistent with the instrumental use of the embryos and the unavoidable destruction of their lives. In what way is the destruction of the embryos for the purpose of harvesting their stem cells a minimization of harm? This seems to us to be manifestly disrespectful according to the expectations set forth by Boomsma himself. A proper respect for a human being requires that we refrain from treating the individual as an instrument for some external purpose, regardless of the nobility of the purpose. We are reminded of the words of Boomsma, that humans must be treated as "ends in themselves and not as means to an end."<sup>44</sup>

Boomsma's main concern with protecting the ongoing research on hES cells is the tremendous promise it holds for healing a large



variety of diseases. Certainly this concern is a legitimate one, particularly for Christians in the medical professions who see their work as part of the healing ministry of Christ, who is the consummate healer. In this regard, Boomsma asked the question: "Are embryos human persons from the point of fertilization or is there some other way to look at embryos that would allow their being treated differently from fully developed humans?"<sup>45</sup> In other words, what is suggested is that if we can find an alternative to the conception-as-beginning idea, then it would remove the major moral concern and obstacle to the highly promising research on hES cells. On the contrary, the true moral status of embryos remains as it is, regardless of how any number of people may choose to see or define it otherwise.

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The proper question is not whether we can somehow, through the use of mental and linguistic gymnastics, define the embryo out of full human personhood, but whether the *true* moral status of the embryo is that of the human person. It is a question about absolute truth, not convenience and most certainly, not utility. In answer to Boomsma's question then, we respond, "Yes, there are other ways of looking at embryos that would allow them to be treated differently from fully developed humans, but our commitment to truth requires that we ask first the question of whether embryos are, in fact, humans or not." What makes an entity a person cannot be based on the potential benefit that this entity brings to others.

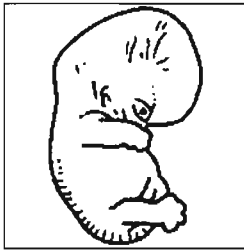
To many, the great potential for new cures for life-threatening diseases may appear to be a good reason to support hES cell research. Bringing healing to a damaged world is fully consistent with the Christian world view. As Boomsma has argued, Christians have a covenantal responsibility to share in the redemptive work of Christ through our lives and actions. As stewards of creation, we share in the responsibility of applying our gifts of

intellect to develop technology that can bring about healing and social justice. It would seem, therefore, that any technology that could potentially bring about healing to millions of people should be pursued wholeheartedly. Such is the promise of research on hES cells.

At this point, Boomsma rightly raised the issue of justice for the embryos.<sup>46</sup> But because he mistakenly regarded embryos as only *potential* image bearers, Boomsma was led to the conclusion that in a fallen, imperfect world certain relatively minor wrongdoings may be acceptable in order to bring about a greater good. He further added that "hES cell use may be justified if the purpose is to promote redemption/stewardship responsibilities."<sup>47</sup> To Boomsma, it is promoting respect for embryos if they are used to serve a noble cause. In other words, the end *does* justify the means. However, given that Boomsma also claimed that humans must be treated as "ends in themselves and not as means to an end,"<sup>48</sup> we cannot help noticing a contradiction.

If embryos are humans as we have established, then to support hES research is to treat them as a means to serve an end. We can affirm that alleviating human suffering is part of what we are called to do as image bearers, as Boomsma has pointed out, but we must always do so within the boundaries of right and wrong that God has defined for us. To treat any human person as only a means<sup>49</sup> in service of ends chosen by others is to overstep that boundary. Even in a fallen world where sin and imperfections abound, the Psalmist confidently proclaimed: "The ordinances of the LORD are sure and altogether righteous."<sup>50</sup> Therefore, we are assured that God "will also provide a way out"<sup>51</sup> of the temptation to do wrong. To suggest that minor wrongdoings are acceptable and, perhaps, even called for by the Christian world view is to imply that God's law itself is contradictory, for it requires contradictory behaviors.

Another point raised by Boomsma was that the unwanted embryos from IVF procedures would eventually be discarded anyway and, therefore, to use them in such a way that could potentially save others from suffering is in fact showing respect.<sup>52</sup> On the contrary, this line of reasoning only makes sense if one accepts that the proper worth of the embryo rests on its capacity to serve the purposes and well being of other human beings,<sup>53</sup> because to respect an entity is to accord it the proper worth. If instead, the embryo is a human person of intrinsic worth based solely on Almighty God's absolute valuation of the being, then the intentional destruction of the embryo for the sake of potential benefits to others is fundamentally a violation of human dignity and, therefore, disrespectful. Such an argument can easily and dangerously be extended to the use of organs of prisoners on death row for medical research. The same can also be said of harvesting organs from people in the late stages of any terminal disease.



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It is important to be reminded of the biblical principle that one may never do evil to bring about good.<sup>54</sup> Therefore, just as we should not harvest the healthy organs of death row prisoners or terminal patients, neither should we bring about the premature death of embryos even if they may be eventually destroyed anyway.

#### Adult Stem Cells as an Alternative

The controversy over the ethics of embryonic stem cell research has obscured news of the feasibility of using adult stem cells for treatment of the same disorders. Adult stem cells derive from a variety of sources including cord blood, autopsy tissue, bone marrow, and tissues of patients themselves. The increasingly very real possibility is that adult stem cell treatment regimens are as effective, if not more so, than embryonic stem cell approaches. In addition, the use of adult stem cells is at least morally neutral (and very likely considered morally positive), without the controversies associated with how embryonic stem cells are obtained.

Boomsma summarized the specific issues in stem cell technology in a succinct fashion. His read on the research data was that embryonic stem cells offer a greater ability to differentiate than do adult stem cells, with the result that embryonic stem cells can be used more successfully and in more situations than adult stem cells. While he did acknowledge some of the current research on adult stem cells, he did not fully explore some of the significant new findings in the field. In fact, there is a growing recognition of the versatility of adult stem cells. As one example, in a May 2001 interview, bone marrow stem cells researcher and associate professor of pathology at New York University School of Medicine Neil Theise stated:

It had been thought that only embryonic stem cells had such wide-ranging potential. However, this study provides the strongest evidence yet that the adult body harbors stem cells that are as flexible as embryonic stem cells.<sup>55</sup>

In another example, a report by the *New Scientist* opened with these sentences:

A stem cell has been found in adults that can turn into every single tissue

in the body. It might turn out to be the most important cell ever discovered.<sup>56</sup>

In our opinion, the optimism expressed is justified, given that in the last several years there has been a flood of reports of applications of adult stem cells to disease states in humans, ranging from brain tumors to various forms of cancers, autoimmune diseases, stroke, anemias, blood and liver diseases, and heart diseases.<sup>57</sup>

A leading researcher in adult stem cell applications is Catherine Verfaillie, MD, on the faculty of the University of Minnesota Medical School and director of the Stem Cell Institute at the medical school. Verfaillie and her colleagues have been world leaders in the development of techniques for use of adult stem cells in medical treatment. One of their important papers includes some of the first findings of the utility of bone marrow cells that could be developed into osteoblasts, chondrocytes, adipocytes, stroma cells, and skeletal myoblasts.<sup>58</sup> Another often-cited study published by the Stem Cell Institute demonstrated the wide versatility of adult stem cells as "an ideal cell source for therapy of inherited or degenerative diseases."<sup>59</sup> These adult stem cells could also generate hepatocytes (liver cells), thus raising possibilities for therapies for liver disorders.<sup>60</sup> More recent publications from this research group include a review of the promising therapeutic benefits of adult stem cells<sup>61</sup> and further research on umbilical cord cells.<sup>62</sup>

Within the last several months, a number of papers on applications of adult stem cells have appeared and are briefly mentioned here primarily to illustrate the rapid advances made in this field. For example, a few recent studies have found that adult stem cells are capable of self-renewal and differentiating into other kinds of cells. In one report, Goldman and Sims at the University of Rochester Medical Center reviewed and discussed evidence of stem cell populations in the adult human brain that are capable of generating neurons and glia.<sup>63</sup> In another, researchers at the University of Pittsburgh found that adult muscle stem cells can multiply as successfully as embryonic ones.<sup>64</sup> Additionally, it has also been shown that a wide variety of human mesenchymal stem cells (hMSC) can be obtained from human veins and can differentiate into several different types of cells.<sup>65</sup>

Other studies have looked at the application of adult stem cells in the treatment of diseases. For example, one recently published study found that adult stem cells appear to be of significance for corneal development and wound healing.<sup>66</sup> Another found that human stem cells are effective in enhancing wound healing in a rat model.<sup>67</sup> Finally, perhaps one of the most exciting news in this area of research has been the finding that human cord blood cells appear to have the characteristics of pluripotency, including the ability to differentiate into hepatocytes, bone cells, and cardiomyocyte.<sup>68</sup> One of the significant findings was that there were no tumor formations detected in any of the animals studied. Needless to say, this short selection represents only a few of the many available research studies that show the usefulness and success of adult stem cell investigations.

## Conclusion

For those still unconvinced by the arguments we have presented thus far, we offer one other consideration. Philosopher Peter Kreeft of Boston College has presented a compelling argument against the destruction of human life in the womb.<sup>69</sup> Using the analogy of a hunter who has to decide whether to shoot a target that has been spotted, there are four possible outcomes. First, if the hunter does not know whether the target is a person or not and it actually is, then shooting the target amounts to manslaughter. Second, if the hunter does not know whether the target is a person or not and it is not a person, then nevertheless, shooting the target amounts to criminal negligence. The hunter, as is the researcher, is legally required and morally expected to first determine beyond any reasonable doubt that the target or subject is in fact *not* a person before proceeding. Alternatively, if the hunter knows that the target is a person and it in fact is, then shooting amounts to murder. Finally, if the hunter knows that the target is not a person, and the hunter is correct, then no wrongdoing is committed. Therefore, the only legitimate possibility for proceeding with hES research is when one is certain beyond reasonable doubt that embryos are not human beings. We hope that the counter-arguments that we have presented will offer sufficient reasonable doubt to encourage supporters of hES research to reconsider their position.

It is our position that the human embryo is human life and therefore carries with it the full worth and privileges of a complete human person, made in the image of God and for his purposes. The partial or potential person simply does not exist. As we have shown, this position is consistent with the Reformed Christian world view and arguably, with most of Christendom at least until the early twentieth century. At the same time, we recognize that there is no infallible scriptural proof for either of the two opposing positions (the unborn is or is not a person from conception). However, because the perspective we pre-

sented is more ancient and more consistent with the biblical teachings that have been passed down through the ages,<sup>70</sup> therefore the burden of proof (as shown in the analogy of the hunter) lies squarely on the shoulders of those who argue with Boomsma on the legitimacy of destroying human embryos for the purpose of extracting stem cells. Thus, we concur with the opinion of the Orthodox Presbyterian Church, which recommended that "the Christian is under Scriptural obligation to act on the assumption that the unborn child is a person from conception."<sup>71</sup> To which we add, "unless proven otherwise." ■

## Notes

<sup>1</sup>Robert Boomsma, "Embryonic Stem Cells and a Reformed Christian World View," *Perspective on Science and Christian Faith* 56, no. 1 (2004): 38–48.

<sup>2</sup>Ibid., 41.

<sup>3</sup>Ibid.

<sup>4</sup>John H. Leith, *Introduction to the Reformed Tradition* (Atlanta, GA: John Knox Press, 1981), 103.

<sup>5</sup>See Leith, *Introduction to the Reformed Tradition*, 74, 104. In writing about Calvin's theology, Leith explained that the foundation of personhood is in the will and intention of God, who conceived of every person even before the person's existence and gave each his or her own identity and destiny.

<sup>6</sup>"Then God said, 'Let us make man in our image, in our likeness, and let them rule over the fish of the sea and the birds of the air, over the livestock, over all the earth, and over all the creatures that move along the ground'" Gen. 1:26 (New International Version).

<sup>7</sup>Humans were not created after our own kind. In Gen. 1:11–25, all living things were created "according to their kinds" and the only exception was the creation of human beings.

<sup>8</sup>"Whoever sheds the blood of man, by man shall his blood be shed; for in the image of God has God made man" Gen. 9:6 (New International Version).

<sup>9</sup>*Epistle of Barnabas* 19:5, trans. J. B. Lightfoot, [www.earlychristianwritings.com/text/barnabas-lightfoot.html](http://www.earlychristianwritings.com/text/barnabas-lightfoot.html).

<sup>10</sup>*Didache* 2:2, trans. J. B. Lightfoot, [www.earlychristianwritings.com/text/didache-lightfoot.html](http://www.earlychristianwritings.com/text/didache-lightfoot.html).

<sup>11</sup>*Quinisext Council*, Canon 91, [www.intratext.com/IXT/ENG0835/\\_P4J.htm](http://www.intratext.com/IXT/ENG0835/_P4J.htm). This council was convened by Byzantine Emperor Justinian II to address disciplinary issues related to the fifth and sixth ecumenical councils, which gave rise to its name *Quinisext*. It is also referred to as the Council in Trullo.

<sup>12</sup>John Calvin, *Commentary on the Four Last Books of Moses Arranged in the Form of a Harmony* (Grand Rapids, MI: Eerdmans, 1950).

<sup>13</sup>Karl Barth, *Church Dogmatics* 3, ed. Geoffrey Bromiley (Edinburgh: T & T Clark, 1961), 415.

<sup>14</sup>Boomsma, "Embryonic Stem Cells," 41.

<sup>15</sup>R. M. Green, *The Human Embryo Research Debates: Bioethics in the Vortex of Controversy* (New York: Oxford University Press, 2001). See Chapter 2 in particular.

<sup>16</sup>The technical term for this early embryo is "zygote."

<sup>17</sup>Boomsma, "Embryonic Stem Cells," 39.

<sup>18</sup>This complex process involves several stages as follows: sperm capacitation, acrosome reaction with penetration of ovum, attachment of sperm head to the secondary oocyte, and fusion of male and female pronuclei.

<sup>19</sup>Boomsma, "Embryonic Stem Cells," 42.

<sup>20</sup>Ibid.

<sup>21</sup>Note that this argument on genetic constitution applies to complete organisms, not parts of organisms.

<sup>22</sup>Green, *The Human Embryo Research Debates*. Also see R. M. Green "Determining Moral Status," *American Journal of Bioethics* 2, no. 1 (2002): 20–30.

# Article

## Embryonic Stem Cells and a Reformed Christian World View: A Response to Robert Boomsma

- <sup>23</sup>Leith, *Introduction to the Reformed Tradition*, 104.
- <sup>24</sup>Christian Reformed Church, *Acts of Synod* (1972), 64. See also the CRC website which affirms the same position: [www.crcna.org/whowere/beliefs/position\\_abortion.asp?WhoWeAreMenu](http://www.crcna.org/whowere/beliefs/position_abortion.asp?WhoWeAreMenu).
- <sup>25</sup>Reformed Presbyterian Church of North America, *The Constitution of the Reformed Presbyterian Church of North America* (Pittsburgh, PA: Crown and Covenant Publications, 2004). The section from which this quote came can be found at [www.reformedpresbyterian.org/conv\\_constitution.html](http://www.reformedpresbyterian.org/conv_constitution.html) in the chapter *Of Marriage and Divorce*, 19.
- <sup>26</sup>Associate Reformed Presbyterian Church, *Minutes of the General Synod, 1981*, 402–3. [www.arpsynod.org/position.html](http://www.arpsynod.org/position.html)
- <sup>27</sup>Presbyterians Pro-Life, *A Voice for Renewal in the Presbyterian Church (USA)*. [www.ppl.org/voicere.html](http://www.ppl.org/voicere.html).
- <sup>28</sup>Presbyterians Pro-Life, *PPL responds to President Bush's Decision on Federal Funding for Stem Cell Research, 2001*. [www.ppl.org/TS\\_StemCell\\_Response\\_Aug01.html](http://www.ppl.org/TS_StemCell_Response_Aug01.html).
- <sup>29</sup>Boomsma, "Embryonic Stem Cells," 43.
- <sup>30</sup>Gen. 2:15 (New International Version). A good basic introduction to the concept of the cultural mandate in the Bible can be found in Chapter 2 of B. J. Walsh and J. R. Middleton, *The Transforming Vision: Shaping a Christian Worldview* (Downers Grove, IL: InterVarsity Press, 1984).
- <sup>31</sup>Leith, in *Introduction to the Reformed Tradition*, wrote: "God thought of every person before he was and called him into being, giving him his name, his individuality, his identity as a child of God, and his dignity that no man should dare to abuse" (p. 104).
- <sup>32</sup>Other examples include Gen. 25:24, Song of Sol. 8:5, Hos. 12:3, and Luke 1:41.
- <sup>33</sup>See, for example, J. Peterson, "Is a Human Embryo a Human Being?" *God and the Embryo: Religious Voices on Stem Cells and Cloning* (Washington, DC: Georgetown University Press, 2003), 77–87.
- <sup>34</sup>"For you created my inmost being; you knit me together in my mother's womb" Ps. 139:13 (New International Version).
- <sup>35</sup>Boomsma, "Embryonic Stem Cells," 42.
- <sup>36</sup>Peterson, "Is a Human Embryo a Human Being?"
- <sup>37</sup>The 1971 report is available at [www.opc.org/GA/abortion.html](http://www.opc.org/GA/abortion.html).
- <sup>38</sup>New International Version.
- <sup>39</sup>For example, see Thomas Aquinas' *Summa Theologica* first part, Q76 which is available at [www.newadvent.org/summa/107600.htm](http://www.newadvent.org/summa/107600.htm). For those readers interested in a detailed analysis of the theology and philosophy of body and soul, we recommend: J. P. Moreland, and S. B. Rae, *Body and Soul: Human Nature and the Crisis in Ethics* (Downers Grove, IL: InterVarsity Press, 2000).
- <sup>40</sup>1 Cor. 6:15 (New International Version).
- <sup>41</sup>1 Cor. 6:19 (New International Version).
- <sup>42</sup>R. P. George, *The Clash of Orthodoxies: Law, Religion, and Morality in Crisis* (Wilmington, DE: ISI Books, 2001), 320.
- <sup>43</sup>Boomsma, "Embryonic Stem Cells," 44.
- <sup>44</sup>*Ibid.*, 41.
- <sup>45</sup>*Ibid.*
- <sup>46</sup>*Ibid.*, 44.
- <sup>47</sup>*Ibid.*
- <sup>48</sup>*Ibid.*, 41.
- <sup>49</sup>Without their informed consent.
- <sup>50</sup>Ps. 19:9 (New International Version).
- <sup>51</sup>1 Cor. 10:13 (New International Version).
- <sup>52</sup>Boomsma, "Embryonic Stem Cells," 44.
- <sup>53</sup>Passages in the Bible such as Matt. 6:25–34 reveal that our personal well being is important in the eyes of God.
- <sup>54</sup>Rom. 3:8 (New International Version).
- <sup>55</sup>P. McDonnell, "Researchers Discover the Ultimate Adult Stem Cell" *New York University Medical Center Press Release*, May 3, 2001, [www.newswise.com/articles/view/?id=STEMCEL3.nym](http://www.newswise.com/articles/view/?id=STEMCEL3.nym). The focus of the interview was on a study published in the journal *Cell*. The full reference of the study is: D. S. Krause, N. D. Theise, M. I. Collector, O. Henegariu, S. Hwang, R. Gardner, S. Neutzel, and S. J. Sharkis, "Multi-Organ, Multi-Lineage Engraftment by a Single Bone Marrow-Derived Stem Cell," *Cell* 105 (2001): 369–77.
- <sup>56</sup>S. P. Westphal, "Ultimate Stem Cell Discovered," *New Scientist* (January 23, 2002): [www.newscientist.com/article.ns?id=dn1826](http://www.newscientist.com/article.ns?id=dn1826).
- <sup>57</sup>The number of publications in peer-reviewed scientific and medical journals is too many to list individually. A lengthy compilation of references and summaries can be found at [www.stemcellresearch.org](http://www.stemcellresearch.org). Another useful extensive summary (from 1998–2003) was provided to the President's Council on Bioethics as background for a July 2003 Council meeting and was written by David Prentice, Ph.D, a professor in the Department of Life Sciences at Indiana State University. This report can be accessed at [www.bioethics.gov/background/prentice\\_paper.html](http://www.bioethics.gov/background/prentice_paper.html). Interested readers should also see D. A. Prentice, "Adult Stem Cells," *Issues in Law & Medicine* 19, no. 3 (2004): 265–94.
- <sup>58</sup>M. Reyes, T. Lund, T. Lenvik, D. Aguiar, L. Koodie, and C. M. Verfaillie, "Purification and Ex Vivo Expansion of Postnatal Human Marrow Mesodermal Progenitor Cells," *Blood* 98, no. 9 (2001): 2615–25.
- <sup>59</sup>Y. Jiang, B. N. Jahagirdar, R. L. Reinhardt, R. E. Schwartz, C. D. Keene, X. R. Ortiz-Gonzalez, M. Reyes, T. Lenvik, T. Lund, M. Blackstad, J. Du, S. Aldrich, A. Lisberg, W. C. Low, D. A. Largaespada, and C. M. Verfaillie, "Pluripotency of Mesenchymal Stem Cells Derived from Adult Marrow," *Nature* 418, no. 6893 (2002): 41–9.
- <sup>60</sup>R. E. Schwarz, M. Reyes, L. Koodie, Y. Jiang, M. Blackstad, T. Lund, T. Lenvik, S. Johnson, W. Hu, and C. M. Verfaillie, "Multipotent Adult Progenitor Cells from Bone Marrow Differentiate into Functional Hepatocyte-Like Cells," *Journal of Clinical Investigation* 109, no. 10 (2002): 1291–302.
- <sup>61</sup>C. M. Verfaillie, R. Schwarz, M. Reyes, and Y. Jiang, "Unexpected Potential of Adult Stem Cells," *Annals of the New York Academy of Sciences* 996, (2003): 231–4.
- <sup>62</sup>For example, see J. E. Wagner and C.M. Verfaillie, "Ex Vivo Expansion of Umbilical Cord Blood Hemopoietic Stem and Progenitor Cells," *Experimental Hematology* 32, no. 5 (2004): 412–3.
- <sup>63</sup>S. A. Goldman, and F. Sim, "Neural Progenitor Cells of the Adult Brain," *Novartis Found Symposium* 265, (2005): 66–80.
- <sup>64</sup>B. M. Deasy, B. M. Gharaibeh, J. B. Pollet, M. M. Jones, M. A. Lucas, Y. Kanda, and J. Huard, "Long-term Self-Renewal of Post-Natal Muscle-Derived Stem Cells," *Molecular Biology of the Cell* 16, no. 7 (2005): 3223–333.
- <sup>65</sup>D. T. Covas, C. E. Piccinato, M. D. Orellana, J. L. Siufi, W. A. Silva, Jr., R. Proto-Siqueira, E. G. Rizzatti, L. Neder, A. R. Silva, V. Rocha, and M. A. Zago, "Mesenchymal Stem Cells Can Be Obtained from the Human Saphena Vein," *Experimental Cell Research* (July 11, 2005): [www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list\\_uids=16018999&query\\_hl=8](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=16018999&query_hl=8).
- <sup>66</sup>Y. Du, M. L. Funderburg, M. M. Mann, N. Sundarraj, and J. L. Funderburg, "Multipotent Stem Cells in Human Corneal Stroma," *Stem Cells* (July 28, 2005): [www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list\\_uids=16051989&query\\_hl=10](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=16051989&query_hl=10)
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- <sup>69</sup>P. Kreeft, *Making Choices: Practical Wisdom for Everyday Moral Decisions* (Ann Arbor, MI: Servant Books, 1990), 120.
- <sup>70</sup>In 2 Thess. 2:15 (New International Version), we are called to "stand firm and hold to the teachings we passed on to you, whether by word of mouth or by letter."
- <sup>71</sup>The report of the committee to study the matter of abortion to the 38th General Assembly of the Orthodox Presbyterian Church (1971) is available at [www.opc.org/GA/abortion.html](http://www.opc.org/GA/abortion.html).



# The Oral Contraceptive as Abortifacient: An Analysis of the Evidence

Dennis M. Sullivan

*Pro-life Christian ethicists and medical practitioners have been united in their opposition to abortion, but have sometimes been divided in their ethical approach to hormonal contraception. Even though many Christians believe that birth control may be a moral option, some claim that the "Pill" acts, at least some of the time, as an abortifacient. If true, Christians who hold that human personhood begins at conception would be morally opposed to the use of combined oral contraceptives.*

*This article examines the scientific evidence for an abortifacient effect of such contraceptive agents, and concludes that such an effect is yet unproven. Some of the ethical arguments are also examined, and the author suggests that further research on early pregnancy factor (EPF) may help to resolve this controversial issue.*



Dennis M. Sullivan

**A**s an ethical litmus test, the abortion debate separates large segments of secular and religious communities. Social conservatives have opposed all forms of abortion on absolutist grounds, allowing only rare exceptions where the life of the mother is truly at stake. Furthermore, the pro-life cause has been championed by conservative elements *within* denominations, so that conservative Roman Catholics and conservative Protestants have found common cause. As James Nuechterlein has put it: "Conservative Catholics and Protestants stand together in opposition to their liberal coreligionists."<sup>1</sup>

A major exception to this unified voice is the issue of contraception. The Roman Catholic Church has traditionally opposed artificial birth control, mostly on the ground of natural law, claiming that sexual union must always allow for the possibility of procreation. Protestants, less influenced by natural law (at least in this regard), have held a more permissive view. They have felt that the unitive and procreative aspects of intimacy within marriage may be separated, and thus are open to interventions that prevent the creation of new life.<sup>2</sup>

In all of this, one principle is clear: there are conservative elements in both religious traditions that agree on the sanctity of human life from conception, and therefore oppose abortion. Recently, some pro-life writers have condemned hormone contraceptives as actually causing an early abortion. If this abortifacient action were true, then the Catholic and Protestant sides might join together to condemn such contraceptive methods. Other writers, however, have dismissed the abortifacient evidence as inconclusive, leading to an unresolved debate within the pro-life family about the morality of oral contraceptives. This paper will summarize the available evidence on this question, and will offer a suggestion to help settle the issue.

*[There is] an unresolved debate within the pro-life family about the morality of oral contraceptives.*

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## Article

### *The Oral Contraceptive as Abortifacient: An Analysis of the Evidence*

#### Some Background Physiology

To better understand the issues that surround oral contraceptives, some of the background of the normal uterine cycle and of early pregnancy will be helpful. The uterus lies within the lower abdomen, where it is held in place by suspensory ligaments. The normal uterus is shaped like a small bottle, with the muscular cervix acting as the "bottle neck" where menstrual flow emerges into the vagina, and where sperm might possibly enter the uterus during sexual intimacy. On each upper side of the uterus are the uterine ("Fallopian") tubes. The uterine tubes terminate in the ampulla, a wider area with many finger-like projections that envelop the ovary on each side. The ampulla acts to collect the ovum after ovulation occurs.

The two ovaries produce reproductive cells (ova) that a woman releases monthly in the process of ovulation (note: the technical term for a pre-ovulation reproductive cell is *secondary oocyte*, but in the interest of brevity this article will use the more general term ovum). At puberty, the ovaries together contain about 40,000 potential ova, of which about four hundred will mature and be released during a woman's lifetime.<sup>3</sup>

The key endocrine hormones in the female reproductive cycle are GnRH, FSH, LH, estrogen, progesterone, relaxin, and inhibin. Gonadotropin-releasing hormone (GnRH) is made in an area at the base of the brain called the hypothalamus. This hormone controls release of follicle stimulating hormone (FSH) and luteinizing hormone (LH) from the anterior pituitary gland. Various forms of estrogen (primarily  $\beta$ -estradiol) and progesterone are both made by the ovary at various stages of a woman's monthly cycle. Estrogen controls female sexual characteristics and stimulates development of the endometrium, the inner lining of the uterus. Progesterone works with estrogen to stimulate the endometrium and prepares the breasts to secrete milk. Both estrogen and progesterone inhibit (through negative feedback) the release of GnRH and LH, and estrogen also inhibits FSH. The ovary also produces the hormones relaxin and inhibin. Because the role of these last two hormones does not directly impact this discussion, they will not be considered further here.<sup>4</sup>

In the normal twenty-eight days of the female uterine cycle, GnRH stimulates the release of FSH and LH. The release of these hormones, in turn, causes development of ovarian follicles. The follicles are the cell-lined spaces where the ova reside. One dominant ovum tends to suppress the others, so that it becomes larger and larger. As it does so, it secretes more and more estrogen. Estrogen causes development and thickening of the endometrium (this is called the "proliferative phase" of the uterine cycle). The estrogen exerts positive feedback on the hypothalamus, causing an increase in secretion of GnRH. This leads to a sudden increase in LH (called the "LH surge"), which initiates rupture of the follicle and ovulation. The follicular "shell" left over after ovulation, called the corpus luteum, is itself a rich source of hormones. LH causes the corpus luteum to secrete additional estrogen and progesterone. In the last fourteen days of the cycle (under the influence of these hormones), the endometrium becomes thicker, has more blood vessels, and develops secretory glands (this is the "secretory phase" of the uterine cycle).

The secretory phase of the female cycle is the only time that the endometrium is prepared for implantation of a fertilized ovum. If this does not occur, the corpus luteum degenerates, depriving the endometrium of progesterone, which leads to its collapse. The inner layer of the endometrium sloughs, creating the menstrual flow, and a new cycle begins.

Fertilization of an ovum by a sperm cell normally occurs in the uterine tube near the ampulla. The new embryo then travels down the uterine tube, with implantation into the endometrium occurring about six days later, and a new pregnancy is then well established. What happens to the corpus luteum, upon which survival of the inner endometrium depends? If implantation is successful, the developing embryo produces a hormone called human chorionic gonadotropin (hCG). This hormone acts like LH to stimulate the corpus luteum to continue its secretion of estrogen and progesterone. This so-called "rescue" of the corpus luteum allows it to continue to produce progesterone, and the endometrium is maintained, which will eventually develop into the placenta of the developing fetus.<sup>5</sup>

## Mechanisms of Hormonal Contraception

The most common oral contraceptive pill used today is a combination of an estrogen, usually ethinyl estradiol but occasionally an analogue called mestranol, plus one of eight possible synthetic progestins (progesterone-like compounds): norethindrone, norethindrone acetate, ethynodiol diacetate, norgestrel, levonorgestrel, desogestrel, gestodene, and norgestimate.<sup>6</sup> This type of pill is often called a combined oral contraceptive (COC). First introduced in the early 1960s, COCs formerly contained much higher doses of both components, but this was associated with higher risks for heart disease, stroke, and venous blood clots. This has led to a reduction in the dose of estrogens and progestins.<sup>7</sup> These newer formulations have not seemingly reduced contraceptive efficacy, but have increased the concern over possible abortifacient effects.<sup>8</sup>

COCs act primarily by inhibiting the release of GnRH from the hypothalamus. This in turn leads to a reduction in levels of LH and FSH. As a result, follicles do not develop in the ovary, and the mid-cycle LH surge is absent, which removes the stimulus for follicle rupture and ovulation. COCs also have a second mechanism: they cause thickening of the cervical mucus, adding an additional barrier to sperm penetration should ovulation occur.<sup>9</sup>

Concern about a third mechanism of action comes from the standard "package insert" that accompanies COCs. Consider, for example, this Web site description from Ortho-McNeil about their popular contraceptive product, Ortho Tri-Cyclin Lo:

By delivering an adequate amount of progestin and estrogen throughout your body, ORTHO TRI-CYCLEN LO stops ovulation from occurring. ORTHO TRI-CYCLEN LO also thickens the cervical mucus, making it difficult for sperm to enter the uterus, and changes the lining of the uterus to reduce the likelihood of implantation.<sup>10</sup>

It is the last phrase in the description that creates a moral issue for some pro-life Christians. If the presence of progestins in COCs prevents the endometrium from supporting implantation, then the "Pill" acts as an abortifacient, at least some of the time (according to the conception view of human personhood).

To be fair to Ortho-McNeil and other companies involved with the manufacture of these drugs, they are trying to reassure their potential customers that their products work well. The key questions for contraceptive users are: "Is it safe?" and "Will it reliably prevent pregnancy?" The lower doses of estrogen and progestins in COCs make the medication relatively safe for women who do not smoke and who do not have a history of heart disease, abnormal clotting, or stroke. As to the second question, the bottom line is the pregnancy rate. To this point, there is a failure rate for contraceptive use: up to 5% for typical users, but dropping to 0.1% for highly compli-

ant use.<sup>11</sup> The manufacturers of oral contraceptives are not necessarily concerned with "fine points" of ethics, so they will understandably make somewhat biased claims to insure a strong market for their products.

The preponderance of evidence shows that COCs work by suppressing ovulation most of the time.<sup>12</sup> As stated earlier, in the rare event that "breakthrough" ovulation occurs, (also called "escape" ovulation or "on-pill" ovulation), COCs also cause thickening of the cervical mucus, making it more difficult for sperm to enter the cervix. Both of the above mechanisms are true *contraceptive* effects, i.e., that prevent fertilization. As to the third possible effect of COCs, this would be an *interceptive* effect, where the action of progestins on the endometrium make it unreceptive for implantation. Despite this theoretical possibility, Keder has said: "There is no direct evidence that this contributes to the effectiveness of oral contraceptives."<sup>13</sup>

## The Oral Contraceptive as Abortifacient: The Scientific Debate

As proposed by physician Walter Larimore and popular Christian writer Randy Alcorn, the case against COCs has been dubbed the "hostile endometrium" theory. Larimore and Stanford have presented their scientific argument in a major medical journal<sup>14</sup> and Alcorn eloquently expresses these ideas for a lay readership in booklet form.<sup>15</sup> Their basic premises are analyzed here.

1. *Women who take oral contraceptives have a thinner and less receptive endometrium.*

Women who take COCs have a thinner endometrial lining, as well as other biochemical changes, compared with non-Pill users. Larimore and Stanford cite a number of pharmacological and gynecological studies to make this point,<sup>16</sup> and both sides of the debate seem willing to concede this.<sup>17</sup>

2. *A thinner endometrium will decrease the likelihood of successful implantation.*

This is suggested by studies involving embryo transfer during *in-vitro* fertilization (IVF). Noyes and colleagues, for example, retrospectively studied endometrial thickness, as determined by ultrasonography, and concluded that a minimum thickness of 9 mm was needed for success in achieving pregnancy.<sup>18</sup> On the other hand, this idea was tested prospectively in 135 patients in a university setting, and endometrial thickness was *not* predictive of IVF outcomes.<sup>19</sup> Though the clinical evidence is inconclusive, endometrial thickness as a determinant of successful implantation is at least theoretically reasonable, since this assumption affects the practice of embryo transfer in many assisted reproduction clinics.<sup>20</sup>

3. *If breakthrough ovulation occurs, the effects of contraceptives on the endometrium make the embryo less likely to implant.*

This is the highly debated issue. Those who write in support of COCs admit that the endometrium is thinner during non-ovulatory cycles (as is typical with Pill users). For the



*To summarize the scientific case indicting COCs as having an abortifacient action [unlike progestin-only contraceptives (POPs), progestin implants (e.g., Norplant), and emergency contraception (EC)], the evidence appears inconclusive at the present time.*

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purposes of argument, they may even grant that a thinner endometrium may be less hospitable for implantation (though this is not completely clear). However, if ovulation takes place, a completely different hormonal milieu exists. As summarized earlier, ovulation leaves behind the corpus luteum, a rich source of estrogen and progesterone. After the six days required for the embryo to travel down the uterine tube into the uterus, these hormones have transformed the endometrium, which has now become receptive for implantation.<sup>21</sup>

There is no doubt that this is true at least *some* of the time. This should be obvious from the known "failure" rate of the Pill cited earlier (0.1–5%). In other words, some Pill-users get pregnant. The key questions become: How often does the user of COCs ovulate and conceive, only to have such a conception fail to implant? How does this rate compare with non-Pill users?

The baseline failure rate for implantation is an important statistic in this regard. A full 70% of fertilized ova fail to proceed to a full-term pregnancy, with three-fourths of these due to failure of implantation.<sup>22</sup> Against this failure rate, the rarity of breakthrough ovulation makes statistical comparison of Pill-users against non-Pill users difficult. Contraceptive opponents must make a difficult statistical case: (1) In instances of breakthrough ovulation (a rare event), a significant number of sperm must penetrate the thickened cervical mucous (presumably a rare event), thus evading both truly contraceptive effects of COCs; and (2) If fertilization does occur, an embryo must fail to implant in an endometrium at least somewhat prepared for it, or if it implants, fail to continue to term, and this failure rate must be greater than the 70% that occurs naturally.

A distinction is necessary here. This article has focused on COCs, but other types of contraceptives are available. In particular, progestin-only contraceptives (POPs) are attractive because they limit Pill-related side effects. However, their overall efficacy is less, and they statistically increase the likelihood of ectopic (tubal) pregnancy, a dangerous condition that can lead to rupture and bleeding, with serious consequences for the mother. This risk is usually expressed as the ectopic/intrauterine pregnancy ratio (E/I

ratio).<sup>23</sup> Progestin implants (e.g., Norplant) offer the advantage that compliance is not an issue. They are also more effective than POPs in preventing ovulation.<sup>24</sup> However, for unclear reasons, the ectopic pregnancy rate is also statistically higher when (rarely) breakthrough ovulation does occur. These considerations, according to Crockett and colleagues, present unacceptable added medical risks to women, making both POPs and Norplant undesirable choices.<sup>25</sup> In addition, the higher ectopic rate means that more breakthrough ovulation pregnancies fail to implant, which bolsters the ethical case that these agents are abortifacients.

It is important to be clear on this point. Opponents of *all* hormonal contraceptives have argued that they statistically increase the ectopic pregnancy rate (i.e., they increase the E/I ratio in pregnancies resulting from breakthrough ovulation). However, these writers combined POPs and COCs together in the data pool. If POPs were excluded and the E/I ratio calculated for COCs alone, there would appear to be no specific evidence indicting COCs for the increase in ectopic pregnancies.<sup>26</sup>

There is also an important distinction between COCs and emergency contraception (EC). With EC (sometimes referred to as the "morning-after pill"), a four-times normal dose of a combined oral contraceptive pill is taken over a 12-hour period. Since this regimen is designed to prevent pregnancy after unprotected sexual intercourse, it may act in two ways: (1) by preventing ovulation, or (2) by interfering with implantation if ovulation (and therefore fertilization) had already occurred.<sup>27</sup> Many (including the present author) feel that the supra-physiological dose of hormones used for EC is therefore an abortifacient at least part of the time, though others would dispute this.<sup>28</sup>

Based on this use (and many would say abuse) of oral contraceptives, Wilks has argued that this supports the moral case against them.<sup>29</sup> However, at the very least, the standard use of COCs is not in view here. If it is granted (as it seems reasonable to do) that EC often acts as an abortifacient, it does not follow that the same mechanism applies to the lower dose used in standard contraceptive formulations.

To summarize the scientific case indicting COCs as having an abortifacient action, the evidence appears inconclusive at the present time. Several leading professional organizations have looked at the evidence, and have been unable to reach a consensus. For example, the American Association of Pro-Life Obstetricians and Gynecologists has carefully studied this issue, and has reached the conclusion that "our knowledge of the truth is incomplete."<sup>30</sup> The Christian Medical and Dental Association holds a similar view: "This issue cannot be resolved with our current understanding."<sup>31</sup> While not drafting a position statement on the issue, the Center for Bioethics and Human Dignity has presented both sides of the debate.<sup>32</sup> All of these organizations support the right of conscience for health care providers to not prescribe or dispense these drugs, if such professionals are concerned about a possible abortifacient effect.

### The Oral Contraceptive as Abortifacient: Some Ethical Comments

Though this article has focused on the scientific evidence, a few remarks from an ethical perspective are in order. This author holds to the conception view of human personhood, and holds that if a true abortifacient effect were demonstrated for COCs, then the Pill would be an immoral intervention into the reproductive process. However, the evidence is inconclusive. How should Christian health professionals respond?

Larimore and Stanford have cogently argued that the possibility of a post-fertilization effect should be part of informed consent for prescribing oral contraceptives.<sup>33</sup> This seems reasonable where the evidence is clear, as in the case of POPs, or where there are clearly defined other risks, as in the statistically higher possibility of ectopic pregnancy with Norplant. However, since the evidence for COCs is not conclusive, it is not clear what health-care providers should tell their patients. Sherfey has responded in this way:

Obtaining informed consent of a general medical-legal nature to cover the possible adverse effects and complications of various methods of birth control is already a common practice. Yet to also educate interested patients specifically that there may be postfertilization effects would be a new practice for many physicians and health care providers.<sup>34</sup>

As an added ethical argument against contraceptive use, Larimore has argued that the classic principle of double effect may provide additional guidance.<sup>35</sup> In this principle, a contemplated action (e.g., giving morphine to a terminally ill patient) may have both a good effect (the relief of pain) and a bad effect (hastening death). For an action to be moral, the good effect must be intended, even though the bad effect may be foreseeable.<sup>36</sup>

Larimore lays out five conditions for proper application of this principle, including the condition that there exists no other way to produce the good effect. He rightly argues that there is indeed an alternative to oral contraception, that of natural family planning, a sophisticated modern option that has little resemblance to the "rhythm method" of twenty years ago. On this basis, he argues that the rules for applying the principle of double effect are not fulfilled, and therefore this principle cannot be an ethical justification for oral contraceptive use.<sup>37</sup>

Yet surely Larimore commits, at least in part, the *petitio principii* fallacy, where he implicitly assumes as true that which he would prove. In the case of morphine in terminal patients or other applications of the principle of double effect, the contemplated intervention has known "bad" consequences (such as the inhibition of respiratory drive with morphine). In the case of COCs, the "bad effect" is unknown or unclear. The principle of double effect is simply not applicable here.

### The Oral Contraceptive as Abortifacient: The Future of the Debate

Many writers on this issue would abandon COCs as a moral option if COCs truly could be shown to be abortifacient. The problem has been to precisely define *when* breakthrough ovulation occurs during COC use, and *when* fertilization occurs. Armed with this information, the rate of implantation can then be statistically compared with the natural rate, and conclusions can be drawn.

Standard pregnancy tests depend upon the presence of hCG in maternal blood, which does not rise to measurable quantities until well after implantation. Until recently, there has not been a maternal test that could reliably diagnose fertilization prior to implantation. Australian researcher Alice Cavanagh has worked extensively with a maternal protein called early pregnancy factor (EPF), first described in 1974 by Morton and colleagues.<sup>38</sup> Cavanagh describes EPF in this way:

Prevailing orthodoxy held that maternal recognition of pregnancy did not occur until implantation; prior to this, the embryo was thought to be merely a silent passenger in the maternal reproductive tract. It is now known that there is extensive cross-talk between mother and embryo throughout the pre-implantation period. However, EPF is still one of the earliest manifestations of this changed physiological status of the mother, opening a unique diagnostic window on this stage of pregnancy.<sup>39</sup>

In passing, it is worth noting that the above is an eloquent rebuff to those who would claim that "pregnancy" begins with implantation, a euphemistic justification for early abortion, human embryonic stem cell research, and other morally problematic practices.<sup>40</sup> Cavanagh goes on to say



*Ethical  
decisions  
should be based  
on personal  
convictions  
combined with  
the best  
possible  
scientific  
evidence ...  
Scripture  
would call on  
all participants  
in this  
discussion to  
mutual respect  
and peace, and  
to apply the  
principles of  
Romans 14 as  
a guide to  
disputable  
matters.*

## Article

### *The Oral Contraceptive as Abortifacient: An Analysis of the Evidence*

that "EPF could be valuable in discriminating between failure to fertilize and failure to implant."<sup>41</sup> In other words, this is exactly the test that will help to answer the question posed in the oral contraceptive discussion.

What is the function of EPF? The embryo, as an immunologically distinct foreign entity, nonetheless is not rejected by the mother's immune system. One of the intriguing roles of EPF may be to suppress the mother's immune system, in order to allow pregnancy to proceed.<sup>42</sup>

One of the problems with EPF is that it exists in such minute quantities. In the past, it has only been detectable by a complex and indirect bioassay called the rosette inhibition test. In recent years, this molecule has been purified and characterized further, and appears to be similar in form to the mitochondrial matrix protein chaperonin 10.<sup>43</sup> As a therapeutic agent, this chemical messenger may be useful for its immunosuppressive effects, and has already been used in an animal model for this purpose.<sup>44</sup> Nonetheless, further research on EPF as a diagnostic tool may ultimately help to unravel the abortifacient question as it relates to hormonal contraceptives.

### Conclusion

This article should not be construed as an unqualified endorsement of hormonal methods of birth control. Indeed, there are many methods (e.g., POPs, Norplant) that raise serious medical and ethical questions for pro-life health care providers. Moreover there are reliable alternatives to hormonal contraceptives, such as barrier methods, natural family planning, and abstinence. However, ethical decisions should be based on personal convictions combined with the best possible scientific evidence. To fail to use a potentially useful intervention because of minimal evidence or theoretical concerns is not how health practitioners should live their ethical lives.

Scripture would call on all participants in this discussion to mutual respect and peace, and to apply the principles of Romans 14 as a guide to disputable matters. Though this author would not wish to minimize the importance of this issue, it remains a debate "within the family." There are other pressing moral concerns before us, concerns about

which we will have much broader agreement. As Christians in the health professions, we must remain united in the defense of the sanctity of human life, as under the authority of our Sovereign Lord. ●

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## Article

*Seeking the Emergence of Created Man and Woman*

# Seeking the Emergence of Created Man and Woman

Robert C. Schneider



Robert C. Schneider

*The biblical  
creation  
premise  
adopted here ...  
begins with  
God creating  
the universe  
billions of years  
ago, referring  
to Gen. 1:1.*

*This is a theory about the origin of human beings that combines the creation of man and woman by God with the theory of evolution. An explanation is given to reconcile the creation story in Scripture with scientific observation. Evolution is considered as a useful theory of the development of life on earth. A solution is given for the conflict between the continuity of Homo sapiens coming forward to today's human beings, and our creation by God.*

*Recent scientific literature concerning archaeology and origins, etc., which is usually interpreted as showing continuity of Homo sapiens, was searched for indications that God's created man and woman replaced Homo sapiens. The major ecological effects of the Ice Age and early Holocene are considered as likely major factors in the transition from Homo sapiens to created man and woman around the world.*

**C**reation by God and current scientific knowledge of origins are considered together here in a theory concerning the origin of human beings. God is accepted as Creator of the universe, of life on earth, and of humankind. The scientific information about origins is taken from published sources written by experts in their fields. Generally that information has led to the conclusion that today's humans evolved continuously from ancient hominids.

In this article, we seek to interpret that information to forward an alternate, Christian view of the recent origin of human beings. Since much of this theory is drawn from the information in those published sources, it remains for Christians most knowledgeable in the several fields of origin studies to evaluate the information and the theory. We seek the truth about the origin of human beings although some of prehistory remains obscure.

**Robert Schneider** grew up in New Jersey and received a B.S. degree in chemical engineering at Drexel. After thirty-one years with Hercules, he retired as Production Manager in Hattiesburg, Mississippi, to pursue volunteer work. He held various offices in church and community organizations, was awarded Hattiesburg Humanitarian of the Year, and is the outgoing president of St. John Lutheran Church. He has two sons by his deceased wife, Marie, and lives with his wife, Doris, who has five adult children. He has been searching for the relationship between scientific discovery and God's creation for more than fifty years. His favorite recreations are bridge, gardening, and sports.

## In the Beginning

The biblical creation premise adopted here, recognizing star spectra, etc., begins with God creating the universe billions of years ago, referring to Gen. 1:1. Generally the laws of nature set in place at the creation of the universe seem to have served God's will and purpose in the development of the universe, and essentially remain for us today. When God determined universal conditions were right, God created life beginning with the base of the food chain. From there, the evolution theory gives us insight into how life evolved up to the creation of humans. Then God created man and woman in his image. This opens Pandora's Box and elaboration on these premises follows.

First, let us consider a view on the relationship of the above premise to the creation verses of the Bible, Gen. 1:2–2:7, the six-day creation. Most likely, God was not giving a scientific explanation of how he created the universe and the Hebrews were neither looking for, nor capable of understanding, the "how" of creation. God says later, in Isa. 45:9, "Does the clay say to the potter, 'What are you making?'"<sup>1</sup>

However, it was important that the Israelites knew that God was the powerful Creator who could have created the universe in six days. The creation narrative too, disposed of

the contemporary gods and other creation stories common at that time.<sup>2</sup> Jesus later confirmed for us that God is the Creator (Mark 13:19), but Scripture does not indicate that Jesus related any details of creation.

It is generally believed that Moses gave us the basis for the book of Genesis and the Ten Commandments from God. Possibly the commandments came before the creation narration. Whether one purpose of the creation narration was to confirm the seventh-day Sabbath by use of allegory seems impossible to know. Moses' use of the allegory form was referred to by Flavius Josephus in his preface to "Antiquities of the Jews." Just as allegory is commonly used in the Bible to allude to the future, here it seems to speak of the mystery of the deep past. For example, Gen. 1:2 refers to the darkness and the hovering spirit of God. This six-day creation story is earth and humanity centered, consistent with the probable understanding in those times.

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*For the period between the creation of life and the creation of humans, it seems reasonable to accept most of the evolution theories for that period.*

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God's next major creation with the universe in place seems to be that of life on earth when the universe was ready. Although various chemicals found in nature are offered as possible forerunners of the chemistry for life, many scientists today see the supernatural required in the complexity of life chemistry, even that of a single cell.

For the period between the creation of life and the creation of humans, it seems reasonable to accept most of the evolution theories for that period. Much good work has been done and continues to help us to understand the principles of evolution of life.

Many Christians oppose the idea that God would let only his laws of nature develop life and the universe. It is not intended here to imply that God used a hands-off policy, but to say that God seems to allow his laws of nature to work except when he wills to intervene. In this way, the world becomes generally understandable and dependable for us to follow his directive to have dominion over the earth.

The long period of evolution of life provided time for the development of many life forms, which continually provided necessary food sources and eventually gave us the beauty and diversity of today's world. It provided for

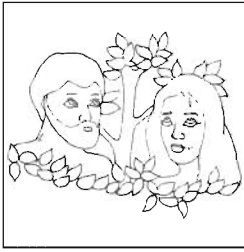
the accumulation of most of our earthbound organic energy sources, and for the evolution of the forerunner of created human beings — *Homo sapiens*. As the initial energy of the universe dissipated over millions of years, our environment stabilized somewhat and apparently God found it suitable for the creation of humans.

Long before the creation of human beings occurred, *Homo sapiens* had become what most proponents of the evolution theory see as our ancestors. Evolutionists generally consider that *Homo sapiens* were anatomically modern man at least 35,000 to 40,000 years ago. Development since then is generally considered to be cultural evolution.<sup>3</sup> Most origin scientists say *Homo sapiens* developed tools and weapons; made clothing and shelter; crafted paintings, sculptures, and jewelry; probably utilized vocal communication; and like the Neanderthals, buried objects with their dead (such as beads, flowers, and tools). Buried objects are seen here as a natural expression of mystery and remorse experienced by most of the higher forms of life. Cave drawings and figurines have been interpreted in many ways in recent decades, from simply representing observations, to shamanism, to more elaborate meanings.<sup>4</sup> Perhaps God considered that it was time to intervene in their development. Sir John Eccles, Nobel Prize winning scientist, came to the conclusion that it was necessary to invoke supernatural spiritual creation for the qualities of the human mind.<sup>5</sup>

We are told in Genesis that God created man in his image. The Garden of Eden narration shows God's intent to provide for humans and it shows our sinful nature and free-will response. Jesus confirms in Mark 10:6 that God created humans.

Our anatomical similarity to *Homo sapiens* living before creation seems to indicate that God used the basic pattern of this most successful life form in his creation of humans. However, it is likely that God created humans as a new and separate species. Our new species would have absolute hybrid sterility, thus isolating created humanity to remain a separate species from *Homo sapiens*. In Acts 17:26, the Apostle Paul said we all came from one man. The long life span attributed in the Bible to early created humans indicates a significant difference from *Homo sapiens* of that era.

We are told in the Garden of Eden narrative that created humans communicated with God, indicating a high level of language skills and the accompanying high level of intelligence. Created humans knew God was a spiritual provider, and they would proceed to worship God and to repeatedly call on him for help. Adam and Eve's sons, Cain and Abel, prepared sacrifices for God and talked to God. This awareness by created humans of a spiritual provider would eventually be expressed in different ways as indicated by created humans' art and other artifacts. Whether created humans' outward appearance was obviously different from *Homo sapiens* is debatable. It is likely



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from one man,  
we are saying  
Homo sapiens  
must have  
become extinct.  
... If God were  
utilizing the  
environmental  
effects of the  
last Ice Age,  
etc. to aid in  
extinction of  
Homo sapiens,  
we should look  
for created  
humans  
to begin  
taking over  
the world  
around  
11,000 years  
ago.*

## Article

### *Seeking the Emergence of Created Man and Woman*

that *Homo sapiens* originating in Africa near the equator did have darker skin. A visual difference in body hair seems possible.

When we say we accept that we all came from one man, we are saying *Homo sapiens* must have become extinct. The last Ice Age, followed by the high temperatures of the Holocene period, put great stress on much of the earth's flora and fauna including *Homo sapiens*, from 20,000 years ago down to 5,000 years ago. Creation of humans, on the other hand, seems to have been after 12,000 years ago when farming and domestication of animals began, since Cain and Abel were practicing those life-styles. If God were utilizing the environmental effects of the last Ice Age, etc. to aid in extinction of *Homo sapiens*, we should look for created humans to begin taking over the world around 11,000 years ago.

Of course, this time frame for creation is well before the more conventional 6,000–7,000 years ago that is traditionally based on biblical genealogies. This conflict with biblical genealogies is an old subject. Reference to an article, "Primeval Chronology," by Rev. Professor William Henry Green, D.D., gave an explanation. Green showed that biblical genealogies are not always complete.<sup>6</sup> This fact allows a possible earlier creation.

Before looking further at possible *Homo sapiens* extinction, we can acknowledge that if the Genesis Flood were worldwide that certainly would have made all of us descendants of Noah, and *Homo sapiens* would have perished. Perhaps this will be accepted at some future time, but most scientists today do not see the evidence of a worldwide flood. Between the widespread prehistoric narratives of an extensive flood and the recognized flooding that occurred after the Ice Age, it seems certain that there was major flooding of some dimension in that general time frame. Jesus confirms the flood in Matt. 24:37–39 and in Luke 17:26–27.

Many Christians accept God's creation of human beings, regardless of scientific theories otherwise, feeling that God's ways are often mysterious and beyond our reasoning. However, as scientists in many fields continuously add to our knowledge of prehistory, we can look for an indication that God's creation of humanity is being confirmed in scientific discovery.

## Extinction and Discontinuity of *Homo sapiens*

The premise for extinction of *Homo sapiens* begins with the last Ice Age. Following the glacial maximum of the last Ice Age, the caves containing the major paintings in France and Spain by the most advanced *Homo sapiens* of the time were abandoned. This was just one example of the result of stresses on the hunter/gatherer *Homo sapiens* caused by climate changes and their effects on flora and fauna and therefore food availability.

The Ice Age had resulted in huge glaciers in northern Europe, Asia, and North America and had produced a generally arid world. Higher elevations around the world were frozen and sea levels were low. This was followed by a series of environmental changes around the world as temperatures rose. As the glaciers melted and the land beneath rebounded, sea levels rose, inland lake and river levels rose and fell. The temperatures rose in the Holocene period over the following term of about 5,000 years, peaking above the temperatures of today. In coastal regions, rising sea levels covered habitat areas. Flora and fauna were continually adjusting.

These drastic climate changes had occurred before in prehistory and seem to be related to natural solar cycles. However, around 11,000 years ago—between the Ice Age and the Holocene—as temperatures were rising, an unexplainable cooling and drying period called Younger Dryas had a devastating reversal effect on the environment of Eurasia in particular, and to a lesser extent around the world. It lasted several hundred years. Perhaps God was setting the table for creation.

Disease was also common among *Homo sapiens* especially in Africa because of their association with animals.<sup>7</sup> Hunter/gatherers were susceptible to sleeping sickness, tetanus, malaria, and schistosomiasis.<sup>8</sup>

*Homo* extinction was not new by that time in prehistory. According to the widely accepted "Out of Africa" theory, *Homo erectus* had spread around the world and then had become extinct. Then *Homo sapiens* evolved in Africa and spread around the world. Neanderthals also became extinct as *Homo sapiens* spread into Europe. The extinc-

tions of *Homo erectus* and Neanderthals probably resulted from failure to compete successfully for food and shelter.<sup>9</sup> It is also recognized by most authorities that Neanderthals and *Homo sapiens* probably lived in the same vicinity with virtually no mixing, indicating hybrid sterility of two separate species.

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*An improved species can contribute to the extinction of a prior, inferior species in the same area.*

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An improved species can contribute to the extinction of a prior, inferior species in the same area. Ezra Zubrow, an anthropologist, has done theoretical analysis of an extinction of one of two such competing groups.<sup>10</sup> He concluded that with modestly better subsistence skills and vitality (measured as mortality, and just 1% or 2% better) one group could render the other extinct in 1,000 years or less. (The circumstance pertinent in this reference was Neanderthals' probable extinction in competition with *Homo sapiens* in prehistoric Europe.) In some regions, farmers thus forced the retreat of *Homo sapiens* hunter/gatherers to new habitats.<sup>11</sup>

When climate changes produce rapid and significant deterioration of flora and fauna in a region, the inhabitants may not have enough time to change and adapt and can therefore be devastated.<sup>12</sup> The smaller the population is the greater the danger of developing a bottleneck where the species loses much of its genetic variety and stands to lose its ability to evolve and compensate.<sup>13</sup> A population below fifty can easily become extinct in case of an epidemic or failure to reproduce in the right number or the right sex. *Homo sapiens*, like any other large mammals that have become extinct, reproduce at a relatively slow rate and thus are more susceptible to extinction than many other species.<sup>14</sup>

The extinction of *Homo sapiens* is not generally acknowledged. Artifact sites in some regions were occupied before and after 10,000 years ago leaving the impression there was *Homo sapiens* continuity down through thousands of years to the present. However, such sites generally are stratified sites that were not continuously occupied. In fact, these sites generally fit a pattern where there is an unoccupied period between the time they were obviously occupied by *Homo sapiens* before 11,000 years ago and the time when created humans probably arrived in the region. The timing of these unoccupied periods varies around the world. Created humans could have taken over these abandoned sites upon or after their arrival.

There is usually a timely change in artifacts that can be interpreted as the arrival of created humans.

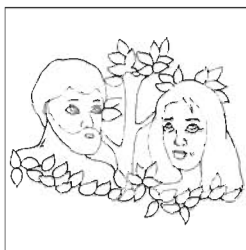
In some regions, the majority of the sites indicate very temporary usage or even just seasonal occupation where food supplies required a nomadic existence. Such sites were likely occupied by small, vulnerable bands and could have easily become the stopping place for newcomers when found abandoned. It is difficult if not impossible to identify the occupants of those sites from decade to decade.

The map titled "*Homo sapiens* Spread and Discontinuity Stresses" (p. 202) shows the regions where there were significant *Homo sapiens* sites or paths that had been developed by 15,000 years ago in the old world and by 10,000 years ago in the new world (the Americas). Areas where the last Ice Age and the Holocene climate changes along with diseases resulted in established devastation to the *Homo sapiens* are blacked over to show the areas of probable discontinuity for *Homo sapiens*. The map provides a generalized picture of the state of *Homo sapiens* habitation in the world as created humans began to spread out from the Near East. The discontinuity events are described later in the regional accounts of events around the world with the pertinent sentences set in italics for easy identification.

## Evolution of Created Man and Created Woman

With the premise of the eventual extinction of *Homo sapiens* and only created humans surviving today, we must look to evolution of created humans over the last 11,000 years to provide the variety of physical appearances evident among today's people that we sometimes call races. The evolution we commonly refer to, produced DNA changes over long periods of time, perhaps including new species, etc. That aspect of evolution is based on random change that normally takes much more than 11,000 years to accomplish. However, changes in outward appearance brought about by climate and nutrition levels commonly used to identify races, occur in a much shorter period of time.<sup>15</sup> These outward appearance characteristics include body shape, extremity length, skin color, cranial shape, and nostril size. Australian Aborigines, New Guineans, and Sub-Saharan Africans are prominent examples of prehistoric people with dark skin and nostril size—effects from high temperatures and sun exposure near the equator. These genetic drift effects, when occurring among small populations reaching a new territory, have been given the name "founder effects." Those effects seem to be prominent in the evolution of the Australian Aborigines and could have resulted in their current physical appearance in less than 6,000 years.

The African Negro appearance was a similar short-term evolution. Dark skin developed by natural selection and



*The timing of the Gen. 4:2 account of Abel keeping flocks and Cain working the soil must have been about the time of evidence for farming and domestication of animals. The Near East is credited with the first recorded appearance of many domesticates during the period 11K–8K ...*

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### *Seeking the Emergence of Created Man and Woman*

genetic drift is a major factor in acquiring protection from UV exposure and melanoma. The opposite effect, depigmentation, does not give a known climate advantage of the same magnitude.<sup>16</sup> One author concludes that it would take more than 100,000 years for *Homo sapiens* from Africa to obtain European skin pigmentation.<sup>17</sup> Without natural selection maintaining dark skin, mutation can produce a reduction in the trait, but it takes a different magnitude of greater time length to do so. Created humans from the Near East provide a better explanation for today's Europeans' light skin color.

Genetic drift seems to have the potential in small, isolated groups to make significant changes in as little as 100 generations or some 2,500 years.<sup>18</sup> Another example of rapid natural selection since the Ice Age is the development of resistance to lactose deficiency.<sup>19</sup>

Looking for a transition from *Homo sapiens* to created man around the world calls for a different perspective on many prehistoric artifacts and theories available at this time. What follows are the results of a search of the regions of the world to find extinction and discontinuity for *Homo sapiens* as created humans repopulated the earth. We begin this search in the cradle of civilization—the Near East.

### Out of Eden

Biologically modern *Homo sapiens* went to Southwest Asia and on to Europe from Africa by 45K (45,000 years ago).<sup>20</sup> Neanderthals were already there. Cave paintings in southern France were about to begin. The glacial maximum of the Ice Age would come some 25,000 years later.

In the late Pleistocene period, as the Ice Age ended, *Homo sapiens* in the Near East were exposed to major climate variation.<sup>21</sup> Dry conditions resulted in many *Homo sapiens* (Natufian) sites being deserted.<sup>22</sup>

Around 11.5K, some *Homo sapiens* were on the south bank of the Euphrates River at a well-known archaeological site, Abu Hureyra, in Southwest Asia.<sup>23</sup> They hunted gazelles in the spring migrations and gathered wild cereal and tree fruitlets, etc.<sup>24</sup> Then, the Younger Dryas last glacial episode arrived at 11K. Both wild cereal and valley bottom plants were greatly reduced and trees re-

ceded westward. Site transitions occurred at 11K, 10.4K, 10K, and again at 9.4K.<sup>25</sup> There is evidence that the cultivation of rye was getting started there during the Younger Dryas (11K–10K).<sup>26</sup> The material dated between 10K and 9.4K was disturbed by later inhabitants.<sup>27</sup> The resettlement at 9.4K showed significant advancement in almost all aspects of culture including farming.<sup>28</sup> Perhaps one of these transitions was the arrival of created humans now toiling as farmers. By 8.3K, domestication of goats and sheep began there.<sup>29</sup>

The timing of the Gen. 4:2 account of Abel keeping flocks and Cain working the soil must have been about the time of evidence for farming and domestication of animals. The Near East is credited with the first recorded appearance of many domesticates during the period 11K–8K, mainly, goats, sheep, pigs, rye, barley and lentil, and cattle.<sup>30</sup> The domestication of sheep and goats was a somewhat unique event. It was started in only one place in the world, southwest Asia, where a susceptible species of mouflon ancestor lived. The sheep (and perhaps goats) were the only animals of many available to humans at that time to be susceptible to domestication. And, one can question why domestication of animals did not occur earlier. Perhaps it points to God providing for created humans. Eventually the lamb/sheep and the shepherd/shepherds take on symbolic roles in Judeo-Christian Scripture.

Another pertinent example in the Near East is the Jericho Oasis settled in that arid area at 10.3K.<sup>31</sup> Emmer wheat and two-row barley were domesticated there and the inhabitants built round houses, walls, and a watchtower before leaving for a brief period between 9.3K and 9K.<sup>32</sup> After the reoccupation at 9K, they reduced their dependence on hunting gazelles for meat and they domesticated goats circa 8.9K.<sup>33</sup> By that time, there were many similar sites in that region.

The Ice Age and the Holocene effects in Europe were somewhat regionalized. Neanderthals had become extinct earlier. At the Glacial Maximum (22K–18K), northern Europe was covered with glaciers.<sup>34</sup> South of the glaciers, after 18K until 10.5K, *Homo sapiens* lived in the Magdalenian culture, most prevalent in southwest Europe.<sup>35</sup> The short, rather severe glaciating of the



Younger Dryas (10.8K–10.2K) had a significant cooling and drying effect on the environment.<sup>36</sup> The ensuing culture in the west, the Azilian (circa 12K–9K), showed degradation in lifestyle.<sup>37</sup> *Population levels were reduced.* There was a general decrease in quantity and quality of artifacts, and cave art ended.<sup>38</sup>

What followed from about 9K was a series of *Homo sapiens* microlithic technology sites starting from southern France, with this phase becoming widespread by 8.5K.<sup>39</sup> By 6.5K, another microlithic technology derived from Denmark was widespread (the Ertebolle). *These Homo sapiens sites, 10K–6.5K, were also characterized as small, some temporary, with a low population density implied.*<sup>40</sup>

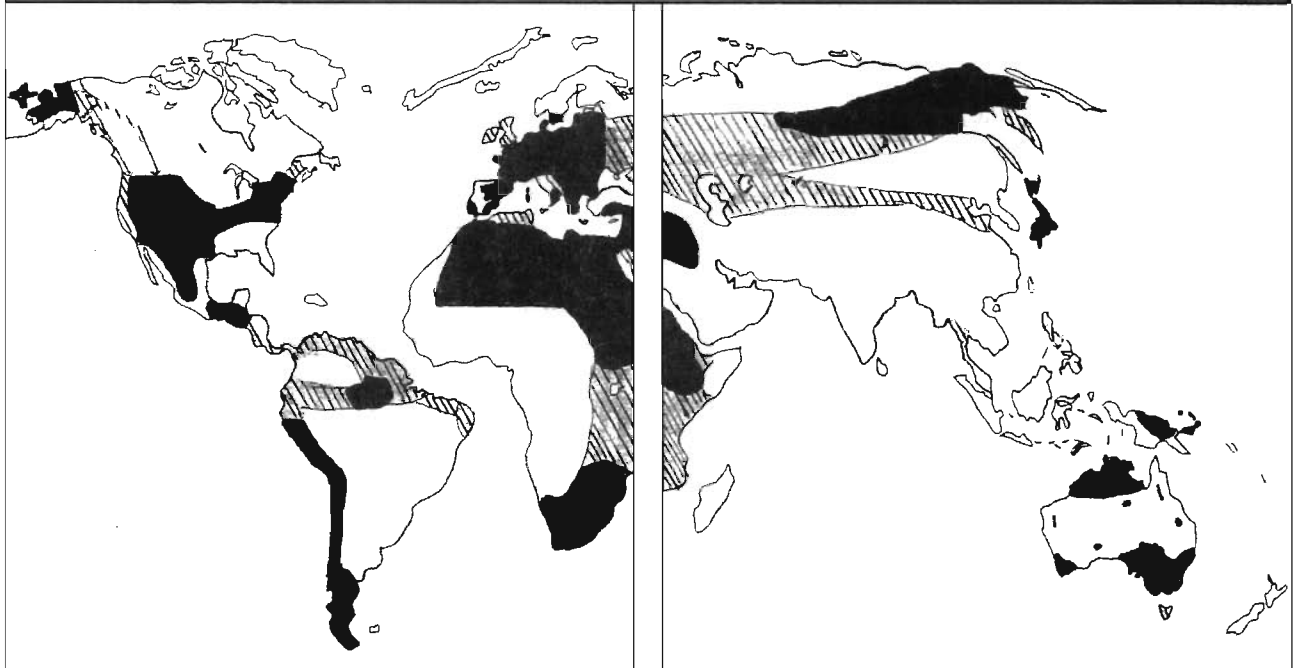
The sea level was rising and wooded areas were increasing, resulting in abrupt changes in food supply.<sup>41</sup> During this period, those who chose the coastal and river sites for marine food sources were experiencing rising water levels and in some areas probably a decline in food supply due to insufficient oxygen in the water.<sup>42</sup>

Some *Homo sapiens* had followed the reindeer north from southern France late in the Ice Age. Those who went to the Baltic area found lagoons and a fresh water glacier lake in the Gulf of Bothnia (between Sweden and Finland).<sup>43</sup> However, the sequence of events that followed

was: (1) the rising North Sea spilled into the lake; (2) the sea was shut off by rising land masses recovering from under the glaciers, allowing the formation of Ancylus Lake; (3) the North Sea eventually rose further and returned circa 7K. *The population went to nothing.*<sup>44</sup> It seems that farmers arrived in Denmark at 6.5K.<sup>45</sup>

Created humans seem to have moved into Europe beginning around 8K. Farmers spread from the Near East into Europe from Turkey and went northwest over the Great Hungarian Plain and on to the North European Plain by 6K.<sup>46</sup> Some appear to have also crossed the Mediterranean. *The earliest spread of farming into Europe in Greece, the Balkans, and the Mediterranean was probably into a relatively empty landscape.*<sup>47</sup> Crete and Cyprus also were essentially empty landscapes circa 9K. Two of the well-explored, earliest sites where created humans seem to replace *Homo sapiens* are the Franchthi Cave in Greece around 9K and the Danube gorges between Serbia and Romania (including Lepenski Vir) around 8.5K. There were several phases of development at Lepenski Vir with sheep and goats arriving at 8.5K. Sheep and goats were not indigenous to the area.<sup>48</sup> Pottery, too, was first dated from Phase 4 in the same time period, giving a second possible indication of the arrival of created humans. The Franchthi cave at the Mediterranean was originally occupied by

### ***Homo sapiens* Spread and Discontinuity Stresses**



**Blank Areas:** Generally not a significant *Homo sapiens* region 15,000 years ago.

**Black Areas:** *Homo sapiens* areas, after 15,000 years ago in the Old World and 10,000 years ago in the Americas, became stressed toward discontinuity as created humans spread around the world.

**Striped Areas:** *Homo sapiens* paths or site areas where they may have been exposed to insignificant stress from the environment.

**All Areas:** Are before the spread of created humans from the Near East.

**Note:** The world map displays today's land forms (not those of the Ice Age). *Homo sapiens* paths in southern Asia and some coastal sites in southeast Asia and Oceania are probably under water. Sites in the central Asia paths were generally widely scattered.



*A major concern when looking for discontinuity of Homo sapiens and the emergence of created humans is the origin of the Australian Aborigines. Many scholars ... believe [they] are descendants of the Homo sapiens who were there at least 50,000 years ago. Generally this conclusion is drawn from the oral transmissions of "The Dreaming" and some related art works.*

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*Homo sapiens* who were using marine food sources. Around the beginning of the Neolithic period (9K–7K), there was a rapid shift to farming.<sup>49</sup> One of a few possible explanations given is the arrival of newcomers—maybe created humans.

As the farmers eventually moved further west in Europe encountering loess soils, they developed a shifting (or swidden) cultivation, switched from sheep/goats to a mainly pig and cattle economy and settled in temporary sites seemingly adjacent to remaining *Homo sapiens* sites.<sup>50</sup> The Neolithic farmers in central Europe used the land at a site for 10–15 year cycles thus allowing soil fertility to be restored.<sup>51</sup> A few transitional sites indicate possible switching of sites after the other group abandoned. A site in south Belgium indicates a ditch used to keep out hunter/foragers. However, it is also possible the newcomers found these territories essentially uninhabited.<sup>52</sup>

The spread of pottery basically coincided with this spread of domesticated plants and animals in Europe. Clay had been first used to make objects in the Near East (10K–9K).<sup>53</sup> Meanwhile, farming was also spreading from the Near East eastward into Iraq and Iran and northeastward through Turkmenistan.<sup>54</sup> Altogether this seems to be the beginning of the worldwide spread of created man from the Near East with farming, domesticated sheep/ goats and pigs, and probably with pottery. It looks like more than a coincidence that this spread of people around the world got started in southwest Asia around 10.5K–8.5K. There are some genetic data that confirm that the ancestors of today's population also spread out from the Near East to Siberia, India, and North Africa.<sup>55</sup>

### **Southeast Asia and Greater Australia**

According to the "Out of Africa" theory, *Homo sapiens* had crossed Asia, passed southward through eastern Asia, and at least 50,000 years ago, floated to the continent of Greater Australia composed of New Guinea, Australia, and some nearby islands.<sup>56</sup> At the time of the glacial maximum, inland Australia was arid.<sup>57</sup> By 16K, a lake system in southeast Australia contained adequate water. Then in 13K, it eventually became dry, and after

13K, the river levels became low and famine and disease resulted in small isolated populations.<sup>58</sup> The *Homo sapiens'* remains indicated they became smaller and less robust. The tribes there probably reached the marginal population level for survival which is estimated to be about 500.<sup>59</sup>

*The population of Homo sapiens in New Guinea from 26K to 11K had been sparse.*<sup>60</sup> Early attempts at cultivation-drainage control there, circa 9K, resulted in malaria.<sup>61</sup>

At the end of the Ice Age, the rise of sea levels was the major ecological event in all of Greater Australia and Southeast Asia, including the separation of New Guinea from Australia at 8K.<sup>62</sup> Most Ice Age coastal occupation sites in the region are now under the seas. Lowland coastal sites at New Guinea today date back to only 4K.<sup>63</sup> *The Bismarks just north of New Guinea were unoccupied from 8K to 3.5K.*<sup>64</sup> *Homo sapiens* who inhabited the coastal areas of Australia prior to 6K experienced sea intrusion up to several hundred kilometers.<sup>65</sup> *Population realignment was significant. One hypothesis indicates that coastal populations of the Pleistocene in Australia were unable to adjust to living in the interior.*<sup>66</sup> *Homo sapiens* used canoes to travel between islands and practiced arboriculture to obtain food.<sup>67</sup> *As temperatures peaked in the Mid-Holocene, some islands experienced catastrophic drought and depopulation.*<sup>68</sup>

A major concern when looking for discontinuity of *Homo sapiens* and the emergence of created humans is the origin of the Australian Aborigines. Many scholars, who have studied Australia, believe the contemporary people labeled as Australian Aborigines are descendants of the *Homo sapiens* who were there at least 50,000 years ago. Generally this conclusion is drawn from the oral transmissions of "The Dreaming" and some related art works. Others, who also have studied Australia, do not consider the Dreaming stories to be factual sources of environmental events from hundreds of generations in the past.<sup>69</sup> Dreaming times are from an entirely different intellectual concept of time and evidence. *Homo sapiens'* remains at the Mungo site dated 62K carried an extinct genetic lineage in mtDNA that is not found in living humans.<sup>70</sup> There are further indications that today's "Aborigines" and the Dreaming stories are of more recent origin.

The uncertainty connected with the chronology of the Dreaming stories is easily understandable. Some of the sites associated with the Dreaming stories are too sacred to excavate.<sup>71</sup> Some of the Dreaming record remains secret and there is no reliable, authoritative source for all of the Aboriginal creation stories.

Those seeking to solve this mystery turn to the prehistoric rock art for illustrations of the Dreaming. Some drawings composed of abstract lines have been dated at 14.4K–13K, and others, at a different site, 10K–8K.<sup>72</sup> This was followed by drawings of large, naturalistic animals in a phase titled the Old Phase. There was an Intermediate Phase and then a Late Phase from 4K with advanced art composed of “x-ray” paintings, stick figures, and beeswax figures. The Intermediate Phase, beginning around 6K, is represented by “Rainbow Serpent” imagery of the Dreaming in Kakadu rock art along with animated battle scenes. This is seen as the beginning of a continuous religious tradition and sounds like the arrival of created humans.

One theory indicates some of the Aboriginal culture came from north of Australia across the Torres Strait.<sup>73</sup> Some of the beings in the Dreaming stories had come to the northern shores, arriving in Cape York from across the sea. Likewise, microliths arrived in Australia at 6K–5K, probably from Southeast Asia.<sup>74</sup>

Most of the rock paintings that commonly expressed Dreaming have been dated later than 6K. The Victoria River District Dreaming paintings are dated 1.4K. The painted rock shelters at Mount Grenfell and Mount Gunderbook are dated 2K and pigment art there in general has been dated 2.5K–0.5K.<sup>75</sup> Another aspect of these paintings that subtracts from their offering dependable chronology is the retouching of paintings by the Aborigines.<sup>76</sup> This retouching is influenced by periodic rejuvenation of motifs and by competing heritage values of the sites. One explanation of the motive for the Dreaming paintings is that the Aborigines feel they must maintain the images to have life on earth continue.

Created humans probably used routes similar to *Homo sapiens* through the Asian mainland to eventually go south and east toward the Pacific. Evidence of farming at 9K in India and Pakistan, and pottery from 8K in Pakistan, confirm this route.<sup>77</sup> The pottery trail goes to Spirit Cave in northwest Thailand (8.8K) and Cambodia (6K).<sup>78</sup> The trail continues eastward to central China and Hong Kong (7K), Taiwan (circa 6K–4.5K), and the Philippines (circa 3K). Continuing toward the South Pacific, pottery was in the Moh Khiew cave in south Thailand (circa 7K), Malaya (circa 6K), and Indonesia (5K–4K).<sup>79</sup> Pottery was in New Guinea by 5K–3K.<sup>80</sup>

A more direct indication of the probable arrival of created humans was the arrival of domesticated pigs. Pigs had been domesticated in the Near East before 8K, showed

up in China near Shanghai circa 7K, then in Taiwan circa 6K.<sup>81</sup> Some people of Taiwan went southward thru the Philippines. Domestic pigs were not native to the islands of the Pacific region or New Guinea, but were discovered to have been in New Guinea circa 6K.<sup>82</sup> Also by 6K, there was a major advance in agriculture in the highlands of Papua (New Guinea).<sup>83</sup> This could be the arrival of created humans there.

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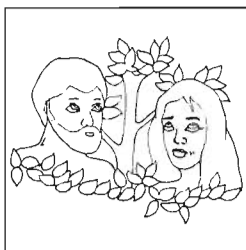
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Domestic pigs do not seem to be a factor in settlements of Australia. There were a series of regional, stone-tool-use developments in Australia over the period 7.5–2K.<sup>84</sup> *These regional changes seem to indicate abandonment or possible extinction in the north for those using unifacial and bifacial points, 7.5K–5.5K.* Microliths were next at 6K–5K. Then, the north was reoccupied by macroblade users. Finally came the widespread use of tulas which continued into the recent past. The use of microliths, probably from Southeast Asia, could indicate the arrival of created humans. In that period, environmental changes continued, resulting in highly mobile and adaptive people in new territories 6K–3K.<sup>85</sup>

While looking in Asia, we consider a special find in Japan of *Homo sapiens* pottery dated circa 12.5K. This is the earliest pottery in the world and although pottery is generally associated here in this text with created humans, this is too early to have been created humans. This pottery was designated as Jomon pottery.<sup>86</sup> However, this first pottery was very primitive, very fragile, and was recovered as only small shards.<sup>87</sup> The wall thickness was 0.5 cm or less.<sup>88</sup> Some believe this could have been the beginning of a culture that produced Jomon pottery up to historical times.

However, Jomon pottery was developed over several millennia, with a number of distinct changes.<sup>89</sup> Some say further that variations in the culture indicate Jomon may have been a mixture of cultures of different people.<sup>90</sup> The primitive 12.5K shards may have been made by a previous *Homo sapiens* culture that died out.

There was rapid warming in Japan, 12K–10K.<sup>91</sup> *Homo sapiens skeletons from 9.5K to 7K indicate that Homo sapiens were experiencing severe survival conditions.* Widespread use of microblades came to a halt and there were few sites. By 7K, coastal sites were covered by the sea.



*Created humans had come to the Americas in Alaska from northeast Asia around 8K. ... The majority of created humans entering Alaska appears to have gone directly south on the west coast of North America and most of them continued southward to Central and South America. ... [Here] we first see the evidence of farming and pottery generally associated with created humans.*

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There are indications of a new culture following this—possibly created humans. Petroglyphs dated 6.5K are like those of Ur in the Middle East.<sup>92</sup> Some form of agriculture seems to have been introduced (7K–6K) to produce green beans and gourds.<sup>93</sup> A study of the Jomon of 7K concluded that they are the ancestors of the Ainu in modern Japan.<sup>94</sup> By 6K–5K, they were using dugouts and paddles, possibly for deep sea fishing.<sup>95</sup> A major change in constructing Jomon pottery occurred in the 9K–6K period, when they began coiling ropes of clay to form pots followed by smoothing the surface.

On the Asian mainland, pottery similar to Jomon (Chulmun pottery) was developed in Korea 8K–4K.<sup>96</sup> The bifacially flaked, stemmed points similar to those that replaced microliths in Japan were found in Manchuria, dated 4.2K.<sup>97</sup>

## Americas

*Homo sapiens* had come to Alaska from Asia during the Ice Age by crossing a land bridge (Beringia) where the Bering Strait is today.<sup>98</sup> They were coming from northern Siberia where the population density remained low as the Ice Age was winding down.<sup>99</sup> They were basically hunter/gatherers and fishermen arriving in small groups. At first they encountered an almost completely glaciated northern half of North America and generally dry American continents. On the Alaskan side of Beringia and in the interior of Alaska, populations were also small. By 9K, several Beringia sites were abandoned, and the Denali complex seems to have crashed. As the *Homo sapiens* moved southward, they progressed down the western side of the continents to the southern tip of South America. In the United States, they headed eastward, south of the glaciers. A small number also eventually went eastward in South America.

Several *Homo sapiens* sites in North America are dated 12K–10K. In this time period of major changes in climate and environment came the great extinction of mammals, including mammoths, the *Homo sapiens* main food source.<sup>100</sup> This extinction is frequently blamed on overkill by the *Homo sapiens* as well as the environmental changes. As the temperatures increased in Canada and the US, there was major periodic flooding of rivers as glacier lakes formed and then dumped their flooding waters.<sup>101</sup> The tem-

perature and land form differences resulted in devastating winds and dust storms in some areas of North America up to 9.5K.<sup>102</sup>

The Holocene period brought peak temperatures progressing from northwest to northeast in North America from 10K to 4K.<sup>103</sup> The peak temperatures were above those experienced today. The prairie area between the Rocky Mountains and the Mississippi River became drier than today for a few millennia beginning circa 8K.<sup>104</sup> *Forest and grass fires were common and the interior was thinly populated.*<sup>105</sup>

*Homo sapiens* headed northward in the east into Canada following the bison and headed further north later to hunt caribou. In the Great Lakes region, there was a pause between the occupation by those Paleo Indians (*Homo sapiens*) and the arrival of the next culture—the American Archaic.<sup>106</sup> After 10K, the Paleo Indians had phased out.<sup>107</sup>

In Mexico by 8K, the Holocene had brought forests and a change in subsistence for the *Homo sapiens* there.<sup>108</sup> Paleo Indian coastal sites flooded and large fauna became extinct.<sup>109</sup> In the dry season of the El Riego Phase (9.2K–7.2K), the *Homo sapiens* probably nearly starved before the spring's new growth.<sup>110</sup>

In South America, many *Homo sapiens* archeological sites in the west were dated 13K–7K.<sup>111</sup> In Ecuador, Peru, and Chile, there was great variety of land forms and climate in the late Ice Age and the early Holocene period, resulting in dispersal of *Homo sapiens*. The ice sheets in the Andes had started to melt by 14K; by 12K, lake levels started to fall; and by 10K, temperatures were up to those of today. Large game including the mastodon and sloth (important food supplies) became extinct by 10K.<sup>112</sup> Populations became small and dispersed.<sup>113</sup> Those who went to the coastal areas where food was more plentiful were contending with thermal maximum effects of the Holocene by 8.5K–6.5K, namely sea level change, tectonic uplift, and tsunamis.<sup>114</sup> Precipitation in the southern Andes was inconsistent. A semi-continental scale volcano struck circa 7.9K and earthquakes there are common.<sup>115</sup> Diseases that evidently were present in pre-historic South America were tuberculosis, hookworm, trypanosoma cruzi, and treponemal diseases.<sup>116</sup> *Homo sapiens sites and cultures ending a little later were the Northwest Tradition*

around Las Vegas, Ecuador, at 6.6K, and the Paijan Tradition of coastal fisherman of 10K, inundated by the sea by 7K.<sup>117</sup> The Encanto Phase took over in the Anton Chillon area in Peru at 6K. In a study of the Eastern Bororo in central Brazil, there was a gap in the lithic traditions from 8.5K to 6K as the maximum temperatures arrived there.<sup>118</sup>

Created humans had come to the Americas in Alaska from northeast Asia around 8K. Near East tools were found at a site in Russia dated 9–8.5K.<sup>119</sup> The Beringia land bridge had been breeched by the rising seas circa 10K. There had been significant warming of western Alaska, 10K–8.3K.<sup>120</sup> It is believed that the ancestors of the Eskimos and Aleuts were able to cross the Bering Strait by boat.<sup>121</sup> The ancestors of the Eskimos had crossed to the Kobuck River in northern Alaska circa 8K. They were probably using boats on the Kobuk River in northern Alaska from 8.2K.<sup>122</sup>

The other probable access route to Alaska involved island hopping (in the warm Japanese current) from northern Japan that led to the Russian Kamchatka Peninsula and on to the Aleutian Islands. That intersection of the Bering Sea and the Pacific Ocean is rich in marine life.<sup>123</sup> Arrival at the northern island of Japan (Hokkaido) would have been from Russia in the north or from Korea in the south. Some created humans had taken the southern route through Asia and went north through China to Korea. The ancestors of the Aleuts settled in the Aleutian Islands at Anangula circa 8.7K.<sup>124</sup> Both the Aleuts and Eskimos used two-hole kayaks.<sup>125</sup> Both cultures basically remained in the Arctic-type region where they had developed skills unique to the region.

The ancestors of some North American Indians are genetically similar to the Chukchi on the Russian side of the Bering Strait.<sup>126</sup> From the Bering Strait in Alaska, they probably went south through the MacKenzie mountain pass to the United States where they would have encountered a difficult environment.

The majority of created humans entering Alaska appear to have gone directly south on the west coast of North America and most of them continued southward to Central and South America. It has been estimated that by the time the Europeans arrived, there were seven times as many people in Central and South America as in North America.<sup>127</sup>

Some people did remain in the northwest of North America rather than proceed further south. Maritime cultures had fully developed there circa 8K.<sup>128</sup> The art of the Nootka people there seems to have origins in the ancient Aquatic Art of eastern Asia and Oceania.<sup>129</sup> The totem pole art of the Haida there indicates origins in China and Siberia.

It is in Central America and South America that we first see the evidence of farming and pottery generally associ-

ated with created humans. The early Holocene climate and environment in North America seem to have discouraged farming there. One of the earliest evidences of farming is in Mexico. Maize (corn) had been domesticated from teosinte in the Tehuacan Valley in the Coxcatlan phase (7K–5.5K).<sup>130</sup> The Amazonian Indians cultivated manioc, perhaps as early as 7K–6K, or at least by 5K–4K.<sup>131</sup>

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*The Amazonian Indians may have been the first created humans to settle in the south in the New World. They had the earliest pottery known in the Americas (7.5K–6.5K).*

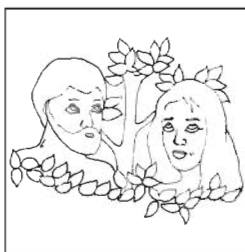
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The Amazonian Indians may have been the first created humans to settle in the south in the New World. They had the earliest pottery known in the Americas (7.5K–6.5K).<sup>132</sup> This was at a time in the early Holocene when there was a change in the size and shape of the stone tools used there, going away from the tools used previously by the *Homo sapiens*. The Amazonian Indians have evolved to appear similar to pygmies as a result of adaptation to the environment, which is common in rain forests.

Ceramics were in northern Columbia, 6.5K–5.5K, and in Panama and on the Ecuador coast circa 5.5–4.5K.<sup>133</sup> The pottery of the Initial period in Peru was dated about 4K–2.7K with examples of drinking vessels used by the rulers of an area there dated 4K–3K.<sup>134</sup> The earliest pottery in North America was discovered at Stallings Island at the Savannah River from 4.5K.<sup>135</sup> Pottery in the Woodland culture around 3K in the eastern United States was similar to Siberian and Scandinavian pottery.<sup>136</sup>

Farming was late in spreading in South America because maritime food had been abundant. Farming was added to the coastal life way there by 4K.<sup>137</sup> In the highlands of Peru, artificial niches were developed with irrigation where needed. Intense cultivation became extensive as populations grew by 3.8K. Cotton was grown by 5K and nets contributed to increased marine food yields by 4K.<sup>138</sup> Llama and alpaca were domesticated circa 5K.<sup>139</sup>

Maize farming had reached the southwest of the United States from Mexico by 4K. It spread with various adaptations along the way in the interior to become the dominant crop in far away New England by circa 1K.<sup>140</sup> By 2.5K, in the Four Corners Territory of the southwest, they were raising corn, beans, and squash, which had originated in Mexico.



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*A better indication of created humans arriving in northern Africa comes from studying the movement of sheep and goats. Sheep and goats did not originate in Africa. They arrived domesticated from the Near East. This is used as the basis for finding the possible north to south progression of created humans down into Africa beginning well before 7.5K.*

Now back to created humans who had come to the United States from Alaska via the mountain pass reaching the drying plains in the heartland. It is difficult to know what cultures were there in the early Archaic Period. The Paleo Indians had been there and seem to have gone. At the Koster site (Illinois River Valley), several occupation levels were explored.<sup>141</sup> Animal remains indicate year-round occupation as early as 7K. In Horizon 6 (5.9K–4.8K), the occupants harvested fish and ate Marsh elder, which they cultivated as early as 2.5K. Those people (created humans) were probably representative of the ancestors of today's North American Indians. Life in the Archaic Period was characterized as bands adapting to the Holocene environment utilizing local riverine sites.

Buffalo hunting was important by 6K. Tipi rings of stones were dated 5.5K.<sup>142</sup> By 2.5K, pottery was common in the Central Plains.<sup>143</sup> The Archaic Period had been a difficult environment. In the North Black Mesa study area in Arizona, there were seven Archaic sites in 5,000 years, and in the following pottery and agricultural phase—Basketmaker II—there were 120 sites in 300 years.<sup>144</sup>

Both pottery and farming by created humans were common across the United States where mounds are found. A famous large geometric mound was found at Poverty Point in Louisiana.<sup>145</sup> This was a trade center settlement (3.2K–2.5K) with three types of pottery. The mound builders were the ancestors of the modern Indian tribes.<sup>146</sup> They hunted buffalo and by 2.5K, were using bows and arrows.<sup>147</sup>

## Africa

Some of the *Homo sapiens* remained in Africa after the glacial maximum. In northeast Africa, an area dominated by the Nile River, *Homo sapiens* had occupied the wetlands for the generally dry 8,000 years approaching the end of the Ice Age.<sup>148</sup> Then in 12.5K, in the so-called "Wild Nile" flood, the Nile River destroyed its own lower valley wetlands. *In the Nile Valley, there were no significant sites then to almost 8K.*

In north central Africa, Lake Chad was almost completely dry until 13K.<sup>149</sup> By 10K, the unity of the Iberomaurusian *Homo sapiens*

*had broken down in northern Africa. In the Sahara desert before 9K, there were only small groups of nomads except for the great oases.* An astounding African rainfall period occurred that caused the sudden greening of the Western Sahara desert from 10K to 7K.<sup>150</sup> Just as astounding were drought periods there circa 8K and 5K.<sup>151</sup> In eastern Africa at 10K, below the Nile at Kenya, Lake Turkana rose to 80 meters above the current level, covering twice the current surface area.<sup>152</sup>

*In South Africa, late Pleistocene microlithic assemblages were low density (40K–12K).<sup>153</sup> As the sea level rose, coastal fauna were affected.<sup>154</sup> By 9.5K, the giant buffalo, southern springbok, and cape horse all became extinct.<sup>155</sup>*

Many infections started in Africa, such as malaria, yellow fever, and trypanosomiasis.<sup>156</sup> Parasites there resulted in anemia.<sup>157</sup>

There are several long-term sites in southern Africa. They are mostly stratified caves and rock shelters where occupation extends well back into *Homo sapiens* times and into more recent times. Artifacts are essentially limited to those of stone.<sup>158</sup> For example, at Nelson Bay Cave on the southern cape, there is a *Homo sapiens* stratum (19K–12K) containing Nachikufan microliths and a Wilton microlith stratum near the entrance dated 2.9–1.9K.<sup>159</sup> Some of the Wilton microlith-industry people (we will confirm in later text) seem to have been created humans. They had come down into southern Africa through Zimbabwe and southern Namibia after 8K.<sup>160</sup> It seems reasonable to accept that the later stratum could have been created humans utilizing this popular multi-strata shelter.

Created humans coming from the Near East would be expected to come into Africa in the north—apparently from the Mediterranean as well as through Egypt. Although skeleton evidence in Africa is rare and difficult to categorize, there are indications that people in northwest Africa came from across the Mediterranean Sea. Skeletons at Haua Fteah in Libya from as early as 10K appear to be related to Mediterranean peoples.<sup>161</sup> These skeletons related to Capsian cultures, seem to be mixed with skeletons from an earlier Mechta-Afalou culture (*Homo sapiens*). A typical Capsian site near the border of



Algeria and Tunisia has been dated 8.5K. A rock painting dated probably 10K–4K at the border area of Algeria and Libya depicts cattle domestication.<sup>162</sup>

A better indication of created humans arriving in northern Africa comes from studying the movement of sheep and goats. Sheep and goats did not originate in Africa.<sup>163</sup> They arrived domesticated from the Near East.<sup>164</sup> This is used as the basis for finding the possible north to south progression of created humans down into Africa beginning well before 7.5K.

In addition, the chronological progression of pottery sites in Africa also follows a generally north to south pattern. Pottery in the Sahara at 9.6K is generally accepted as the first in West Africa.<sup>165</sup> The Saharan pottery has been associated with new inhabitants at 10K and was not from the indigenous Aterian industry.<sup>166</sup> By 8K, that pottery showed affinity to the pottery across the Mediterranean.<sup>167</sup>

In the table below titled “African Trends,” the north to south progression of herding sheep/goats and of pottery discoveries is shown by listing relevant African sites vertically with northern sites at the top. A few latitude references are included. The southward progression of sites is divided between east and west because the progression appears to have taken place in essentially independent tracks in the east and west halves of the continent.

Khartoum is a very often-mentioned site in Sudan associated with early pottery (wavy line) and later phase

pottery (impressed dots).<sup>168</sup> The original population (circa 10K) has been classified as Negroid, harpoon fishermen and was *Homo sapiens*.<sup>169</sup> The early pottery probably came from southern Libya (9.5–8.5K) in the west. (Sudan and Libya are early, northern sites in the east and west sides respectively in the African Trend table.) This arrival of pottery could indicate created humans arriving at Khartoum. At Esh Shaheinab (just north of Khartoum and considered related to early Khartoum), beads were found (probably from Chad) with remains of goats.<sup>170</sup> *Homo sapiens* and created humans may have both been in adjacent areas of East Africa for a few millennia after 9K. By 6K, the later pottery phase was established along with farming.<sup>171</sup>

Another possible indication of created humans in Africa was found at the Fayyum Depression in northern Egypt. An arrow manufacturing technology used there (8K–7K) came forward into Egyptian dynasties.<sup>172</sup> This was the site of the first Egyptian agriculture at 7K like that previously in Asia at 9K.<sup>173</sup> By 6.5K, the southwest Asian group of domesticates was there.<sup>174</sup>

A different aspect of prehistoric Africa is the origin of the variety of people there now in historic times. Determination of origins is hampered by the severe lack of late Stone Age sites.<sup>175</sup> A variety of origin conclusions have been reached over the years and more recent studies of language sources and DNA patterns have helped to draw more conclusions, but work continues. From the standpoint of created humans arriving in Africa, current people

| AFRICAN TRENDS                   |      |                                 |        |                                  |        |                                 |      |
|----------------------------------|------|---------------------------------|--------|----------------------------------|--------|---------------------------------|------|
| Herding—Sheep/Goats              |      |                                 |        | Pottery                          |        |                                 |      |
| West                             |      | East                            |        | West                             |        | East                            |      |
| El Khril, Morocco <sup>176</sup> | 8K   | Kharga, Egypt <sup>177</sup>    | c.9K   | El Khril, Morocco <sup>178</sup> | 8K     | —                               |      |
| Haua Fteah, Libya <sup>179</sup> | 8K   | Afayeh, Egypt <sup>180</sup>    | c.5K   | Acacus, Libya <sup>181</sup>     | c.9K   | —                               |      |
| Acacus, Libya <sup>182</sup>     | 7K   | —                               |        | Niger <sup>183</sup>             | 9.6K   | —                               |      |
| 20° North                        |      |                                 |        |                                  |        |                                 |      |
| Ghana <sup>184</sup>             | 3.8K | Kadero, Sudan <sup>185</sup>    | c.6.5K | Nigeria <sup>186</sup>           | 6.5K   | Sarourab, Sudan <sup>187</sup>  | 9.3K |
| —                                |      | El Bor, Ethiopia <sup>188</sup> | 5K     | Cameroon <sup>189</sup>          | c.7K   | Kadero, Sudan <sup>190</sup>    | 6.5K |
| —                                |      | Ileret, Kenya <sup>191</sup>    | 4.5K   | —                                |        | Shabona, Sudan <sup>192</sup>   | 7.5K |
| —                                |      | —                               |        | —                                |        | El Bor, Ethiopia <sup>193</sup> | 5K   |
| —                                |      | —                               |        | —                                |        | Ileret, Kenya <sup>194</sup>    | 4.5K |
| Equator                          |      |                                 |        |                                  |        |                                 |      |
| —                                |      | —                               |        | Zaire <sup>195</sup>             | c.2.5K | —                               |      |
| 10° South                        |      |                                 |        |                                  |        |                                 |      |
| Namibia <sup>196</sup>           | 2K   | —                               |        | Angola <sup>197</sup>            | c.2K   | Zimbabwe <sup>198</sup>         | 2.1K |
| —                                |      | —                               |        | S.Cape Coast <sup>199</sup>      | c.2K   | —                               |      |



*The fact that those first civilizations grew out of the farming settlements seems to indicate another leap in culture in just a few millennia. That was not characteristic of Homo sapiens and indicates those people were created humans with sophisticated language abilities (syntax).*

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there must be the result of adaptation of created humans to their new environment in Africa.

The "African Trends" Table indicates a north to south movement of created humans from northern Africa toward the equator in the west and east sides of Africa. Dark skin is an example of natural selection which is responsive to sun exposure, which in turn, increases approaching the equator.<sup>200</sup> We go to the west side of Africa to find the origin of the major Negroid inhabitants of Africa, the Bantu speakers. They had come from the Near East and were herders and probably farmers as well, living in the Sahara around 7K. They were tending long- and short-horned cattle as well as sheep/goats.<sup>201</sup> There are indications of fighting—there may have been some *Homo sapiens* still there seeking food. The period, 6.5K–4.5K, was considered a wet period for those herders.<sup>202</sup>

The tsetse fly prevented any southward movement until 4.5K. When dryness extended southward, the tsetse had to move southward below the newly dry area. The herders then also moved southward staying north of the tsetse but nearer the equator. The herders occupied the area just north of the Niger River. The Bantu-speaking people became farmers in West Africa below the Sahara after the 5K drought in the Sahara.<sup>203</sup> They became the major Negroid inhabitants of Africa, developing farming across the continent to the east and south from 3K, and then southward in the east from 2K to 1K.<sup>204</sup> Their farming technology and sustaining yam crops gave them success in supplanting other peoples as seen in Zaire at 3K.<sup>205</sup> Other created humans, Negroid groups, probably evolved independently in the east side near the equator.

The pygmies have adapted to the African equatorial rainforest. Other pygmies are found at similar geographic and climatic sites around the world.<sup>206</sup> This seems to indicate an established adaptation of created humans to those particular environments. For example, the Bantu speakers who went into that African forest showed pygmy characteristics in just a few centuries compared to those Bantu in the savanna.<sup>207</sup>

The well-known San of South Africa are representative of one type of Khoisan people in Africa. Some feel they have *Homo sapiens*

ancestors before 10K.<sup>208</sup> That conclusion is generally based on ethnographic studies of recent San, indicating a continuous hunter/gatherer life-style of periodically gathering and dispersing, and on conjecture concerning African rock art. However, it is likely that the paintings that possibly depict San belief systems and rituals were produced in the past few thousand years. Many earlier artifacts discovered in South Africa are naturalistic paintings of animals and geometric or schematic motifs, typical of *Homo sapiens*, and probably irrelevant.

A different approach (that from created humans) to San origins can be found in the Wilton people, who arrived in South Africa. There is a genetic similarity between Khoisans and West Asians.<sup>209</sup> Some of the Wilton industry people went down into southern Africa through Zimbabwe and southern Namibia after 8K.<sup>210</sup> Some of these people in the mid-Holocene (circa 4K) were known to practice seasonal aggregation and dispersal and reciprocal gift exchange, characteristic of the San.<sup>211</sup> The Wilton industry people could have been the created humans' ancestors of today's San. The San were in southern Zambia in 4K where reliable skeleton artifacts at Gwisho Hotsprings confirm the Khoisan presence there circa 5K–3K.<sup>212</sup> The San have moved further south since then to the Kalahari in Botswana. The Khoi, a taller version of the Khoisan people, began a practice of pastoralism with sheep at 2K in south Africa.<sup>213</sup>

### **Developed Neolithic or Emergence of Created Man and Created Woman?**

Archaeologists named the period after 11K the New Stone Age—believing that *Homo sapiens* hunter/gatherers, after 45,000 to 100,000 years as biologically modern man, turned to farming and herding settlements. The Near East is recognized as the starting place for this drastic cultural change and the spread around the world in less than 10,000 years.

The primary requirement for the first farming of various crops around the world was the presence of an indigenous forerunner (wild) plant.<sup>214</sup> The Bible indicates the

belief that God provided those wild plants. This is indicated in Gen. 1:29 and 3:17–19. God sent humans out from Eden to toil in the fields and gave created humans every seed-bearing plant on the face of the earth. Then Isaiah tells of God teaching the farmers and indicates God was assisting the founders of animal domestication (Isa. 28:26). Jesus indicates in Mark 4:26–29 that the wheat crop grows from the soil but (like the Kingdom of God) they do not know how.

The second most important requirement for farming was a settled community. This necessity eventually led to the world's first civilizations in the Near East, China, and Egypt; followed by Europe; then Central and South America. It was wheat farming, beginning in the Near East and extending into Egypt and Europe. Rice farming went from Pakistan (around 9K) on the way to China.<sup>215</sup> Corn was domesticated in Mexico (7K–5.5K) and beans and manioc domesticated in South America (6K). The fact that those first civilizations grew out of the farming settlements seems to indicate another leap in culture in just a few millennia. That was not characteristic of *Homo sapiens* and indicates those people were created humans with sophisticated language abilities (syntax).

In other areas of the world, development of civilizations was delayed by the environment. In Africa, domesticated sheep/goats (and perhaps cattle) were the first choice of created humans. In North America, created humans encountered a harsh environment in the Archaic Period with farming developing late. Corn domesticated from Teosinte for farming in Mexico was carried by farmers to the southwest of the United States around 4K. Maize arrived in the Midwest in the Hopewell area by 2K–1K.<sup>216</sup> It was eventually hybridized to grow in New England by 1.2–1.1K.<sup>217</sup> Created humans had utilized domesticated pigs in the South Pacific. Farming was not developed in Australia until 4K–3K.

## Seeking the Creator Spirit

Perhaps the most decisive indication that it was created humans who repopulated the earth comes eventually in the Developed Neolithic Period. It is seen in created humans' intuitive quest for God and spirit. The more settled lifestyle of farmers and herding bands led to their expressing their thoughts in various art forms. Their art predominantly expressed a relationship with a provider spirit, thus distinguishing created humans from *Homo sapiens*.

On the following page is a tabulation of those artifacts showing recognition of a spiritual world. These examples are taken from the first known artifacts (after 11K) to express an acknowledgment of a spiritual world in a particular region. The spread of these art and worship forms follows the spread of created humans around the world after 10K. In general, the artifacts and beliefs represented were spirit-evoking figurines and idols, shamanistic seek-

ing of favors from the spirits, using masks, etc., worship of pantheons of gods, worship of or through human deities, and religious writings in historic times, including the early books of the Old Testament. From the period, 4.6K to 2.6K, in what could be called here the birth of religions outside of the Near East, there are art artifacts that indicate places of worship in chapels and temples in Europe, and the advent of Greek gods. At the same time, the Vedas religious hymns of India were among the earliest writings.

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*Perhaps the most decisive indication that it was created humans who repopulated the earth ... is seen in created humans' intuitive quest for God and spirit.*

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The Bible, too, refers to the various attempts by humans to gain access to spirits other than Yahweh in the Near East. The Genesis Flood indicated God's anger at the way created humans' free-will response had gotten off to a bad start. In the Exodus from Egypt (3.3K), some of God's chosen people fell into worshiping idols and foreign pantheons, and it happened again in the Kingdoms after Solomon. The Ten Commandments had been God's first universal guide to help wayward created humans to understand what was necessary for all people to live peacefully together and enjoy his creation.

The map, "Spiritual Artifacts After 11K" (p. 211), shows the sites of the first art and worship artifacts found in a region after 11K, taken from the previous tabulation. The map emphasizes the location and the date of the artifacts. The timing sequence of the first spiritual artifacts generally follows the arrival of created humans around the world. It seems unlikely that *Homo sapiens* around the world would begin expressing those spirit manifestations in such a pattern.

There are at least two examples where worship of spirits after 11K is seen by some to connect back to *Homo sapiens* Ice Age art. Some see a commonality of thought in the recent symbols in bull worship and goddesses with the symbols in Ice Age art. It has, however, been concluded that we will probably never understand the reason or motivation for *Homo sapiens* animal, cave art.<sup>218</sup> The bull cult found at Çatal Hüyük (Turkey: 9K–8K) is cited, but indications are that the cult was based in goddesses and bull spirits to assure fertility among their domesticated cattle.<sup>219</sup> Worship of bull spirits also occurred later in Egypt and Crete where domesticated bulls were again involved.<sup>220</sup> This dependence on spirits for fertility among

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| SPIRITUAL AND WORSHIP ARTIFACTS AFTER 11K (First in the Region) |                                  |   |
|---|----------------------------------|---|
| Date  | Location                         | Artifact  |
| 10–8K   | Acacus—Algeria                   | Rock painting (Masked dancer) <sup>221</sup>  |
| 9–8K  | Jericho                          | Reconstructed skulls (Spirit in head) <sup>222</sup>  |
| c. 9–6K   | Remigia, Spain                   | Rock painting (Ritual dance) <sup>223</sup>   |
| c. 8.7–8.2K   | Jordan                           | Plaster human figures (Religious ceremonial burial) <sup>224</sup>                            |
| 8.5K  | Çatal Hüyük, Turkey              | Figurines (Fertility goddess)<br>Wall painting and sculpture (religious rites) <sup>225</sup> |
| c. 7K   | Lepenski Vir, Yugoslavia         | Mask (fertility cult?) <sup>226</sup>   |
| 6.5K  | Japan                            | Petroglyph (worship inscriptions) <sup>227</sup>  |
| 6K  | Carnac-Brittany, France          | Miles of great single stones (considered religious symbols) <sup>228</sup>                    |
| c. 5.1K   | Egypt                            | Palette of Narmer (works of the gods) <sup>229</sup>  |
| 5K  | Iraq                             | Priest-King inscriptions <sup>230</sup>   |
| 5K  | Urals, Russia                    | Masks (represent sacred spirits) <sup>231</sup>   |
| 5K  | Kamchatka Pen., Russia           | Eskimo—masks (ceremonies for blessings) <sup>232</sup>  |
| c. 5K   | Malta                            | Temples, a goddess and an altar <sup>233</sup>  |
| 4.6–3.1K  | Cyclades near Crete              | Marble Idols <sup>234</sup>   |
| c. 4.2K   | Indus Valley                     | Priest-Kings <sup>235</sup>   |
| 4K  | Stonehenge, England              | Sacred place related to astronomy <sup>236</sup>  |
| c. 4K   | India                            | Vedas hymns <sup>237</sup>  |
| c. 4K   | Capetown and Namibia             | Ornamented human figures <sup>238</sup>   |
| 3.9K  | Northwest Australia              | Wandjina rock paintings—helpful spirits <sup>239</sup>  |
| c. 3.5K   | Near East                        | Pentateuch (Old Testament)  |
| c. 3.5–3K   | Shang Dynasty, China             | Divination inscriptions on bronze vessels,<br>Oracle bones and tortoise shells <sup>240</sup> |
| c. 3.5K   | Mexico                           | Clay figurines (extended rituals) <sup>241</sup>  |
| c. 3.4K   | Tiryus, Greece                   | Greek god (legendary birthplace for Hercules) <sup>242</sup>                                  |
| 3.3–3K  | Islands of Torres Straits        | Art for food supply rituals <sup>243</sup>  |
| c. 3K   | Adena-Hopewell, US               | Various art suggests strong religious beliefs <sup>244</sup>                                  |
| 2.9K  | Nigeria                          | Clay faces and figures (Ancestor worship) <sup>245</sup>                                      |
| 2.8K  | Peru                             | Sculptured gods <sup>246</sup>  |
| c. 2.8K   | Alaska and Greenland             | Ivory Masks (probably Shaman) <sup>247</sup>  |
| c. 2.6K   | Central Italy                    | Temple (home of deity) <sup>248</sup>   |
| c. 2.5K   | Russia (near Kiev)               | Clay idols <sup>249</sup>   |
| c. 2.2K   | Mauryan Empire, India            | Buddhism inscriptions <sup>250</sup>  |
| c. 2.2K   | Denmark (from southeast Europe?) | Silver vessel; Celtic deities <sup>251</sup>  |
| 2K  | Pueblo—Southwest US              | Painted murals (rain spirits) <sup>252</sup>  |
| 1K  | Mali                             | Terracotta figures (evoke ancient divinities) <sup>253</sup>                                  |
| 0.5–0.3K  | New Zealand                      | Carvings and Pendants (protect and guide) <sup>254</sup>                                      |

domesticated animals could not have been a motivation for animal, cave art long before 11K.

The other example is the worship of goddesses after 11K. Here again, like animal cave art, there have been many meanings proposed for the pre-11K sculptures and engravings of naked women. Arguably the most common meaning now proposed is association with lunar and female cycles based on the female figure at Toussel.<sup>255</sup> It seems like the most convincing aspect tying those earlier female figures to later goddesses is the name itself given to them—"goddess" or "Venus" (as in the Venus of Willendorf). The goddesses after 11K were clearly worshiped where they were perceived to have powers over various aspects of nature.<sup>256</sup> We have no way to know of any such worship relationship for the pre-11K figures.

## DNA

DNA studies have led to some pertinent conclusions. One observation is that humans today exhibit less DNA diversity than many other species.<sup>257</sup> Chimpanzees are ten times more diverse than humans.<sup>258</sup> A study of men's Y-chromosomes indicates essentially no variation among men. These have been interpreted to mean either we have mixed geographically more than other species or that we have not been around as long. The latter conclusion is taken to support the "Out of Africa" theory that *Homo sapiens* from Africa became our ancestors within the last 200,000 years.<sup>259</sup> Looking outside of the box, we might say lack of diversity among humans today indicates a relatively

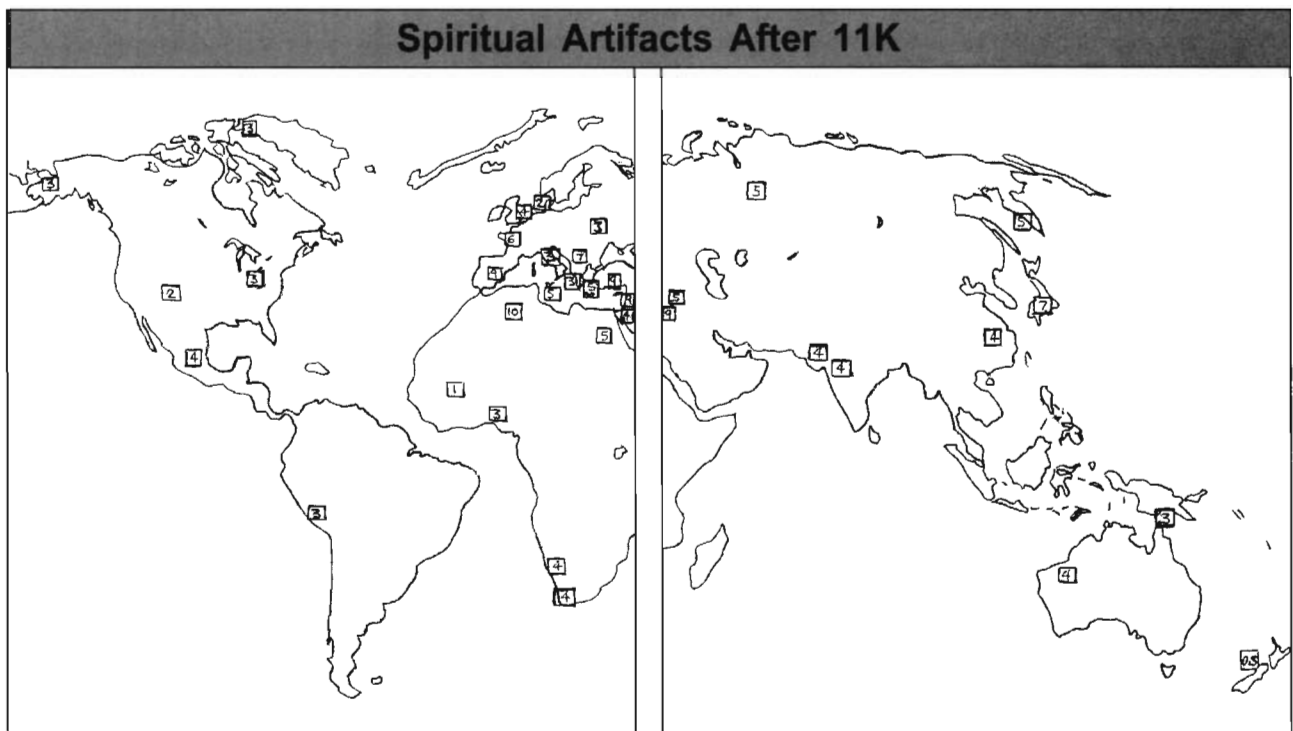
recent creation of a new species (created humans who have a different rate of evolution).

Another DNA observation is that today's Africans exhibit greater diversity than do other humans.<sup>260</sup> This is generally interpreted to also support the "Out of Africa" theory because the African *Homo sapiens* were the first and, therefore, oldest and most diverse. On the other hand, those that live in small groups exposed to considerable ecological stress from the environment can develop greater diversity by natural selection and genetic drift.<sup>261</sup> Although farming was eventually practiced in Africa, that continent continued without centralized systems and had low population densities in many areas until recently.

In the Holocene period, drastic changes in moisture followed by continuously arid desert areas resulted in shifting populations and a prevalence of seasonal sites calling for a hunter/gatherer life style into very recent times. In a graphic view of genetic distances, African cultural subdivisions are shown to be more distant from one another than the distance between many other recognized population groups around the world.<sup>262</sup>

## The Future

It seems it is time for open discussion and evaluation concerning the theories for the origin of humans over the last 10,000 years. The scientific explanations for origins covering the last 50,000 years have been open to conjecture because the development of humans was grossly different from evolution in the previous millions of years.



**Note:** The number in the box indicates the approximate date of the artifact in thousands of years before the present. The artifacts are listed in the table, "Spiritual and Worship Artifacts After 11K" (the earliest artifacts found in the region).



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Many scientists are reluctant to consider the supernatural in their theories because they do not consider the supernatural to be science. Other scientists are exposing and questioning this barrier and presenting a hybrid science of origins.

New data for prehistory from archaeological sites and new DNA analyses will be forthcoming. This theory may be useful in interpreting future information. Our God is in the details. ●

## Notes

- <sup>1</sup>The New International Version of the Bible (NIV) has been used for the scripture references.
- <sup>2</sup>Conrad Hyers, "Biblical Literalism: Constricting the Cosmic Dance," in *Is God a Creationist? The Religious Case Against Creation-Science*, ed. Roland Mushat Frye (New York: Charles Scribner's Sons, 1983), 100-2.
- <sup>3</sup>Richard E. Leakey, *The Origin of Humankind*, Science Masters Series (New York: Basic Books, 1994), 79.
- <sup>4</sup>Roger Lewin, *The Origin of Modern Humans* (New York: Scientific American Library, 1998), 139-59.
- <sup>5</sup>Steven Mithen, *The Prehistory of the Mind: The Cognitive Origins of Art, Religion and Science* (New York: Thames and Hudson, Inc., 1996), 42, n. 22.
- <sup>6</sup>William Henry Green, "Primeval Chronology," in *Bibliotheca Sacra*, 47 (1890): 285-303.
- <sup>7</sup>Colin Tudge, *The Time Before History: 5 Million Years of Human Impact* (New York: Scribner, 1996), 289; and John H. Relethford, *The Human Species: An Introduction to Biological Anthropology*, 3rd ed. (Mountain View, CA: Mayfield Publishing Company, 1997), 439.
- <sup>8</sup>Relethford, *The Human Species*, 439.
- <sup>9</sup>Walter Bodner and Robin McKee, *The Book of Man: The Human Genome Project and the Quest to Discover Our Genetic Heritage* (New York: Scribner, 1995), 153-6.
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# Article

## Seeking the Emergence of Created Man and Woman

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- <sup>225</sup>Cole, "Animals of the New Stone Age," 32; Purushottan Singh, *Neolithic Cultures of Western Asia* (New York: Seminar Press, Inc. 1974), 98; and Sonia Cole, "Animals of the Stone Age," in *Animals in Archaeology*, ed. A. Houghton Brodrick (New York: Praeger Publishers, Inc., 1972), 32.
- <sup>226</sup>Constable, *The World Atlas of Archaeology*, 124–5.
- <sup>227</sup>Fu, "Asia," 766.
- <sup>228</sup>Tansey and Kleiner, *Gardner's Art*, 38; and Glyn Daniel, *The Megalith Builders of Western Europe* (Baltimore, MD: Penguin Books, 1962), 15.
- <sup>229</sup>Monica Blackmun Visona, "Lands of the Nile: Egypt, Nubia and Ethiopia," in *A History of Art in Africa*, 51–2.
- <sup>230</sup>Collon, *Ancient Near Eastern Art*, 48–51.
- <sup>231</sup>Douglas Fraser, *Primitive Art* (Garden City, NY: Doubleday & Company, Inc., 1962), 92, 288, 307–12.
- <sup>232</sup>*Ibid.*, 46–52.
- <sup>233</sup>Constable, *The World Atlas of Archaeology*, 116–7.
- <sup>234</sup>Janson, *History of Art*, 67–70.
- <sup>235</sup>Constable, *The World Atlas of Archaeology*, 128–9.
- <sup>236</sup>John North, *Stonehenge: A New Interpretation of Prehistoric Man and the Cosmos* (New York: The Free Press, 1996), 519; and Tansey and Kleiner, *Gardner's Art*, 38–9.
- <sup>237</sup>Tansey and Kleiner, *Gardner's Art*, 468–9.
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- <sup>239</sup>Mulvaney and Kamminga, *Prehistory of Australia*, 391–405 (see n. 57).
- <sup>240</sup>Hugo Munsterberg, *Symbolism in Ancient Chinese Art* (New York: Hacker Art Books, 1986), 19, 30–1, 34.
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- <sup>257</sup>Relethford, *The Human Species*, 340–1 (see n. 8).
- <sup>258</sup>Bodner and McKee, *The Book of Man*, 153, 157 (see n. 9).
- <sup>259</sup>Leakey, *The Origin of Humankind*, 89–90 (see n. 3); and Cavalli-Sforza, *Genes, Peoples and Languages*, 78–80.
- <sup>260</sup>Relethford, *The Human Species*, 341 (see n. 8).
- <sup>261</sup>*Ibid.*, 69–83.
- <sup>262</sup>Cavalli-Sforza, *Genes, Peoples and Languages*, 89.

## Upcoming ASA Conferences

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## Article

*Science and the Mystery of the Human Person*

# Science and the Mystery of the Human Person

Thaddeus J. Trenn



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*It is my contention that the essential spiritual nature of the human person quite transcends the secular domain, being irreducible to space-time biophysical components or considerations.*

*"Traveling with haste, in the unerring security which transcends all objects, instructed by the Spirit Who alone can tell us the secret of our individual destiny, man begins to know God as he knows his own self. The night of faith has brought us into contact with the Object of all faith, not as an object but as a Person Who is the center and life of our own being, at once His own transcendent Self and the immanent source of our own identity and life."<sup>1</sup>*

**W**ith these poignant words, Thomas Merton concluded his mature book entitled *The New Man* dedicated to the exigent need for clarification regarding the mystery of the human person. Put plainly, we simply do not and cannot know who we really are in the eyes of God. My main reason for writing this communication is to help dispel the darkness of secular humanism that easily tends to stifle a deeper appreciation and understanding of who we really are.

As the title suggests, the salient issues concern the mystery of the human person in light of modern neuroscience. A secular humanist approach to neurophysiology would attempt to capture the human person primarily in physicalist terms. Neuropsychology would be similarly restricted concerning transcendent levels of human consciousness.

I offer an alternative perspective about the mystery of the human person closely allied with that which Merton has so eloquently expressed. It is my contention that the essential spiritual nature of the human

person quite transcends the secular domain, being irreducible to space-time biophysical components or considerations. Nevertheless, during its incarnational sojourn, the human person is capable of expressing self through physically familiar and scientifically detectable space-time categories of behavior. In other words, "soulish" expressions would be expected and manifested in detectable somatic ways. However, the *innermost* essence of the human person must be sought elsewhere, viz in the *authentically eternal* spiritual soul that is embedded with Christ in God. Accordingly this *quintessential* aspect of the human person remains totally unbeknownst to most and inherently beyond the scope of any form of physicalism. As well, this alternative view faithfully reflects the intricate nature of the "whole person" who is created in the image and likeness of God so *potentially* shares the divine capacity for deep interpersonal love.

The essential nature of any human person, as a child of God by *adoption*, accordingly *reflects* the image and likeness of the one eternal God who is Love. At the very least, the one eternal God must be *authentically eternal*. This stands in contrast with the secular view of eternity construed as endless time, for we are dealing with that which transcends time altogether.<sup>2</sup> Accordingly this also implicates and entails the dual nature of the Son of God, Jesus Christ. As Son of God not by adoption but in virtue of his divine nature this same Jesus Christ also became "Son of Man" through whom God himself

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deigned to dwell incarnationally with *all* humanity. As Christians we celebrate his coming as Emmanuel. This is a key part of the "Good News" of Christianity. Although it may seem to be shockingly simple, the "rest of the story" is that every human person, in virtue of being created in the image and likeness of God, is also *authentically* eternal. Though the human person can be partially *expressed* in somatic terms, the essential human person cannot be exclusively described as a function of genetic disposition. This conclusion, standing in stark contrast with the dominant vision of secular humanism, has profound implications vis à vis the mystery of the human person.

### Living Eternity Is Not Merely Living "Forever"

In the first instance, this alternative perspective has serious implications for the eternal life of the human person. All too often this topic is discreetly deferred to the "end" of our physical life, almost as if it were taboo. Indeed, from the trans-humanist perspective, it ought to be within the purview of medical science to "fix" this untoward "departure problem" by lengthening physical life indefinitely. Yet Christianity is all about developing a mutual loving relationship between human persons and the eternal living God who constantly yet dynamically dwells within our earth-based midst! How else, pray tell, could human persons *relationally* "connect" with God except upon a mutually shared basis? Although reason may fail us here, it is by faith that we are assured that the living God "dwells within us."<sup>3</sup> Scripture concurs: "If a man loves me, he will keep my word and my Father will love him, and we will come to him and make our home with him" (John 14:23). Paul reminds us that "we have this treasure in earthen vessels, to show that the transcendent power belongs to God and not to us" (2 Cor. 4:7), for the actualization of this potential indwelling presence is "so that the life of Jesus may also be manifested in our bodies" (2 Cor. 4:10b).<sup>4</sup> Unfortunately, human weakness and ignorance easily divert us from gaining a clear appreciation of Christ's poignant mandate that even "as you did it to one of the least of these my brethren, you did it to me" (Matt. 25:40).<sup>5</sup>

As already mentioned, all this remains fraught with conventional misunderstanding about "authentic eternity" in general, whether applied to God or human persons. Variations of classical secular viewpoints from the Greeks, dealt with by Augustine and the later Scholastics, remain entrenched today in spite of a radically bifurcated understanding of "until the end of time." Eternal life is not a boringly endless recycling of the familiar but a complete state of full existence that, due to the poverty of language, might be provisionally expressed as *present moment NOW-ness*. Yet this must also be the very same type of NOW by which the one eternal God is "ever present" to the space-time universe, perhaps like in that single-point

"osculating" fashion suggested by C.S. Lewis whereby our time-line touches the "sphere" of eternity. God, in his unlimited wholeness thereby continues to sustain his creation even as it unfolds within the confines of its ongoing, evolving space-time frame.

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Amazingly, this "fullness of time," construed as the present moment NOW, can sometimes be *experienced*, if only vaguely, by human persons while living in space and time. This experience might take the form of in-breaking manifestations perhaps in "deep awareness" of the "Beyond Within." As noted above, human persons do inherently bear a latent capacity for eternal life, usually unbeknownst to themselves, even while they continue to live in space and time. But rarely is this dual capacity evoked in physical life, and even then only with great difficulty.

Writing of such experiential duality, Henri Nouwen briefly described his personal experience of what he could only term "living eternity" even while remaining earth-bound. Reflecting upon his serious surgery in the early 1990s, and fully expecting to die as a result, Nouwen suddenly awoke to a quite unfamiliar way of consciousness and thinking.

It was only in the face of death that I clearly saw — and perhaps only fleetingly — what life was all about. Intellectually, I had understood the concept of dying to self, but in the face of death itself it seemed as if I could now grasp its full meaning.<sup>6</sup>

Until now I have been thinking and speaking from time into eternity, from the passing reality toward a lasting reality, from the experience of human love to the love of God. But after having touched "the other side," it seems that a new witness is called for: a witness that speaks back to the world of ambiguities from the place of unconditional love. This is such a radical change that I might find it very hard, yes even impossible, to find the words that can reach the hearts of my fellow human beings.<sup>7</sup>



## Article

### *Science and the Mystery of the Human Person*

*It is possible for  
a human person  
to "live eternity"  
by entering  
deeply into  
a state of  
contemplation ...  
The "core"  
human person is  
eternally linked  
with Christ,  
potentially in  
a veritable  
existential  
I-Thou  
relationship.  
This relationship  
is hidden, hence  
not something  
that can be  
discovered by  
scientific  
acumen.*

What is at stake here is a way of being in the truth that tries less to persuade than to demonstrate. It is the way of witness. I must remain on the other side while being sent back. I have to *live eternity* while exploring the human search in time.<sup>8</sup>

All of this manifests a "dual" modality of existing very difficult for anyone to apprehend much less maintain, since opposing gestalts are involved. Nouwen was quite aware of the difficulty. He wrote:

The clarity of the meaning of life received on a hospital bed easily fades away when the many daily obligations return and start dominating life again. It requires an enormous discipline to remain a disciple of Jesus, to continue to stay anchored in his love, and to live primarily from above. But the truth of the hospital experience cannot be denied.<sup>9</sup>

Writing about this life-transforming experience five years later, Nouwen was quite aware that he had lost much of the peace that he had experienced while at the veritable portal of death. Nevertheless he could still claim: "I know for sure that my accident was nothing but a simple reminder of who I am and what I am called to become ... a child of God."<sup>10</sup>

In a similar vein, it is possible for a human person to "live eternity" by entering deeply into a state of contemplation, the approach taken by Merton. The "core" human person is eternally linked with Christ, potentially in a veritable existential I-Thou relationship. This relationship is hidden, hence not something that can be discovered by scientific acumen. Yet it can mature into what is essentially a deeply interpersonal bond of mutual love. Merton, like Nouwen, also affirmed that most persons remain basically unaware of this deeper capacity of their human condition. It is generally off the secular "radar screen" altogether. As a result, the secular "hobby" self that we easily assume to be our true self "core" actually becomes reinforced, though only a chimera, and even stabilized by the "world" through support from socializing factors that include psychological testing. Our "false self" is thereby able to evade detection as the vacuous state that it is.

As Merton observes, most persons do not even guess who they really are until after death. Only then is a human person mercifully released from his or her ongoing enthrallment by the "false self" system comprised mainly of emotional and affective states. Merton clarifies in poignant detail the inevitable future of one's personal chimera, one's familiar "false self" persona which has audaciously and magnificently been posing for so many years as if it were one's true self.

There is an irreducible opposition between the deep transcendent self that awakens only in contemplation, and the superficial, external self which we commonly identify with the first person singular. We must remember that the superficial "I" is not our real self. It is our "individuality" and our "empirical self" but it is not truly the hidden and mysterious person in whom we subsist before the eyes of God. The "I" that works in the world, thinks about itself, observes his own reactions and talks about itself is not the true "I" that has been united to God in Christ. It is at best the vesture, the mask, the disguise of that mysterious and unknown "self" whom most of us never discover until we are dead. Our external, superficial self is not eternal, not spiritual. Far from it. This self is doomed to disappear as completely as smoke from a chimney.<sup>11</sup>

Why are we so fixated upon, yet ignorant concerning, our false self chimera that is destined for death and destruction? The essential if kenotic human person is linked with Christ in God. Whether *this* self, our true self, is even partially revealed to us during earthly life or only after death does not affect the main point. *This* God-made true self is the authentic human person who is eternally loved by God. While this universal truth must extend to everyone, not only to Christians, we easily tend to remain in denial of this Good News. One reason for this is our inveterate and specious human tendency to limit and restrict what could even count as reality (*viz.*, ontic) to that which is deemed to be rationally knowable by us, (*viz.*, epistemologically), at least in principle. Searching by means of reason appropriately tempered by faith may seem difficult. Yet put plainly, the mystery of the human person remains embedded with Christ in God. Choosing



ultimately to accept who we *really* are is the universal “fear must eventually yield to love” story of all human life. In our gradual passage from the Old Adam to the New, the true self eventually becomes activated even as the fearfully protective old self yields in love. This transition can be swift, like in the case of Paul when he yielded his self-righteous false self to Christ: “But by the grace of God I am what I am, and his grace toward me was not in vain” (1 Cor. 15:10).

## Universal Nature of the Human Person

Again, this reflects the Good News while also conveying the deep meaning behind the explicit mandate of Jesus: “as you did it to one of the least of these my brethren, you did it to me” (Matt. 25:40). Indeed the only authentic reality within *any* human person is Christ. Since each of us is linked with Christ, we are to this extent also *linked with one another* through Christ. Thus the common nexus or locus of all authentically human interactions is also to be found in Christ.

While this essential aspect of the mystery of the human person includes everyone—past, present, and future—this may require some clarification since the universal nature of the human person differs from “universalism” understood as all will be saved in the end. Although this may indeed be true, the obvious great unknown regarding “salvation” is human free will. “We’ll all live forever spiritually,” as Ogilvie succinctly affirms. But because of free will, there can be no “universalism,” he continues, so the “question is where and how. Christ offers us the gift of eternal life ...”<sup>12</sup> Our personal choice ultimately to accept or to reject this offer, as with Paul, certainly depends upon the infinite mercy and grace of God. Eschatological matters aside, however, every human person is bound with Christ at the depth of his or her very being.

Universalism concerning the essential nature of each human person is well documented and fully endorsed by such church luminaries as the recent Pontiffs John XXIII and John Paul II. Human love manifesting the universal image of God is the key. In particular, they affirm God’s universal love for humankind for “love is the basis of all that Christ came to declare to the world. It is the command to love which distinguishes the Christian revelation from the doctrine of all other religions.”<sup>13</sup> The profound and radical implication is that every human person, in virtue of having been created in the image of God who is Love, each has the built-in potential to convey God’s love. This applies to all creation in the stewardship mode. As regards other persons, we are each called to share with everyone the evangelization mission of “*love for mankind*, for all mankind, without any exception or division at all: without difference of race, of culture, of language, of concept of the world, without distinction between friends and enemies.”<sup>14</sup> For this is “the message of universal love preached by Christ.”<sup>15</sup>

Though the vast majority of human persons—past, present, and to come—may have but a vague grasp of the role of Christ dwelling in the depths of their very being, Christ’s explicit wish is that all may be one and return safely home.<sup>16</sup> While ultimately our choice to return depends upon our personal *response* to the infinite mercy and forgiveness of the Father’s love, whether anyone could successfully choose to reject the power of divine Love remains hidden in the eschatological mystery of salvation.<sup>17</sup>

## Limited Access through Science

While the authentic human person can never be completely identified or fathomed by any mode of human experience, including science, nevertheless *expressions* of the human person can be manifested and detected in the here and now. For this reason, both neurophysiology and neuropsychology about the human person are valuable to open new frontiers of scientific explanation. Specifically, these may well provide considerable information and valuable new understanding about biological and mental *functions* of the human person.

Neuroscience, however, is also being freighted with considerable optimism and interest today because it seems capable of providing a degree of assurance regarding life beyond the grave. Extreme optimism about what is called science but often operates as an ideology called scientism has become the modern mantra in the public mind, for some even replacing any need for faith in Christ.<sup>18</sup> Expectations are running high. Could we perhaps really know with purportedly “scientific” assurance that there is something personal that will survive our death? Is there something “soul-ish” that would surely survive, something that we could detect and measure today? After all, fear of death still remains our biggest obstacle to living joyfully. Must everything ultimately depend upon a human response to Christ?

To engage this fear, let us examine the situation from the point of view of proper science. Manifestations or expressions of soul-ness would certainly be expected, directly or indirectly, via normal bodily functions and activities. Since we are “whole persons,” body and soul, it is not surprising that these expressions and manifestations are *associated* with particular brain states which can be measured and detected, as spectacularly exemplified by Michael Persinger’s “God-helmet” experiments.<sup>19</sup> Electromagnetic stimuli of diverse areas of the brain seemed to yield evidence of induced mental states purportedly associated with alleged signals of divinity. Whether this might correlate with a built-in god-spot as a genetic disposition remains an intriguing possibility.<sup>20</sup>

Other recent examples abound within neuroscience and psychology especially regarding states and levels of “consciousness.” However, if approached from the bottom-up, by means of “physicalism,” “soul-ish” manifes-



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understanding  
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taken as  
endless or  
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... [T]his  
underlying  
problem is only  
exacerbated  
by an  
unwarranted  
tendency to  
uncritically  
construe the  
human person  
in terms of  
bio-genetic  
factors alone ...*

## Article

### *Science and the Mystery of the Human Person*

tations intentionally induced and stimulated anywhere within the somatic matrix appear to be essentially indistinguishable from what might implicate a deep "spiritual core." Physical registration of itself is unable to differentiate locally induced "bottom-up" manifestations from authentic "soulful" expressions and manifestations. The problem is certainly not any absence of correlation between the functions of the hidden soul and detectable brain states. The problem remains how to determine the cause of the correlation. No matter what the data, the results cannot easily discriminate a process that is locally self-induced from a process that may implicate an immediate experience within the "core" spiritual soul; an experience that is not self-induced by some chemical or other means. What then is the source of the identified "signal"? In particular, authentic mystical experience cannot be placed "on call" as it were. Therefore the purported *origin* of these claimed experiences must remain inherently underdetermined. God is not, as it were, available at our beck and call. He will "awaken us" through Christ at a time of his choosing! But, will we be open to his coming? Will we choose humbly and fearlessly, despite our sin, to respond in love to the call of Christ?

#### Interrelated Issues about Time, Genetics, Ontology, Death, and Consciousness

While much of this may be quite self-evident from a Christian perspective, considerable confusion continues to reign concerning what constitutes authentic eternity. Augustine's classic treatment in Book XI of his *Confessions* still spawns a considerable literature concerning time and eternity. The problem for us today can be traced to an uncritical acceptance of the secular understanding of eternity taken as endless or perpetual time. When dealing with the nature of the human person, this underlying problem is only exacerbated by an unwarranted tendency to uncritically construe the human person in terms of bio-genetic factors alone, reflecting a deeply entrenched ideological perspective disguised as neutral science.

The resulting state of confusion is evident from some current comments regarding cloning and stem cell research. If the human person were identified exclusively or even

primarily with genetic aspects, then great difficulties would arise. Controversy continues to plague our understanding concerning the status of "nascent humanity" and whether an embryo is inherently "human or person."<sup>21</sup>

From the alternative perspective discussed above, it follows that the nature of the human person, indeed the very meaning of personhood, evidently transcends biology and genetics. Therefore what is being empirically observed is the incipient manifestation of a human person as one commences his or her incarnated sojourn. Confusion reigns only when the human person is reductively and exclusively associated with specific identifiable bio-genetic aspects of that sojourning human person. For example, to speak of the genetic beginning of personhood is a rather incomplete way of expressing this crucial matter since this secular formulation would implicitly deny by default that the *authentic* human person is eternally linked with Christ in God. Following the skewed rules of scientism, there would be no acceptable way to justify such a claim, much less confirm it, so it must be dismissed as mere speculation far beyond the range of human understanding. Yet from a Christian perspective, human beings, human life, and hence human persons are primarily of God, only secondarily of "stardust." Once again, the key error is to mistake what is epistemic for what is ontic; that is, to delimit reality to what human reason can fathom. In general, however, the level of available knowledge ought never to decide the scope of reality.

From the perspective of science, what seems ephemeral could be dismissed as altogether beyond the pale. Yet *neutral* science, in contrast with specious scientism, is at least open in principle to the existence and value of what it cannot access. Nevertheless, an *exclusive* dependence upon the genetic-biological scientific approach remains inherently problematic for it cannot penetrate the surface *expression* of the human person. On this basis, it would be considered quite standard to assert that "the uniqueness of an individual begins at the moment of syngamy" [aka fertilization].<sup>22</sup> Thus *fertilization* would seem to define the commencement of life for a unique human person.

On this alternative perspective, however, maintaining that the essential human person

is authentically eternal, it would follow that: "the uniqueness of an individual begins [to manifest self in space and time somatically] at the moment of syngamy." Clearly these two assertions are not identical!

That considerably greater depth of understanding is required to approach the mystery of the human person is patent even from simple considerations of the "twinning" phenomenon on the genetic level. The key point here is that genetic components alone do not and cannot suffice to account for the quite nontrivial differences between individual personalities observed in twins. Yet on this alternative view of the human person such problems would not even arise.

Evidently this alternative approach to the mystery of the human person yields profound implications, not least regarding the vexed matter of cloning. Human persons are unique in the eyes of God both in virtue of their genetic aspects but primarily in virtue of their essential and authentically eternal nature linked with the mystery of Christ. While the genetic and somatic aspects of the human person are important as the *sine qua non* for one's earthly pilgrimage, these remain secondary when assessing the essential nature of each unique human person.

From this postulate, several corollaries and extrapolations follow straightaway:

1. Somatically, every living human person is composed of stardust. Though the genetic units of the body are recycled every few years, the essential human person normally remains relatively constant in his or her development over time vis à vis one's ever-present source.
2. Spiritually, or in terms of the soul, while the entity that we each call "me" persists over time, developing deep patterns of volition and attitude, each of us is far more than merely a congeries or summation of individualized "soulful" instances, however unique these may be. The deep source of continuity in spirit or soul constitutes the essential core of the human person who is not confined to space and time. This directly affirms our "God-made selves as the true source of our being" in contrast with our addictive and enthralling socialized "false self" construct, aka our time-bound "hobby self," which we customarily project as if it were the essential "me."<sup>23</sup> While earth-bound, the human person can express self within a space-time frame in virtue of his or her somatically embedded participation within bio-chemical structure. Nevertheless, the *essential* human person transcends space and time.
3. The uniqueness of each human person is "sourced," as it were, in the eternal Christ. In this respect, it would be impossible to clone a whole human person, for only God creates the authentically eternal soul. That is God-stuff. We have limited access even regarding the bodily and genetic aspects of the human person. Although these somatic aspects and associated genetic components could

in principle be duplicated, the essential "core" of each unique human person accordingly remains "sourced" at an entirely different level altogether.

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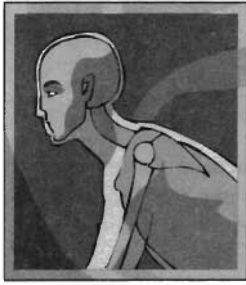
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Another serious issue about the mystery of the human person concerns death and dying. Physical death releases the essential human person from the bonds of its genetic disposition. One result of such release would be that the human person becomes less constrained in expressing self. But such human expression is best conducted in the "whole person" mode, entailing and embracing both body and soul. Therefore the children of God await "new clothing," as it were, the gift of a spiritual body after death once awakened by Christ. Accordingly, in terms of eschatology, human persons are not destined to remain in a *non-incarnate* state similar to the angels.<sup>24</sup> On the contrary, authentically human persons who freely choose to abide in Christ as adopted children of God will ever remain *whole* as the unique "incarnate spirit" they were created to be in the eyes of God.<sup>25</sup>

The normal way by which the whole human person could express self is by means of some kind of body. Evidently a spiritual body would free the whole person from those space-time constraints associated with the physical body. Physical death therefore results in freedom from somatic limitations without the human person losing the ability to interact with space-time creation. Indeed, this may provide one way to understand reported visions, apparitions, and perhaps even near-death experiences.

Finally, human consciousness is a multi-leveled phenomenon extending far beyond mere stimulus response characteristic of most living beings. At increasingly higher levels, human consciousness enters the domain of partial self-reflection leading toward advanced transcendence that is manifestly not of human origin. That no system can completely grasp itself reflexively follows directly from general systems theory. The domain of human consciousness is effectively, experientially and demonstrably opened in its extraordinary dual capacity for *projective*



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which is most  
relevant here is  
that God is  
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we live, move,  
and have our  
being.*

## Article

### *Science and the Mystery of the Human Person*

transcendence and especially for *responsive* transcendence. Operating at these higher levels of consciousness, human physiology often seems engaged with transmitting and receiving signals of information connected with other minds and with the Spirit. Nevertheless, no conscious person could completely grasp or understand self reflexively. Attempts to objectively measure and detect psychic manifestations of such reflective consciousness would be subject to these same "system" limitations. So confining the limits of what is permitted even to count as human consciousness to that which can be objectively measured and detected scientifically is therefore quite counter productive for the physicalist approach, since this patently exposes its own poverty when it comes to exploring the mystery of the human person. Indeed, an enlightened investigation of human consciousness conducted from a properly scientific perspective including non-reductionist psychology might succeed in delving more deeply into this mystery thereby enhancing the findings of neurophysiology and psychology.

### Conclusions

Absent shared terms of reference, no amount of rational argument alone could ever convince or suffice to elicit the quasi-gestalt switch required to change one's attitudinal default position. Secular humanism allied with rationalistic scientism presents a formidable default position quite impermeable to arguments not in conformity with that highly restrictive belief position. Indeed, this truncated perspective often goes unrecognized as being essentially a *belief* position despite its prominence today. Christianity combined with authentic science offers a less restrictive perspective on matters pertaining to the human person. However, neither approach can fathom the mystery of the human person not least because of various limitations about human reason and the constraints of systems theory. Neither science proper nor its ideological imposter *scientism* can fathom the mystery of the human person. If secular humanism would nevertheless presume to consider it solvable, at least in principle, perhaps this illusion arises from having set the reality-bar too low.

To the extent that human *experience* regarding consciousness might be welcomed

and acceptable to the investigation perhaps the search could move beyond the restricted domain set by human neurophysiology if imbued with physicalism. Indeed exploring the range of human consciousness more freely might even enhance and expand the limited findings available from neurophysiology and neuropsychology.

Approaching the mystery of the human person from the perspective of sense perception and scientific knowledge alone is inherently limited. Nevertheless, further scientific exploration would be most welcome, especially if conducted from a wider perspective even though these means cannot suffice to unlock the mystery of the human person any more than we could fathom the nature of God. The soul, and all that is essential to the authentic human person, is simply beyond the scope of physicalism. A further clarification of the dual features of the human person, as described by Merton above, would entail distinguishing the time-bound "false self," largely a social construct, from the eternally loved "true self" known only to God. Indeed, a clarification of the dialectical relationship between the "false self" and the "true self" would be paramount for any proper understanding of the physiology and psychology of this situation.<sup>26</sup> As with Paul, our false self must first be *voluntarily* surrendered to Christ so that our dormant true self, which is already living eternity in and through Christ, may be fully awakened.

The essential message of Christianity which is most relevant here is that God is nearer to us than we oft dare to consider, for it is in him that we live, move, and have our being. Keating reminds us, though we cannot see this, "Christ is dwelling at the center of all creation and of each individual member of it."<sup>27</sup> This seminal insight can augment and enhance the limited perspective made available through science and reason, so it ought not to be prematurely nullified by exclusive utilization of, and conformity with, a truncated physicalist perspective which, by definition, is inherently restricted to space-time considerations.

Many of the problems concerning the nature of the human person as an incarnate spirit can be traced to an inveterate misunderstanding regarding the notion of authentic eternity. Therefore a careful distinction

must prevail regarding authentic eternity in contrast with the deeply embedded secular view of eternity as an infinitely long time, a distinction so poignantly captured by C. S. Lewis.<sup>28</sup> Furthermore, a careful distinction must be maintained between ontic and epistemic aspects associated with the human person as an incarnate spirit. Setting the "ontic" viz. reality-bar too low by applying exclusionary epistemic constraints would perforce prematurely delimit the available domain of reality to the highly restrictive expectations characteristic of rationalistic secular humanism. Such restrictive reality-gating would inappropriately filter out all "things unseen" (Heb. 11:1) precluding God, soul, and spirit indiscriminately along with albino unicorns and little green leprechauns.

On the alternative perspective espoused here, the eternal soul of the human person, envisioned as an incarnate spirit created in the image of God, really exists, even if "sleeping" awaiting Christ's call. Although "flying" beneath the restrictive radar of physicalism during its somatic sojourn, the authentically eternal soul can nevertheless manifest its presence, even if unconscious, by means of detectible space-time categories and functions while remaining in a somatically embedded state. ■

### Coda

Just as we come from God, so must each return to God through Christ (John 10:34; 14:6), the ultimate mystery far beyond the scope of science, indeed of all human discernment.

### Acknowledgment

I am grateful to the several anonymous referees who offered many insightful suggestions for improving the original manuscript, raised points requiring further clarification, and encouraged further related reflections concerning this complex nexus of issues. I have tried at least to address most of these points. Any residual errors and lack of clarity remain my responsibility.

### Notes

<sup>1</sup>Thomas Merton, *The New Man* (New York: Farrer, Straus & Giroux, 1961), 247–8.

<sup>2</sup>Adam Drozdek, "Time and Eternity," *Perspectives on Science and Christian Faith* 49 (1997): 192–5. This useful article concerning several views of eternity draws on Aquinas, Horvath, Underhill, Pascal, and others to "point to the fact that our humanity is strengthened by the eternal perspective. Without it human personality withers and human being turns just into being. Eternity is, therefore, no foe to human personality" ... In turn, "God's personality is guaranteed by his eternity" for his personality is directly "proportional to eternity," 194.

<sup>3</sup>Thomas Keating, *Crisis of Faith, Crisis of Love* (New York: Continuum, 1995), 33.

<sup>4</sup>Paul expressed this emergent awareness and manifestation of what we already are in the eyes of God as a "new creation" (2 Cor. 5:17).

<sup>5</sup>Clearly, Christ dwells kenotically within everyone.

<sup>6</sup>Henri Nouwen, *The Path of Freedom* (New York: Crossroad, 1995), 33.

<sup>7</sup>*Ibid.*, 34–5.

<sup>8</sup>*Ibid.*, 36–7, emphasis added.

<sup>9</sup>*Ibid.*, 41.

<sup>10</sup>*Ibid.*, 46. Likewise, Lloyd Ogilvie highlights that we can indeed experience "His resurrection lifting you up to the person He created you to be" (Lloyd J. Ogilvie, *Silent Strength for My Life* [Eugene, OR: Harvest House, 1990], 105).

<sup>11</sup>Thomas Merton, *New Seeds of Contemplation* (New York: New Directions, 1972), 7. In a poignant note at the bottom of the same page, Merton adds: "Hell can be described as a perpetual alienation from our true being, our true self, which is in God."

<sup>12</sup>Ogilvie, *Silent Strength*, 111. An authentic relationship of love necessarily entails "freedom as a foundational characteristic" — in this case the freedom to will and to choose whether to accept or to reject Christ's offer of eternal life (Peter Rüst, "Dimensions of the Human Being and of Divine Action," *Perspectives on Science and Christian Faith* 47 [2005]: 200.) That perhaps God's grace and mercy could "override" human free will, kenotically, through the complexity of natural events is interesting. However, the authenticity of free human choice remains subject to the test of Christ. "Not everyone who says to Me, Lord, Lord shall enter the Kingdom of Heaven but he who does the will of my Father in Heaven" (Matt. 7:21–23).

<sup>13</sup>Pope John XXIII, *Days of Devotion*, ed. John P. Donnelly (New York: Penguin, 1998), 51.

<sup>14</sup>Pope John Paul II, *Prayers and Devotions*, Peter van Lierde (New York: Viking Penguin, 1994), 330.

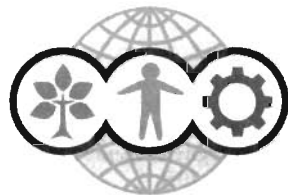
<sup>15</sup>*Ibid.*, 92. After dealing at length with possible alternative meanings for "Imago Dei," Malcolm Jeeves has recently focused on our human "capacity for relatedness to our Creator, to one another, and to the creation of which we have been made responsible stewards." For Jeeves, this "calling to a personal relationship of love and obedience to our Creator [is also our] destiny to fulfill his invitation and command to be faithful stewards of his creation" (Malcolm Jeeves, "Neuroscience, Evolutionary Psychology, and the Image of God," *Perspectives on Science and Christian Faith* 47 [2005]: 182–3). The key to all of this is to be found in a mutual relationship of love where human persons are appropriately endowed and mandated to bear God=Love to all creation before leaving for "home."

<sup>16</sup>Yet Christ is "dwelling at the center of all creation and of each individual member of it" (Thomas Keating, *The Mystery of Christ* [Amity, NY: Amity House, 1987], 87). Christ died "for all, for all; no one is denied his love and his forgiveness" (Pope John XXIII, *Days of Devotion*, 288). Christ embraced all humanity in hopes that everyone would freely choose to return safely home. Though "I have other sheep, that are not of this fold" (John 10:16) his greatest wish is for ultimate unity in the spirit.

<sup>17</sup>Salvation from self-enthralment by freely electing our hidden love-bond with Christ yields eternal life, that is knowing-loving the Father and Jesus Christ with our full heart and mind (John 17:3).

<sup>18</sup>Authentic science must be defended by clearly differentiating it from the ideology of scientism, which publicly masquerades as science and has usurped the name "science." Scientism bears the essential characteristics of a fundamentalist belief position, an ideology espousing rationalistic secular humanism. While authentic science humbly acknowledges the proper limitations of science when probing reality, scientism would artificially delimit the scope of reality to the ultimate horizons of human reason.

<sup>19</sup>As reported in *Wired Magazine* (November 1999), Michael Persinger experimented with a head-circlet device that produced weak electromagnetic fields to stimulate areas of the right hemisphere and reportedly induce alleged religious or spiritual experiences. This research has been further developed by the behavioral neuroscientist, Todd Murphy, an associate of Persinger, to facilitate the production of artificially altered states of consciousness mainly for therapeutic purposes. [www.innerworld.50megs.com/god.htm](http://www.innerworld.50megs.com/god.htm) Retrieved July 10, 2006.



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<sup>20</sup>Dean Hamer, *The God Gene: How Faith Is Hardwired into Our Genes* (New York: Doubleday, 2004).

<sup>21</sup>K. A. Mannoia, "An Evaluation of Three Religious Perspectives on Stem Cell Research," *Perspectives on Science and Christian Faith* 56 (2004): 233.

<sup>22</sup>D. M. Sullivan, "Would God 'Play' This Way?" *Perspectives on Science and Christian Faith* 56 (2004): 236. To speak of an individual being present from conception is not the same as to speak of that individual beginning to manifest its own personal uniqueness from conception. Nor does this manner of addressing the issue entail "pre-existent" souls. This ancient and rather vexed position would inappropriately imply a "time" sequence on that which is authentically eternal and hence altogether timeless. Human souls simply "are," created in the image and likeness of the one authentically eternal God. Considerable confusion has already been generated amongst adolescents vis à vis the beginning of human life and its early viability, their abysmal ignorance often due to linguistic obfuscation. During a recent in-class debate concerning abortion, some quite intelligent young ladies from Christian homes vigorously defended the position that prior to "four months" abortion involves no killing whatsoever since at that early stage it has allegedly been "proven scientifically" that the fetus is not yet even *alive*! Yet these same young ladies become very perplexed when presented with the challenging possibility that they themselves *could* have been victimized in this manner. For truly they know not what they do!

<sup>23</sup>Henri Nouwen, *Bread for the Journey* (San Francisco, CA: Harper, 1997) reading for April 8.

<sup>24</sup>While Mark's Gospel (12:25) affirms that those who rise from the dead will be *like* angels, this of itself does not preclude the *spiritual body* proclaimed by Paul (1 Cor. 15:35–54). Human persons are blessed with the gift of *time* enabling them to decide and repent unlike angels who "live eternity" presumably rendering their freely chosen state of humble love or prideful hate irrevocable.

<sup>25</sup>Pope John Paul II, *Prayers and Devotions*, 315–16. The "human person is an incarnate spirit, that is, a soul expressing itself in the body, a body informed by an immortal spirit ... God is love and lives in a mystery of personal communion of love in himself. In creating mankind in his image [God is also] continually conserving it in love." The very "core of the human person as such" is expressed in human love which becomes "a rendering of the deepest truth on man, that of his being in God's likeness."

<sup>26</sup>Our true self, properly understood, is certainly not a separate self—aloof, solipsistic, or egocentric in any way but more a quiet participation in the God-self where it remains *embedded with Christ in God*. During one's journey through life, as Ogilvie notes, we must first "pass through our own death to self with a complete surrender of our lives" (Ogilvie, *Silent Strength*, 103).

When turning over our false self to Christ, however, one embarks upon an ongoing journey that ultimately leads to no self at all. In the end, utter faith becomes paramount for there would seem to be not really *any* self at all! According to Roberts: "at one point in this journey, self comes forth, contributes what it can give, and then fades forever beyond reach" leading to a sense of oneness that is, however, "not ... God's oneness with self or consciousness, intellect or will or any such faculties of the soul. Rather, our oneness with God IS Christ and only Christ. The resurrection, then, is the Truth of Christ: the Truth that only the divine Christ (*Logos*) is eternally one with God, and not our personal individual selves. While this is truly the good news of Christ, for some people, at least, this seems to be too frightening to even consider" (Bernadette Roberts, *The Experience of No-Self: A Contemplative Journey* [Albany, NY: SUNY, 1993], 196, 150).

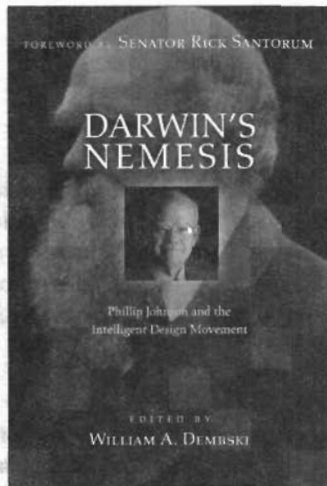
<sup>27</sup>Keating, *The Mystery of Christ*, 87.

<sup>28</sup>"For the Present is the point at which time touches eternity," in C. S. Lewis, *The Screwtape Letters* (1942; reprint, London: Fount-HarperCollins, 1977), 76.



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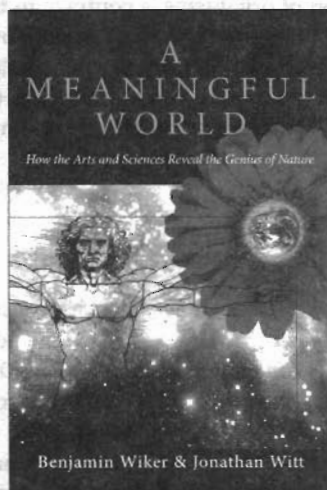


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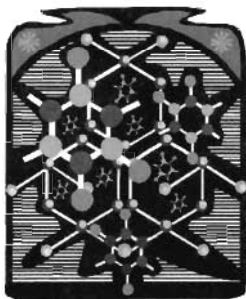
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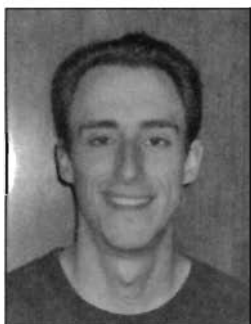


## Students and Early Career Scientists Corner

*Science or Sience: The Question of Intelligent Design Theory*

# Science or Sience<sup>1</sup>: The Question of Intelligent Design Theory

Jeff Mino



Jeff Mino

*I believe [that]  
a conscientious  
methodology of  
ID [can be]  
incorporated  
into the realm  
of scientific and  
theological  
acceptability.*

*Intelligent Design Theory (ID) has been much maligned recently as Neo-Creationist pseudo-science. This paper looks briefly at the common arguments used against ID, including arguments from methodological naturalism (MN), falsifiability, productivity, and religious fundamentalism. Ultimately it goes on to explain why the theory could be beneficial to our society today and suggests a need for a methodology of studying nature that exists alongside traditional science yet is not based on the precept of MN.*

**S**ince the Enlightenment, many would contend that science and theology are incompatible. Some argue that one must accept either one or the other, while others argue that both may be accepted because they cannot contradict. Science explores the physical, while religion explores the metaphysical.

It seems to me that whether one chooses to exclude either, or claims a separation between them exists, something is lost either way. Ultimately, while science and religion may separately answer contextual-awareness questions of who, where, why, when, and how, both overlap in the answer to the question of *what*. What is existence and creation? In recent years, a hypothesis on the origins of the universe, life, and species has arisen that has challenged the common wisdom that science and the supernatural are incompatible. This hypothesis is Intelligent Design (ID).

As one might imagine, however, this hypothesis leaves a bitter taste in the mouths of some on either side of the argument. Many scientists chafe at the idea of ID, claiming it removes the necessary filter of methodological naturalism (MN) from the

pursuit of their profession. Likewise, some theologians balk for a number of reasons, including that ID sets up a god-of-the-gaps mentality, and our faith should be based on more than what we can observe, or that the imperfection of organisms is contrary to the scripturally attributed nature of God.<sup>2</sup> However, I believe such concerns, while valid, can be overcome, and a conscientious methodology of ID incorporated into the realm of scientific and theological acceptability.

## Intelligent Design Criteria

The question remains, however, what exactly does the concept of ID look like and how does it affect our practice? Essentially, ID is a critique on Darwin's theory of evolution, claiming that the latter is insufficient to account for the data found in nature. In naturalistic science, only two explanations are accepted: either natural law (i.e., natural selection, genetic drift, etc.) or chance. ID suggests a third criterion: design. ID posits that evidence in nature implies its creation by more than the gradual process of random chance. Proposed by William Dembski, a philosopher and mathematician, it is based on the laws of probability, with its three main criteria being contingency, complexity, and specification.

Contingency simply means that there is choice in the ordering of a string of information, be it words in a sentence or nucleotides

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in DNA. If 3 is required to follow 2, and 2 is required to follow 1, then contingency does not exist. In other words, systems must exhibit contingency as opposed to necessity.

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*Essentially, ID is a critique on Darwin's theory of evolution, claiming that the latter is insufficient to account for the data found in nature. In naturalistic science, only two explanations are accepted: either natural law ... or chance. ID suggests a third criterion: design.*

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Complexity states that while simple strings can be formed by chance, complex ones cannot. If one were to cut up a name into its individual letters, put them in a bag and pull them out at random, given a sufficient amount of time one would almost certainly form the title by chance. However, if this entire paper were broken up into its constituent letters and the same attempted, the probability of randomly achieving such a goal would be astronomical to say the least. It would quite nearly take an eternity to accomplish. Dembski defines complexity as a string with a probability of  $10^{-150}$  or essentially 500 bits of information.

Of course, even Dembski concedes that low probability does not rule out chance. The probability of a person winning the lottery is often one in millions. However, one should not therefore assume that if a person wins, cheating was involved. Similarly, if one were to lay out the fifty-two cards in a deck, whatever pattern was presented would be equally as unlikely as any other (specifically  $8.06 \times 10^{-67}$ ), even the one where all cards are arranged numerically. Thus critics of ID often argue that the existence of life, however unlikely, can still be attributed to chance, besides which, the current configuration of life and the universe in general is no more unlikely than any other. Ultimately, chance cannot be ruled out. Of course, those familiar with statistical analysis realize the problem with this statement, and this is where the third filter of specification comes in.

Specification means there is a prior, specified pattern of intelligence detectable in a system. Here is an illustration.

If an archer shoots arrows into a wall and we then paint bull's-eyes around them, we impose a pattern after the fact. Thus there is no complexity. On the

other hand, if the targets are set up in advance ("specified") and then the archer hits them accurately, we know it was by design.<sup>3</sup>

By adding a requirement of specification on beforehand, saying that the order of a system must follow a precise, defined pattern essentially multiplies the probability of all orders against the probability of a specific, predetermined order such that it is *exceedingly* more likely to get any other order except the specified one. In fact, the probability is so unlikely that its occurrence essentially cannot be due to natural law or chance. Therefore, if information is contingent, complex, and specified, then intelligent design is evident.

### Irreducible Complexity

The clearest alleged example of Dembski's "specified complexity" in biological systems is what has become known as irreducible complexity. Michael Behe defines irreducible complexity as "an integrated multipart functional system where removing any of its parts destroys the system's function."<sup>4</sup> There are three naturalistic possibilities as to how such a system could form. First, perhaps all parts of the system evolved through direct evolutionary processes. However, since all parts of an irreducibly complex system would have no function on their own, natural selection would not select for them. Thus, direct evolutionary processes are ruled out. As design proponents would say:

It's logically possible that with my very limited chess ability I might defeat the reigning world champion in ten straight games. But if I do so, it will be despite my limited chess ability and not because of it. Likewise, if the Darwinian mechanism is the means by which a direct Darwinian pathway leads to an irreducibly complex biochemical system, then it is despite the intrinsic properties or capacities of the mechanism.<sup>5</sup>

Design proponents are not saying it is utterly impossible that systems could form from a direct Darwinian process. They are simply saying it is vastly improbable.

Secondly, perhaps all of the parts developed together at the same time. Of course, the chances of the entire system forming spontaneously are so exceedingly unlikely as to rule this out immediately as well. Skeptics of ID admit the logic of design proponents up to this point.<sup>6</sup> However, they point to the third naturalistic mechanism: indirect evolution. This is the notion that parts of an irreducibly complex system originally had other purposes but were modified and used by the newly forming system. Theoretically, these subsystems would have "served some other function (a function that could conceivably be subject to selection pressure)."<sup>7</sup> This is known as co-optation. Essentially, naturalists get around irreducible complexity by hypothesizing that all parts of an irreducibly complex



*The clearest alleged example of Dembski's "specified complexity" in biological systems is what has become known as irreducible complexity. Michael Behe defines irreducible complexity as "an integrated multipart functional system where removing any of its parts destroys the system's function."*

## Students and Early Career Scientists Corner

*Science or Sience: The Question of Intelligent Design Theory*

system originally had functions of their own or were useful in other systems, but they were eventually co-opted into the irreducibly complex system and have now lost their original function. A similar possibility is that these systems were originally parts of larger systems that evolution whittled away until they became irreducibly complex. However, to date:

[N]o indirect Darwinian pathways are known. At best, biologists have been able to isolate subsystems of such systems that perform other functions. But any reasonably complicated machine always includes subsystems that perform functions distinct from the original machine.<sup>8</sup>

If we could observe modern examples of such phenomena occurring, this would allow us to believe credibly that though we have no evidence of past co-optation, we have present experience which sheds light on such a mystery. Unfortunately, not only do we have no detailed and *testable* hypothesis of how subsystems undergoing coevolution could form into an irreducibly complex system, but we have no experience of such occurrences nowadays to support it. Essentially then, the naturalistic argument against irreducibly complex systems is an untestable hypothesis.

Critics such as Richard Dawkins, Robert Pennock, and others scream that this is an argument from ignorance, since just because we have no detailed and testable hypotheses of co-optation does not mean it could not have happened.<sup>9</sup> Of course, one could just as easily claim that denial of a creator is also an argument from ignorance, and then it becomes a matter of discerning which is more probable. Personally, I feel it takes more faith to believe that we sprang from the head of natural law and chance than to believe that a creator formed us with a purpose.

### Arguments against Intelligent Design Methodological Naturalism

Unfortunately, the general scientific establishment often does not feel the need to drive the argument to such a point. For many, Darwinian evolution is the only game in town by default. As Massimo Pigliucci notes in *Denying Evolution*:

Even if evolutionary theory as currently accepted is wrong in some fundamental way (and it is hard to see how this could be), the victory does not go to intelligent design creationism, because it clearly fails to provide a better explanation of nature.<sup>10</sup>

How can Pigliucci say this with such certainty without presenting empirical data to support such a claim? His reasoning bypasses such debate and instead is due to a semantical sleight of hand. To put it succinctly, the scientific community has ruled ID as being outside the bounds of science simply by definition, leaving Darwinian evolution as a theory with no contenders.

Science as it exists today does not look for the possibility of "God" working through natural causes, due to the premise of MN. To be fair, MN does not claim there is no God. Rather, the narrower construal posits that

scientific accounts must refer to wholly natural phenomena, making no reference to immediate or direct contribution by nonnatural or supernatural agency, while permitting further, nonscientific appeal to the divine as the ultimate and sustaining source, meaning, and purpose of all natural phenomena.<sup>11</sup>

In short, MN does not ask one to believe that there is no God, but rather asserts that one may not claim God to be the direct cause of an effect when one studies said effect in the name of science.

At first glance, this is a valuable and necessary restriction. One would shudder to think of where we would be today if at the first sign of befuddlement, scientists threw up their hands and said, "This must be God's doing," and then went on to study something else. MN gives us the impetus to understand natural phenomena in natural terms. One may contend that science should not be so narrowly defined, but to my mind this betrays an underlying belief in scientism in the minds of the opponents, the notion that all truth is scientific truth, and that the only worthy endeavor is the one that seeks out the reduction of a phenomenon to quantifiable data. Yet as O'Connor states:

There are, of course, many ways to understand a phenomenon, including

such concerns as its aesthetic value, moral significance, economic impact, and divine purpose. From among these disparate explanatory interests, we pick out natural science as that activity specifically concerned with perceiving the phenomenon as a functional constituent of the natural created order.<sup>12</sup>

In other words, those who argue against MN do so with the unsaid implication that science is the only absolute truth. Only if MN is coupled with a philosophy of scientism does it become dangerous.

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*If one refuses to call ID "science," ... call it "science" instead ... Include under this term the study of reality and its causes by any means, natural or designed, remove the metaphysical rejection of the super- or extranatural, and let the evidence lead one toward the mutually exclusive and categorically exhaustive options of naturalistic evolution or ID.*

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These are valid arguments for the need for MN. In fact, if one accepts the quite reasonable limitation of science given here, MN is crucial by definition. However, the issue here becomes one of limited resources. Any Christian would have to assert that the goal of this definition of science is unattainable. After all, if everything can be explained away by natural causes, then this is directly contrary to the claims of Scripture, and belief in God becomes merely wishful thinking. This is not to say, however, that the practice of natural science is therefore futile. After all, "If the exact extent of our ability to provide natural explanations remains unknown, conceding too much too soon may serve to cut short a venture which holds forth the prospect of considerable conceptual gains."<sup>13</sup> At the same time, however, excluding divine causal explanations may stifle accounts which would rival the natural alternatives in gains and merit.

This is an argument not solely against MN but the goal of science itself. Even if science is to be defined such that MN is necessary by definition, one nevertheless cannot rule out inclusivity on the grounds that it is unproductive until one has at least attempted to investigate this claim,

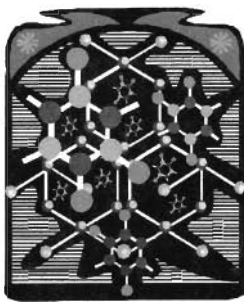
which MN rules out a priori. As ID advocate Stephen Meyer states: "What we want to know is not whether a theory is scientific but whether a theory is true or false, well confirmed or not, worthy of our belief or not."<sup>14</sup>

Whether scientists will allow that ID is scientific should not be at issue here. The issue is whether or not it is productive. After all, numerous theories that have become accepted standards of the scientific paradigm were originally judged as reactionary and outside the bounds of science, including Einstein's theory of invariance, not to mention Darwin's theory of evolution itself. Views of science judged to be unacceptable to the established paradigm have repeatedly shown their productivity under the right circumstances or right minds, surpassing even the "legitimate science" of the day.<sup>15</sup> If one refuses to call ID "science," well and good. Call it "science" instead if one pleases.<sup>16</sup> Include under this term the study of reality and its causes by any means, natural or designed, remove the metaphysical rejection of the super- or extranatural, and let the evidence lead one toward the mutually exclusive and categorically exhaustive options of naturalistic evolution or ID. Whether or not one claims such an endeavor falls under the narrower definition of "science," it is still worth studying, and in fact may be just as important as studying naturalistic science alone.

### Falsifiability

Beyond the contention of indirect evolution or ruling out ID by fiat, other arguments against this hypothesis are employed as well. One is the notion of falsifiability. Proposed by Karl Popper (1902–1994), it has until recently been one of the foundations of science. Essentially, this premise states that what makes a claim scientific is not that one can verify it, but rather that it has the capacity to be proven false. By this logic, ID cannot be proven false because the intelligence exists outside of the realm of science. If we want to find God in the molecular machines, then even if they were explained through naturalistic means, we could still claim God had a hand in it nonetheless. In reality, however, the concept of ID is falsifiable. If irreducibly complex systems could conclusively be shown to occur through naturalistic means, such that their perceived specified complexity is merely an illusion, then ID would have to concede on the premise of Occam's Razor. In other words, ID would be rendered superfluous.

Of course, naturalists claim that they should not have the burden of proof in this matter. After all, naturalists would be required to refute every single instance of supposed irreducible complexity in order to falsify ID, and the nature of evolutionary studies means that the evidence for it ceased to exist millions of years ago. Just because that evidence no longer exists doesn't mean intelligence must be the answer. Of course, this amounts to saying that ID is only unfalsifiable to the extent that naturalism



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is unprovable. One would hardly consider this a victory for Darwinists.

Turning the tables on naturalists, however, ID proponents counter-argue that Darwinism fares no better than ID by the standard of falsifiability. As skeptic David Depew has admitted: "Darwinism does not relate to the facts it is supposed to explain in the same way that Newton's or Einstein's paradigmatic scientific theories do."<sup>17</sup> While physicists may have metaphysical beliefs based on their data, nevertheless "what makes them professional physicists is their ability to wield the mathematical formalism of quantum mechanics and use it to interpret data."<sup>18</sup>

On the other hand, what makes a scientist a Darwinian is metaphysical materialism, not a concrete data theory. To get from the origin of life to the myriad species today requires more untestable assumptions than actual empirical data. Dembski writes that while

Darwinists describe, in highly abstract and schematic terms, supposedly possible Darwinian pathways that might bring about the features of living systems, no Darwinist has offered a hypothetical Darwinian production of any tightly integrated multipart system with enough detail to make the hypothesis testable even in principle.<sup>19</sup>

Thus, Darwinism is not as scientific a theory as those of other disciplines but rather more of a metaphysical research program, and is as unscientific as ID, at least according to the requirement that many use to discredit the latter. Falsifiability, therefore, is not an acceptable criterion with which to reject either ID or Darwinism. As Thomas Kuhn points out:

To wield the falsificationist ax too early means the premature extinction of research programs that, if the past is any guide to the future, might well go on to prove their worth.<sup>20</sup>

Yet this is exactly what Darwinists feel is called for with ID.

#### Productivity

Darwinists argue that the criterion of productivity is a good rationale for accepting a metaphysical research program. Darwinism is accepted not because it has been confirmed or escaped falsification, Depew argues:

but because it is a research tradition that has, up to the present, had a pretty good run. Creationism, by contrast, has been rather unfortunate in its lack of fecundity in the past century or so.<sup>21</sup>

Small wonder, however, considering it has been ruled out a priori as a scientific practice for that past century. While there may be nothing wrong with using this criterion as a valid reason for dismissal of a hypothesis, if productivity is the filter a theory must pass through, then by necessity ID must at least have the opportunity to pass through it in the first place. In a sense then, productivity is a reason ID *should* be delved into. To exclude ID because it fails to produce results as a consequence of its having been defined as being incapable of producing results is not only circular reasoning, but profoundly unscientific.

#### Religious Overtones

The previous quote also yields an insight into another misconception, namely that ID is simply Neo-Creationism in disguise. While it is easy to see how the former could amount to the latter, there is a subtle difference between the two. Although a creator is the logical conclusion of ID, ID is not at its core a religious assumption. Rather, it is a scientific methodology which seeks to detect "specified information." As to the cause of this information, all ID is willing to say is that the design exhibits intelligence necessary in its creation. What form this intelligence takes is outside the bounds of ID. Perhaps it is the Christian Yahweh or perhaps space aliens. ID does not concern itself with such issues because it cannot verify them. Thus, ID proponents would point out that the argument that ID can always appeal to God regardless of material evidence has nothing to do with ID and everything to do with religion, which, despite what skeptics claim, ID is not primarily interested in.

The response at this point is usually that while in its strictest sense, ID is not a Christian Neo-Creationist assertion, in practice, it is, as its supporters have ulterior motives, namely the overthrow of naturalistic science for theistic science. Their ultimate goal is the introduction of religious teaching into the school systems.<sup>22</sup> Thus, ID is not truly scientific. By coupling ID with Neo-Creationism, Darwinian evolution proponents can claim



that “people are trying to put up religion ... as a rival to science ... and it is not necessary.”<sup>23</sup> There is a significant problem in this line of reasoning, namely, that it is not specifically relevant to the present argument. Once again, the issue should not be one of science versus religion, but rather the judging of ID on its own merits.

Besides, knowledge does not exist inside a vacuum. All beliefs and their pursuits incorporate more than the idealistic quest for pure knowledge. Many Darwinian evolutionists pursue a naturalistic explanation of the origins of the species not simply because the evidence is so overwhelming, but because it fits their pre-existing metaphysical paradigm. One need only read any work of Richard Dawkins to understand the contempt he holds for any position outside the natural. Such disdain—nearly on par with religious fanaticism in its vehemence—does not come from pursuit of a neutral and objective scientific method. Rather, it comes from a prior commitment to a belief outside the bounds of science. Should we then reject naturalistic evolution because of the nonscientific beliefs of its proponents? Not at all, and no more than we should reject the notion of ID for the same reason. What is at issue here is whether the data supports the beliefs, and whether the investigations are carried out in an intellectually open and honest manner. Again, it would be a mistake to judge a hypothesis on the religious beliefs of its adherents rather than on its ability to explain the data itself.

### Potential Benefits of ID Methodology

This then is the fundamental reason for supporting ID: it is plausible yet untested. If it gives us no additional insight than naturalistic evolution, then while this would not strictly falsify ID, it would be rendered unnecessary. However, one of the biggest questions asked today is how ID brings anything to the table. While the theory of evolution has led us to amazing discoveries in terms of what was and is possible, ID is a much more negative proposition, instead stating what could not have happened. How then, do such claims further the pursuit of science?

At the very least, ID can act as a check against the sometimes far-reaching assumptions of the naturalistic evolutionist. On a more substantial level, however, theoretically the assumption of the involvement of a creator should push us in new directions in terms of scientific research and inquiry. Here, then, are a few possibilities. The first is the development of techniques for detecting design. Another possibility involves evolvability. As Dembski states:

Evolutionary biology’s preferred research strategy consists in taking distinct biological systems and trying to merge them. ID, by contrast, focuses on a different strategy, namely, taking individual biological systems and perturbing them to see how much the systems can evolve.<sup>24</sup>

To restate this in an admittedly overly-simplistic way, Darwinists attempt to look back toward what could be, while ID theorists look back toward what could not be.

Another avenue of research spawned by ID is to replace MN with the principle of methodological engineering. According to this principle, biological systems should be understood as engineering systems. Thus, everything from their origin and construction to their operation should be seen in engineering terms rather than invoking a connection of dots without detailing how they got from A to B. After all, evolution is committed to continuity. “But for dots to be plausibly connected,” Dembski argues, “they need to be reasonably close together.”<sup>25</sup> That is why the gaps in the fossil record and lack of evidence of “missing links” are such a problem. To be fair, one should not expect to find anything close to a complete fossil record simply due to the extremely narrow conditions required for fossilization to occur. Nevertheless, coupling these gaps with the issues of complexity and lack of conclusive evidence for a naturalistic genesis, ID questions whether or not these intermediates ever existed in the first place. As such, it might be more fruitful to expend resources discovering the history of modification without attempting to find transitional forms.

The last potential avenue of research that may be relevant is what Dembski essentially describes as cryptography. If intelligence was involved in the designs of species, then it is possible that “organisms instantiate designs that have no functional significance but that nonetheless give biological investigators insight into functional aspects of organisms.”<sup>26</sup> Also, naturalistic evolutionists expect to find little of worth in what is known as “junk” DNA. ID proponents, however, posit that this DNA may not be as worthless as it seems. Dembski mentions that while this is, of course, hypothetical, early results from bioinformatics may suggest such a possibility.

### Intelligent Design in Schools Religion and Ideology

Unfortunately, the coupling of ID with religious fundamentalism in the public eye has been fairly successful up to this point, such that the teaching of it is often outlawed in public schools, due to the separation of church and state. In the same way that MN rules out design, claiming ID is Neo-Creationism rules out its acceptability a priori. However, Darwinism fares little better in the separation of church and state, as will be discussed later. And while it may not specifically espouse Christianity, ID certainly points us in the right direction, toward a proper harmony between faith and reason.

In contrast, Darwinism lacks models for describing the origins of life. Even some skeptics will admit that natural selection cannot be the principle cause of origins. After all, natural selection depends on variation and heredity which



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exist only in organisms, so it can hardly account for their origins in the first place. Faced with this, most Darwinists

retreat to the high ground of meta-physical materialism and issue a philosophical guarantee that, in the absence of empirical proof, life will eventually be shown to be consistent with received Darwinian thought.<sup>27</sup>

This is not science, but rather ideology. To those who claim that ID does not account for origins either, they are correct, to an extent. ID does not account for origins naturalistically—or if one accepts MN, scientifically. But more importantly, it never claims to. ID rather says that we may need to be content with knowledge rather than understanding. Similarly, Dembski notes:

We do not *understand* how quantum mechanics works, but we *know* that it works. So too, we may not *understand* how an unembodied designer imparts specified complexity into the world, but we *know* that such a designer imparts specified complexity into the world.<sup>28</sup>

Ultimately, though it claims to be value-free, Darwinism presents itself as the ultimate bastion of skepticism. Dembski writes:

Skepticism, to be true to its principles, must be willing to turn the light of scrutiny on anything. Yet that is precisely what it cannot afford to do in the controversy over evolution and intelligent design. The problem with skepticism is that it is not a pure skepticism. Rather it is a selective skepticism that desires a neat and sanitized world which science can in principle fully characterize in terms of unbroken natural laws.<sup>29</sup>

In other words, skepticism is usually a tool to justify one's inherent, empirically untestable beliefs when in reality it should be the other way around. This brings up another important issue. If skepticism is a tool rather than a foundation, where do our core beliefs come from?

#### Paradigms

As Blaise Pascal noted: "People almost invariably arrive at their beliefs not on the basis of proof but on the basis of what they find

attractive."<sup>30</sup> Cognitive psychologists have been telling us for years that evidence is rarely sufficient to change someone's viewpoints on controversial subjects. What is required is a paradigm shift. This is why pro-choice individuals simply cannot fathom why pro-lifers would hold to the arguments they put forth, and pro-lifers likewise look in disbelief at the pro-choice crowd. Debates rarely ever win anyone over from the other camp but rather influence those select few who are truly on the fence between the two opposing positions. More likely, debates simply confirm what people already "know." In the same way, a debate between ID and Naturalistic Evolutionary Theory is unlikely to change any minds once their "habits of thought" are already solidified.

How these "habits of thought" form is not fully understood. Emotion is certainly involved to some extent, and trust is obviously a significant factor as well, as most people cannot hope to comprehend all of the possible nuances of all subjects. Thus, we turn to those we trust and essentially take their word for it. After this point, reason takes a back seat, and arguments for our newly acquired position hold more weight than those against it. As one can imagine, these "habits of thought" emerge at an early age during our formative years. This is why so many psychologists look back to one's family situation and early experiences when attempting to understand how one came by specific beliefs.

If such paradigms are often solidified at an early age, then if we claim to value freedom of thought, it is simply not enough that we do not censor books. If we allow one side of an issue to be taught to the exclusion of the other, we are essentially doing the same thing, perhaps even to a greater degree. Note how children with Republican parents tend to grow up Republican, or those with Buddhist parents become Buddhists themselves. Yet it is much more difficult to think about the Republican platform critically without being exposed to the Democratic one. The same is true for religion, philosophy, even science. We claim it is unconstitutional to teach religion in school, and at least bad taste to mention politics in the early years of schooling, but it is nonetheless acceptable to speak of evolution as if it were an indisputable law. John Campbell writes:

[In ethics,] consideration of unorthodox or conventionally unacceptable alternatives is to be met without prejudice. In science, by contrast, even permitting the bare impression that there might be some arguments in favor of creationism—or in the present case, of ID—is a dereliction of educational responsibility.<sup>31</sup>

In fact, if we value freedom of thought as much as we claim, we should have classes in comparative religion, in public policy, and even between science and “science.”

## Dialectical Discussion

Agnostic Michael Ruse feels that “it is quite wrong to teach Intelligent Design in science classrooms.” Given this is essentially a semantic argument, I do not see the need to argue the point, especially since to his credit, he also says that “it is quite wrong to teach evolution as religion in science classrooms.”<sup>32</sup> This is exactly what I see happening today, however. In the lack of opposition, naturalism has become “the only game in town.” And when one is exposed only to the explanatory power of science and is presented with no alternatives that may limit the claims of scientism to defined boundaries, then the narrow, perfectly acceptable definition of MN becomes replaced by practical, philosophical, and universal materialism. In essence, the greatest threat to the separation between church and state has become the secular religion of Darwinism.

Certainly it is not the place of special interest groups to dictate curriculum but, as Campbell says:

by the same token, it is not the business of science educators to pronounce on metaphysical issues or pretend that they do not exist or have been resolved by empirical research.<sup>33</sup>

Whether or not we wish to call ID science, if we want to allow true freedom of thought, we need to allow individuals access to the required information during the formative years when their “habits of thought” emerge. To teach *only* naturalism is in essence to indoctrinate, not teach. Certainly, to not know anything of the robust, explanatory theory of evolution is to be scientifically illiterate. Yet, to not know of the evidential challenges to the theory, the assumptions it requires, and the philosophical implications and baggage it has, and to not know that in science, nothing is sacred and above question, is also to be scientifically illiterate. Once individuals can reasonably weigh their options, perhaps then we will see just what the theory of ID has to offer in terms of productivity.

## Conclusion

While the scientific method does typically necessitate a certain amount of extrapolation, one must always be careful not to assume that a theory can be extrapolated too far beyond the scope of its evidential base. Microevolution, the limited variation within boundaries that every college

geneticist has observed in the study of fruit flies, cannot necessarily be translated to “the unlimited plasticity of organisms to diversify across all boundaries”<sup>34</sup> that we know as macroevolution. One might do well to remember the times before Einstein, Maxwell, and Heisenberg, when physicists asserted with irrepressible certainty that Newton’s theory could account entirely for the dynamics of the universe. Today we know that

the proper domain of Newtonian mechanics is far more constricted. So too, the proper domain of the mutation-selection mechanism may be far more constricted than most Darwinists would like to admit.<sup>35</sup>

Certainly there is a great deal of evidence to support the notion that over millions of years, organisms evolved from one another. The genomes of humans and chimps differ by only .01%, strongly suggesting common ancestry. Gorillas have one less chromosome than humans, but only because it appears that two of their chromosomes fused into one at some point in their history. TATA boxes and other vital DNA sequences show amazing consistency throughout the whole of diverse life on this planet. The bone structure of fins, wings, hands, and feet of various organisms are surprisingly similar considering the quite different functions of each. Few would seriously argue that evolution has strong support from the physical world. However, more and more, recent discoveries are presenting serious, virtually unsolvable issues for the naturalistic metaphysic.

In and of itself, this is not enough to reject the theory, for “it is not enough to show that a particular explanation is wrong. One must also be able to advance a *better* alternative.” While an alternative is not logically necessary to discard an inadequate explanation, in psychological and sociological practice, this does seem to be the case. The recognition of this phenomenon has become accepted wisdom in the philosophy of science thanks to Kuhn’s convincing argument for paradigms. ID offers one such possible solution. Equally as important, it is not merely a god-of-the-gaps assertion claiming that whatever we cannot explain must be God’s doing, but rather a conclusion based on the laws of probability.

Perhaps there is truth in both or neither view. Regardless, as responsible individuals we must remain open-minded in order to let the weight of evidence and reason direct our sentiments. This means, among other things, that MN, while important, is not non-negotiable. It also means that we must come to grips with the limitations of our knowledge, both in Evolutionary Theory and ID. Without a foundation of MN, evolutionary theory has no more legitimate claim over truth than ID except that it has shown more beneficial results. This is not necessarily an inherent quality of the former, however. Nor can one make such a claim until ID has passed its emergent period of prominence. To this end, as Christians we should

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support a more detailed examination of this concept, so that we may know the truth we devote our lives to seeking.

### Notes

- <sup>1</sup>Alvin Plantinga, "Methodological Naturalism?" *Origins & Design*, 18 (1997): 1-2.
- <sup>2</sup>Howard Van Till, *Science Held Hostage: What's Wrong with Creation Science and Evolutionism* (Downers Grove, IL: InterVarsity Press, 1988), 127; Francisco J. Ayala, "Design without Designer," in *Debating Design* (Cambridge: Cambridge University Press, 2004), 70.
- <sup>3</sup>William Dembski, "Detecting Design in the Natural Sciences," *The Natural History Magazine* (2002): 41.
- <sup>4</sup>William Dembski, *The Design Revolution* (Downers Grove, IL: InterVarsity Press, 2004), 292.
- <sup>5</sup>*Ibid.*, 294.
- <sup>6</sup>Robert T. Pennock, *Tower of Babel* (Cambridge: The MIT Press, 1999), 153.
- <sup>7</sup>Dembski, *The Design Revolution*, 293.
- <sup>8</sup>*Ibid.*, 295.
- <sup>9</sup>Pennock, *Tower of Babel*, 168, 170.
- <sup>10</sup>Massimo Pigliucci, *Denying Evolution* (Sunderland, MA: Sinauer Associates, Inc., Publishers, 2002), 173.
- <sup>11</sup>Robert O'Connor, "Science on Trial: Exploring the Rationality of Methodological Naturalism," *PSCF* (1997): 17.
- <sup>12</sup>*Ibid.*, 19.
- <sup>13</sup>*Ibid.*, 21.
- <sup>14</sup>J. P. Moreland, ed., *The Creation Hypothesis: Scientific Evidence for an Intelligent Designer* (Downers Grove, IL: InterVarsity Press, 2004), 99.
- <sup>15</sup>John Campbell, "Why Are We Still Debating Darwinism? Why Not Teach the Controversy?" in *Darwinism, Design, and Public Education*, ed. John Campbell and Stephen Meyer (East Lansing, MI: Michigan State University Press, 2003), xxv.

- <sup>16</sup>Plantinga, "Methodological Naturalism?" 1-2.
- <sup>17</sup>David Depew, "Intelligent Design and Irreducible Complexity: A Rejoinder," in *Darwinism, Design, and Public Education*, 445.
- <sup>18</sup>*Ibid.*, 445.
- <sup>19</sup>Dembski, *The Design Revolution*, 249.
- <sup>20</sup>Depew, "Intelligent Design and Irreducible Complexity: A Rejoinder," 445.
- <sup>21</sup>*Ibid.*, 446.
- <sup>22</sup>Robert T. Pennock, "Why Creationism Should Not Be Taught in Public Schools," *Intelligent Design Creationism and Its Critics* (Cambridge: The MIT Press, 2001), 757-8.
- <sup>23</sup>Michael Ruse, "On Behalf of the Fool," in *Darwinism, Design, and Public Education*, 478.
- <sup>24</sup>Dembski, *The Design Revolution*, 312.
- <sup>25</sup>*Ibid.*, 314.
- <sup>26</sup>*Ibid.*, 317.
- <sup>27</sup>Depew, "Intelligent Design and Irreducible Complexity: A Rejoinder," 448.
- <sup>28</sup>Dembski, *The Design Revolution*, 157.
- <sup>29</sup>*Ibid.*, 201.
- <sup>30</sup>Blaise Pascal, *The Art of Persuasion* (Boston, MA: Harvard Classics, 1914), 105.
- <sup>31</sup>John Campbell, "Intelligent Design, Darwinism, and the Philosophy of Public Education," in *Darwinism, Design, and Public Education*, 26-7.
- <sup>32</sup>Campbell and Meyer, eds., *Darwinism, Design, and Public Education*, 483.
- <sup>33</sup>Campbell, "Intelligent Design, Darwinism, and the Philosophy of Public Education," 22.
- <sup>34</sup>William Dembski, *Intelligent Design* (Downers Grove, IL: InterVarsity Press, 1999), 113.
- <sup>35</sup>Michael Behe, *Darwin's Black Box* (New York: Free Press, 1998), 154.
- <sup>36</sup>Pigliucci, *Denying Evolution*, 173.

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# Why Does ID Get (Nearly) All the Christian Press?

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**R**eaders of this journal are accustomed to reading a wide variety of articles about the relationship between Christian faith and the scientific pursuit. We have read papers in these pages from those who claim irrefutable scientific evidence for intelligent design (ID). We also hear from Christians who affirm design in creation, but believe that God may have worked (and is yet working) consistently through natural laws to bring about life on Earth ("evolutionary creationism," "teleological evolution," "robust formational economy principle," etc.). In presenting a variety of opinions and providing a forum for open discussion, this journal provides a great service to the community of Christians interested in science in particular, and to the wider Christian community in general.

I find this breadth of viewpoints refreshing compared to what I find in other Christian periodicals. It seems like most popular conservative and evangelical Christian media present only one viewpoint. Pick up any copy of *Christianity Today*, *First Things*, *Books and Culture*, etc. and you may notice what I have noticed. (I am not in a position to comment on the content of more liberal publications such as *The Christian Century*.)

If you find any theoretical discussion at all of science and faith in these magazines, it will almost certainly be about intelligent design. Moreover, if you find an individual who is active in the science/faith conversation on the editorial board of one of these publications, that person is likely a leading proponent of the ID movement.

It seems that everywhere one looks in the Christian press one sees articles advocating ID, while evolutionary creationism is seldom seen. Why is that?

I have a hypothesis. I contend that the audience and editors of these publications are concerned primarily with apologetics and not with broader theological insights into and implications of scientific inquiry. They are concerned more with demonstrating the existence of God and less about how God has interacted with the natural order throughout time. That God is seems to be more interesting to them than who God is—at least regarding the subject of creation.

If we look at two distinct ways of integrating science and faith today, ID and evolutionary creationism, we see that only one of them provides apologists with new arguments. ID is both a way of understanding how God has interacted with the natural world and is also a novel component in an argument for the existence of something supernatural (though not necessarily a personal God). Evolutionary creationism, on the other hand, while just as compatible with Christian faith (so its proponents claim), and perhaps just as compelling on intellectual grounds, is of more value in the theology of creation or the philosophy of science than it is for apologetics.

To put it bluntly, most readers of *Christianity Today* are very interested in apologetics and may not be otherwise interested in the doctrine of creation—let alone the philosophy of science.

This leads to an interesting problem. Permit me to establish a potentially false dichotomy. Let us imagine that either ID or evolutionary creationism is the only correct way of relating Christian faith to science. One is completely right and the other is completely wrong. Lots of very bright people are working hard to decide which of these is correct: scientists, philosophers, and theologians. Unfortunately, because of the preference of conservative Christian magazines for apologetics, their curious and engaged Christian readers will be kept abreast of only one of the two options, regardless of the intellectual merit of other possible viewpoints.

Let us now imagine that the correct understanding turns out to be the one that does not focus on an argument for the existence of a supernatural reality. (Note that this obviously would not imply that there is no supernatural reality! It only would mean that the existence, let alone the nature, of the supernatural reality could not be proven from scientific investigations of the natural order.) If that turns out to be the case, most of the Christian public today is being informed only about a false theory. This would be tragic, even if the true theory does not constitute a bullet-proof argument for the existence of God.

Perhaps ID is the correct option, and my worries are unfounded. However, if my worries are justified, we need to find a way to avoid this tragedy. Perhaps responsible Christian readers are obligated to pursue other theories wherever they can find them. Perhaps editors should be

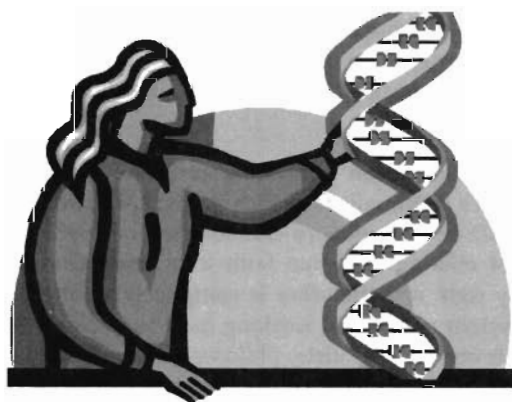
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more aware of what is happening at the Christianity/science interface and present alternative viewpoints. Perhaps the proponents of ID themselves need to be extra vigilant in providing a fair summary of different ideas in their articles.

Given the nature of the problem, none of these potential solutions is likely to occur to a great extent, nor is it fair to hold the involved parties responsible to fix the problem (except, perhaps, the editors). Ultimately, it is incumbent on those of us who do have exposure to a broad range of ideas to keep reading, writing, and talking about all the options. For the time being, this vigorous discussion may have to occur only in more specialized venues. However, over time, the best model will slowly emerge, and once generally accepted by our community, it will come to the attention of the broader Christian community. ♦

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## Creation Versus Creationism

Graeme Finlay,\* Bernard Choong, John Flenley, Nishi Karunasinghe, Graham O' Brien, Ross Prestidge, Cris Print, Andrew Shelling, and Mark West

**M**any religious people think that evolutionary science and Christian faith are enemies. In the USA, they expend energy, time, and good will by attacking the teaching of evolution in schools. Recent battles have raged in Louisiana, Kansas, and Ohio.<sup>1</sup>

The issue simmers in New Zealand, too. The *NZ Listener* (in 1995) commented that "God and Darwin are still battling it out in New Zealand schools" and (in 2000) that "the teaching of evolution remains under siege from Creationists."<sup>2</sup>

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We are Christians who work in the sciences, and regard this controversy as a tragedy. We are committed both to the scientific enterprise (including evolutionary science) and to the Good News that God has revealed himself as a person, Jesus of Nazareth. The issue is resolvable by accepting two considerations:

1. We are an evolved species. Unprecedented developments in genetics show beyond reasonable doubt that we and other primates are the descendants of common ancestors. Just as DNA is used in courts to establish paternity, or to identify people involved with crimes, so particular features of DNA sequences establish evolutionary relatedness.
2. The science of evolution and the theology of creation differ in their vocabularies, subject matter, and concerns. Evolutionary science and the biblical concept of creation (regardless of whether someone believes in it) should be seen to address different aspects of human experience. They are not mutually exclusive.

Today we are witnessing momentous scientific developments. An international consortium has determined the order of (most of) the 3 billion DNA bases (chemical units of information) that comprise the chimpanzee genome. Comparison of the base sequences of chimp and human DNA shows that they are very similar. This indicates that humans should be classified as a species of ape. Our closest relatives (in order) are chimps, gorillas, and orangutans. The differences between chimp and human genetic sequences reflect natural genetic processes. Bases have been changed, and segments of DNA rearranged.

Genetic history is inscribed in DNA sequences. Our DNA sequence includes thousands of derelict genes. These are either ancient relics of once-active genes, or randomly generated copies of genes.<sup>3</sup> It is extraordinary to view large segments of chimp and human DNA, aligned side-by-side, and see the same sequence of genes and derelict genes. Both species are products of the one lineage in which these scrambled genes were generated.<sup>4</sup> Fascinating examples are known. Most mammals make their own ascorbic acid (vitamin C), but higher primates like us need ascorbic acid in their diet. This is because a gene required to make ascorbic acid became inactivated in an ancestor of the higher primates. Chimps, humans (and other higher primates) retain in their DNA derelict copies of this gene.<sup>5</sup>

Most mammals wage war and make love in response to chemical signals (pheromones) that they detect with the vomeronasal organ. But Old World primates (including chimps and humans) lack this structure. The gene for a key signaling protein is defunct, although still present in our DNA (and containing the original inactivating mutation). Pheromone-sensing receptor proteins cannot now signal, and their genes (about 100 of them) have fallen into disrepair.<sup>6</sup>



We have 1,000 “olfactory receptor” genes that encode proteins needed for our sense of smell. About 600 of these can no longer make functional proteins, and many are defunct also in chimps, gorillas, and orangutans—and have the same inactivating mutations in each species. Such mutations occurred in an ancestor of all the species that currently own (by inheritance) the common mutation.<sup>7</sup> Similarly, humans and chimps have 33 genes that make proteins used to sense bitter taste. Some of these genes are derelicts (with the same inactivating mutations) in both humans and chimps, scrambled in a common ancestor.<sup>8</sup>

What compensates for our loss of pheromone and olfactory sensitivity? New World primates have 2-color vision, but Old World primates (including humans) have 3-color vision. This arose when a segment of DNA containing one of the original visual pigment genes was duplicated. Old World primates inherited the same duplicated gene from the one ancestor in which the unique copy-and-paste event happened.<sup>9</sup> Copying-and-pasting has repeatedly produced new genes. Primate genes that control the immune system<sup>10</sup> and sexual function<sup>11</sup> have arisen by multiple cycles of DNA duplication. Many copied-and-pasted DNA segments occur on the X- and Y- (sex) chromosomes, and have been inherited by humans, chimps, and gorillas. Large-scale changes to DNA continue. Humans differ from chimps by about 200 large duplicated or deleted segments. Any two humans differ by some ten large duplications or deletions of up to 400,000 bases.<sup>12</sup>

We and other primates have emergency patches on our DNA, marking sites where radiation once caused DNA breaks. Many patches are common to chimps and humans. Our DNA has the scars of radiation damage that occurred in reproductive cells of long-extinct ancestors.<sup>13</sup>

Chimps and humans are related genetically. This indicates that we are the products of a common lineage. We marvel in these scientific discoveries, and affirm our conviction that the discoveries of science reveal the work of God.

We regret the efforts of religious groups that seek to debunk evolution. We regret the wastage of resources and good will arising from ongoing confrontations. We fear for generations of children whose minds are being turned against science by anti-“evolution” indoctrination. Does acceptance of human evolution consign the book of *Genesis* to the rubbish bin? We affirm fervently that the *Bible* is our authority in all matters of faith and conduct. But we do urge that it be read responsibly.

The *Bible* describes how God has revealed himself in the history of Israel and supremely in a person called Jesus. It shows us our significance, our responsibilities, and the possibility of a relationship with the Maker of heaven and earth. The early chapters of *Genesis* do not address scientific questions. They are concerned with something more fundamental than science. They intro-

duce in richly figurative language the magnificence of Israel’s God.

The *Genesis* creation story has a carefully crafted, semi-poetic structure. It is rich in symbolism and in allusion to religious concepts current in the ancient world. It sets out to undermine the assumptions upon which the religions of Israel’s neighbors were based. Its meaning is strikingly illuminated by the socio-religious context in which it was written.<sup>14</sup> Israel was surrounded by mighty empires that worshiped crowds of gods. Israel was almost alone in the ancient world in its vision of a God who was all-powerful, rational, consistent, righteous, faithful, and good. The gods of the ancient empires were nothing like this. As C. S. Lewis said, “‘gods’ is not the plural of ‘God.’”<sup>15</sup>

*Genesis* does not set out to present the age of the universe, the definition of “species,” or the biological origins of humanity. But *Genesis* presents a God who makes science possible. Science took root in Europe because the early scientists recognized the character of God as the guarantee that nature was lawful, intelligible, and consistent.<sup>16</sup> What the Bible says about creation was vital for the development of science.

Remarkably, people at the extreme poles of the science-religion debate are united in their insistence that “evolution” and “creation” are competing concepts. To bedmates like Richard Dawkins and biblical literalists, you have to believe one or the other. This “either-or” dichotomy shows a lack of understanding about what these words mean. Evolution is a process. The concept of creation (wherever or not you believe it) refers to an act of an agent, God.<sup>17</sup> The concerns of evolutionary science are impersonal (interactions between organisms and environment). The concerns of creation are personal (relationships between God and his creatures, and God’s intentions for his world). The language of evolution is about genes, duplications, and base substitutions. The language of creation is about value, purpose, and destiny.

So we reject the claims of Dawkins and biblical literalists that “evolution” and “creation” are mutually exclusive terms. “Evolution” describes dynamic change within the created order. “Evolution” is an aspect of “creation.”<sup>18</sup>

Christians who oppose evolution regard themselves as a part of creation. They accept that they came to exist by the biological processes of conception, birth, and growth, and that God uses his biological processes to create them. Could they not accept that God used another of his biological processes to create their species? When thinking about the astonishing processes involved in the development of the foetus, we can only concur with the author of Ps. 139:13, 14, “You created every part of me ... I praise you.” The same sense of wonder and worship arises from the astonishing biological processes by which our species developed.

Given that human DNA is so similar to that of the chimps, is our status any different from that of other animals? People at both extremes of the debate argue that an evolutionary past denies current value to humanity. *Genesis* does not give the mechanism by which we got here. It simply describes our physical substance as "earth" and ascribes our being to the work of God. It gives our status as creatures in the "image of God." "Image" means that we should reflect what God is and does.<sup>19</sup> The concept refers not to biological properties but to personal response to God.

The geneticist Ajit Varki has said that genes alone cannot explain the human brain. The human brain owes many of its sophisticated abilities to an intimate synergy between nature (genes) and nurture (environment). The human mind will ultimately be explained only as "Nature via Nurture."<sup>20</sup> We are human not only because of our genes, which provide the necessary biological framework for our humanity. We are human also because of our nurture. The Christian believes that vital to this nurture is the call and care of God, who has shown us his goodness, justice, and liberating love. ●

### Acknowledgment

We are grateful for helpful comments from Paul Wraight, Ph.D., who lectured in physics at the University of Aberdeen.

### Notes

- <sup>1</sup>For comment by scientists, see E. C. Scott and G. Branch, "Evolution: What's Wrong with 'teaching the Controversy,'" *Trends in Ecology and Evolution* 18 (2003): 499; R. T. Pennock, "Creationism and Intelligent Design," *Annual Review of Genomics and Human Genetics* 4 (2004): 143.
- <sup>2</sup>NZ Listener July 1-7, 1995, p.42; April 22-28, 2000, p.16.
- <sup>3</sup>Z. L. Zhang and M. Gerstein, "Large-Scale Analysis of Pseudogenes in the Human Genome," *Current Opinion in Genetics and Development* 14 (2004): 328. For an analysis of recently arising pseudogenes, see the update on the human genome: International Human Genome Sequencing Consortium, "Finishing the Euchromatic Sequence of the Human Genome," *Nature* 431 (2004): 931.
- <sup>4</sup>In a genetic region concerned with immunity (1.9 million bases) chimps have 41 genes and 59 scrambled genes, almost the same as humans. The main difference is that a stretch of 95,000 bases has been deleted from chimp DNA. This resulted in the loss of one gene and three scrambled genes that remain in human DNA. Sequencing work on chromosome 21 has ordered 33 million bases. Essentially the same set of genes and fossil genes is found in chimp and human DNA. In many cases, the fossil genes are the same length in the two species. They have hardly changed since the species diverged. See T. Anzai, T. Shiina, N. Kimura, et al., "Comparative Sequencing of Human and Chimpanzee MHC Class I Regions Unveils Insertions/Deletions as the Major Path to Genomic Divergence," *Proceedings of the National Academy of Science of the USA* 100 (2003): 708; The International Chimpanzee Chromosome 22 Consortium, "DNA Sequence and Comparative Analysis of Chimpanzee Chromosome 22," *Nature* 429 (2004): 382.
- <sup>5</sup>Y. Inai, Y. Ohta and M. Nishikimi, "The Whole Structure of the Human Nonfunctional L-Gulonolactone Oxidase Gene—The Gene Responsible for Scurvy—and the Evolution of Repetitive

Sequences Thereon," *Journal of Nutritional Science and Vitaminology* 49 (2003): 315.

- <sup>6</sup>E. R. Liman and H. Innan, "Relaxed Selective Pressure on an Essential Component of Pheromone Transduction in Primate Evolution," *Proceedings of the National Academy of Science of the USA* 100 (2003): 3328; J. Zhang and D. M. Webb, "Evolutionary Deterioration of the Vomeronasal Pheromone Transduction Pathway in Catarrhine Primates," *Proceedings of the National Academy of Science of the USA* 100 (2003): 8337.
- <sup>7</sup>Y. Gilad, O. Man, S. Paabo, and D. Lancet, "Human Specific Loss of Olfactory Receptor Genes," *Proceedings of the National Academy of Science of the USA* 100 (2003): 3324; Y. Gilad, V. Wiebe, M. Przeworski, et al., "Loss of Olfactory Receptor Genes Coincides with the Acquisition of Full Trichromatic Vision in Primates," *PLoS Biol* 2 (2004): 120.
- <sup>8</sup>C. M. Parry, A. Erkner, and J. le Coutre, "Divergence of T2R Chemosensory Receptor Families in Humans, Bonobos, and Chimpanzees," *Proceedings of the National Academy of Science of the USA* 101 (2004): 14830.
- <sup>9</sup>K. S. Dulai, M. von Dornum, J. D. Mollon, and D. M. Hunt, "The Evolution of Trichromatic Color Vision by Opsin Gene Duplication in New World and Old World Primates," *Genome Res* 9 (1999): 629. And the process of duplicating (and deleting) opsin genes on the X chromosome continues, as evidenced by the abnormal patterns that are found in cases of color blindness. See H. Ueyama, R. Torii, S. Tanabe, et al., "An Insertion/Deletion *TEX28* Polymorphism and Its Application to Analysis of Red/Green Visual Pigment Gene Arrays," *Journal of Human Genetics* 49 (2004): 548.
- <sup>10</sup>T. Shiina, G. Tamiya, A. Oka, et al., "Molecular Dynamics of MHC Genesis Unraveled by Sequence Analysis of the 1,796,938-bp HLA Class I Region," *Proceedings of the National Academy of Science of the USA* 96 (1999): 13282; H. Sawai, Y. Kawamoto, N. Takahata, and Y. Satta, "Evolutionary Relationships of Major Histocompatibility Complex Class I Genes in Simian Primates," *Genetics* 166 (2004): 1897; J. K. Kulski, T. Anzai, T. Shiina, and H. Inoko, "Rhesus Macaque Class I Duplcon Structures, Organization, and Evolution within the Alpha Block of the Major Histocompatibility Complex," *Molecular Biology and Evolution* 21 (2004): 2079.
- <sup>11</sup>These duplications have a structure in which the copied segment faces the opposite direction from the original segment, and is separated from it by a spacer segment. S. Rozen, H. Skaletsky, J. D. Marszalek, et al., "Abundant Gene Conversion Between Arms of Palindromes in Human and Ape Y Chromosomes," *Nature* 423 (2003): 873; P. E. Warburton, J. Giordano, F. Cheung, et al., "Inverted Repeat Structure of the Human Genome: the X-chromosome Contains a Preponderance of Large, Highly Homologous Inverted Repeats That Contain Testes Genes," *Genome Research* 14 (2004): 1861.
- <sup>12</sup>A. Fortna, Y. Kim, E. Maclaren, et al., "Lineage-Specific Gene Duplication and Loss in Human and Great Ape Evolution," *PLoS Biology* 2 (2004): 937; J. Sebat, B. Lakshmi, J. Troge, et al., "Large-Scale Copy Number Polymorphism in the Human Genome," *Science* 305 (2004): 525; A. J. Iafrate, L. Feuk, M. N. Rivera, et al., "Detection of Large-Scale Variation in the Human Genome," *Nature Genetics* 36 (2004): 949.
- <sup>13</sup>The patches in our DNA can identified as interstitial telomeric repeats, (TTAGGG)<sub>n</sub> possibly put in place by telomerase, and as nuclear mitochondrial pseudogenes. See S. G. Nergadze, M. Rocchi, C. M. Azzalin, et al., "Insertion of Telomeric Repeats at Intrachromosomal Break Sites during Primate Evolution," *Genome Res* 14 (2004): 1704; M. Richetti, F. Tekaiia, B. and Dujon, "Continued colonization of the Human Genome by Mitochondrial DNA," *PLoS Biology* 2 (2004) 1313.
- <sup>14</sup>J. Drane, *Old Testament Faith* (Tring: Lion, 1986), 62f; E. Lucas, *Genesis Today* (London: Stirling University, 1989), 89f; A. Konig, *New and Greater Things* (Pretoria: UNISA, 1988), 9f. The authors were respectively, Lecturer in Religious Studies, Stirling University; research chemist-(University of Oxford)-turned-theologian; and Professor of Theology, University of South Africa.

The genre of the Genesis creation stories is very different from that of the New Testament records that describe the life of Jesus. The New Testament authors emphasized that what they wrote about Jesus—his life, death, and resurrection—was based on direct observation. Paul did not allow that his message could be taken figuratively (1Cor. 15:1–8); Luke stressed that he wrote as an investigative historian (Luke 1:1–4; Acts 1:1–2) and John, although considered the most “spiritual” of the Gospel writers, emphasized his reliability as an eyewitness (John 19:35; 1 John 1:1–3). The “second generation” believers made it clear that they understood the Good News as describing history (John 21:24; Heb. 2:3). That the earliest Christian preaching about Jesus was to be taken in concrete historical terms was made plain by reports of Roman (Tacitus), Jewish (Josephus, Talmudic writings) and early Church (Ignatius, Clement) writers. See P. Barnett, *Is the New Testament History?* (London: Hodder and Stoughton, 1986); E. M. Blaiklock, *Who Was Jesus?* (Chicago: Moody Press, 1974); F. F. Bruce, *Jesus and Christian Origins Outside the New Testament* (London: Hodder and Stoughton, 1974); M. Staniforth, trans., *Early Christian Writings* (Harmondsworth: Penguin, 1968).

<sup>15</sup>C. S. Lewis, *Reflections on the Psalms* (Glasgow: Collins, 1961), chap. 8.

<sup>16</sup>H. Turner, *The Roots of Science* (Auckland: DeepSight Trust, 1998).

<sup>17</sup>M. Poole, *Science and Belief* (Oxford: Lion, 1990), 110.

<sup>18</sup>A debate between Dawkins and a science educationalist is hugely instructive for understanding the issues. See M. Poole, “A Critique of Aspects of the Philosophy and Theology of Richard Dawkins,” *Science and Christian Belief* 6 (1994): 41; with the replies in the same journal, vol. 7, pp. 45, 51. Dawkins insists that “I pay religions the compliment of regarding them as scientific theories ... I see God as a competing explanation for facts about the universe and life.” Dawkins and Creationists see “God” and “evolution” as competing explanations. This is as illogical as seeing “God” an alternative to “star formation,” “plate tectonic movement,” “pollination,” “fruit set,” or “cell division.”

<sup>19</sup>J. I. Packer, “Reflected Glory,” *Christianity Today* 47 (2003): 56. “Image” means “representative likeness.” This requires that, like God, “we should always act with resourceful rationality and wise love, making and executing praiseworthy plans ...” We should generate value by producing what is truly good. “We should be showing love and goodwill towards all other persons ... And in fellowship with God, we should directly honor and obey him by the way we manage and care for that bit of the created order that he has given us to look after.”

<sup>20</sup>A. Varki, “How to Make an Ape Brain,” *Nature Genetics* 36 (2004): 1034.

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## Mounting Evidence for Theistic Evolution against Intelligent Design

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**T**wo reports in a single journal challenge the notions presented in opposition to theistic evolution (TE). Daniel M. Weinreich et al., “Darwinian Evolution Can Follow Only Very Few Mutational Paths to Fitter Proteins,” [*Science* (7 April 2006): 312: 111–4] challenges the notion that evolution functions by totally random mutations. The report describes five mutations in a standard bacterial  $\beta$ -lactamase that confer high resistance to cefotaxime, a recently introduced cephalosporin antibiotic. Five mutations theoretically allow 5! or 120 paths. However, 102 of the 120 trajectories are “inaccessible to Darwinian selection,” with several of the remaining ones unlikely. They indicate that no more than four, and possibly only two, are viable. This means that the actual evolutionary sequence will be more nearly linear than random. Reality markedly restricts logical possibility.

I must add two further points. First, not all the bacteria will change to the new enzyme because many other  $\beta$ -lactam antibiotics (the penicillins, cephalosporins, and carbapenems) are still in use, with the original forms still found in nature. So, while some strains will develop resistance to the one cephalosporin, others will develop different resistance. Some will retain the original gene. Second, what looks very much like guidance is built into living things at a very basic level.

The second report, Jamie T. Bridgham, et al., “Evolution of Hormone-Receptor Complexity by Molecular Exploitation” [*ibid.*, pp. 97–101] is accompanied by an analysis,

# News & Views

## Mounting Evidence for Theistic Evolution against Intelligent Design

Christoph Adami, "Reducible Complexity" [ibid., pp. 61–3]. The report notes that, in tetrapods, one irreducibly complex (IC) signaling sequence involves aldosterone and the mineralocorticoid receptor. Another involves cortisol and the glucocorticoid receptor. This latter is more ancient, found in some of the most primitive vertebrates, agnathans, which have a single pathway utilizing cortisol as the signaling molecule. However, their receptor also responds to aldosterone. The gene in this ancient pathway was duplicated before elasmobranchs split from agnathans, apparently between 470 and 440 million years ago. One of the duplicated genes mutated twice sometime during the next 20 million years, removing sensitivity to aldosterone in one receptor. Thus teleosts have a single functional pathway. They already have the pair of receptors, but with no aldosterone synthesis the unmutated receptor cannot be triggered. The tetrapod line adds aldosterone synthesis, thereby producing two control systems. Thus the single IC control sequence of the ancestor about 470 million years ago became two separate IC control sequences in tetrapods by normal Darwinian evolution. So the report concludes:

We propose that molecular exploitation will be a predominant theme in evolution, one that may provide a general explanation for how the molecular interactions critical for life's complexity emerged in Darwinian fashion.

Adami refers to this study and to an earlier paper, Richard E. Lenski, et al., "The Evolutionary Origin of Complex Features" [*Nature* 423 (8 May 2003): 139–41], and concludes:

Although these authors have not directly addressed this controversy [ID] in the discussion of their work—because the work itself is intrinsically interesting to biologists—such studies solidly refute all parts of the intelligent design argument. These "alternative" ideas, unlike the hypotheses in these papers, remain thoroughly untested. Consequently, whatever debate remains must be characterized as purely political.

This is markedly different from Michael Behe's admission as a witness in the Kitzmiller v Dover trial:

There are no peer-reviewed articles by anyone advocating for intelligent design supported by pertinent experiments or calculations which provide detailed rigorous accounts of how intelligent design of any biological system occurred.

As a Senior Fellow, Discovery Institute, he would certainly have given Intelligent Design (ID) the most positive spin possible.

Looking at the material scientifically, the claims against TE are rejected, and support for ID is denied. Looking at this from a theological/philosophical viewpoint, the mate-

rial runs counter to all versions of old earth creationism, including ID. The Creator evidently established the basis for IC processes within natural patterns of development. Providential control anticipated evolutionary requirements without any need for later tinkering. So the Robust Formational Economy Principle is buttressed by the new research. This "fully-gifted creation" must be expected from the omniscient and omnipotent Author and Conserver of all. Is it too strong to suggest that the deity of old earth creationism has limited competence and ability? ●

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# Book Reviews



## ENVIRONMENT

**ENVIRONMENT, INC.: From Grassroots to Beltway** by Christopher J. Bosso. Lawrence, KS: University of Kansas Press, 2005. 208 pages, notes, bibliography, index. Paperback; \$15.95. ISBN: 0700613684.

Bosso is associate professor of political science at Northeastern University and author of the book *Pesticides and Politics: The Life Cycle of a Public Issue*. He has also contributed to a number of editions of the following publications: *Interest Group Politics*, *Environmental Policy in the 1990s*, and *Environmental Policy: New Directions for the 21st Century*. The purpose of this book is to analyze the evolution of "organized environmental advocacy" in the United States from the early 1970s to the present. The origins, organizational changes, and methods of operation of some thirty organizations that lie at the core of the national environmental advocacy community are examined both individually and collectively.

The book consists of six chapters, the first of which is an introduction to the author's reasons for undertaking this study of the national environmental community. Chapter two looks at the origins of the environmental community from the late nineteenth century through the early 1970s. Chapter three examines the maturation of this community following the creation of a number of environmental organizations in the late 1960s and early 1970s. Chapter four looks more closely at how these organizations have managed to survive over the years while chapter five examines the range of tactics utilized by national environmental advocacy organizations. The final chapter considers the lessons that can be extended beyond the particulars of environmental advocacy to other public-interest advocacy communities.

Bosso describes how the major environmental organizations have transformed themselves over the last forty years from relatively amateur outfits, often supported by a few elite patrons, into today's mass-based professional advocacy organizations. Most of these organizations responded to internal stresses and external political pressures by growing larger, diversifying their sources of revenue, replacing volunteers with professional staff, and adopting the kinds of management procedures that are characteristic of any well-run nonprofit organization. These transformations are documented in the numerous tables that are included throughout the book. These tables provide a wealth of information about the major environmental organizations that are still in existence today. The contents of each chapter are also documented by an extensive list of endnotes.

Bosso states in his preface that this book is written for two somewhat different audiences: students of environmental politics and students of interest groups. The book could be used as a supplemental text in a college course that deals with environmental policy and politics. It also

## Book Reviews



provides a detailed case study for the broader landscape of interest group politics in the United States. Anyone who would like to know more about the history of the American environmental movement and the organizations that have shaped this movement should take the time to read this book.

Reviewed by J. David Holland, 868 Oxford Drive, Chatham, IL 62629.



## FAITH & SCIENCE

**HOW DO YOU KNOW YOU'RE NOT WRONG? Responding to Objections That Leave Christians Speechless** by Paul Copan. Grand Rapids, MI: Baker Books, 2005. 272 pages, notes. Paperback; \$14.99. ISBN: 0801064996.

Copan is the Pledger Family Chair of Philosophy and Ethics at Palm Beach Atlantic University in Florida. He is the author of two other apologetics resources, *That's Just Your Interpretation* and *True for You, But Not for Me*. In addition, he has coauthored with William Lane Craig a book entitled *Creation Out of Nothing* which examines the biblical, scientific, and philosophical case for God's creation of the universe *ex nihilo*. He also edited another book entitled *Will the Real Jesus Please Stand Up?* which is based upon a debate between John Dominic Crossan of the Jesus Seminar and William Lane Craig, research professor at the Talbot School of Theology. In recent years, he has lectured as a Christian apologist on many university campuses in the United States and in other countries.

This book is divided into three parts. In part one, which includes two chapters, Copan discusses "slogans related to truth and reality." In these chapters, Copan presents some of the philosophical problems that are associated with skepticism and pragmatism. Part two, which includes eight chapters, discusses "slogans related to worldviews." Several of these chapters focus upon an analysis of naturalism and scientism, worldviews that are in conflict with theism. Other chapters deal with the naturalistic perspective which maintains that there is no soul or mind that is distinct from the body and capable of surviving death. Practical aspects of naturalism are presented in the last two chapters of part two where Copan critiques the animal rights movement. Part three, which consists of seven chapters, focuses upon "slogans related to Christianity." In this section of the book, several important issues regarding biblical teaching and Christian belief are discussed. Issues addressed include God's command to Abraham to sacrifice his only son Isaac, the harsh and oppressive nature of some Old Testament laws, other Old Testament laws that appear to be strange and arbitrary, problems associated with the doctrine of original sin, the exclusion of certain texts from the New Testament canon, and the debate over the Gospel of Thomas as a legitimate source about the historical Jesus.

Every chapter in this book addresses a particular topic with a list of points that either provide challenges to a non-Christian perspective (such as naturalism or scientism) or offer explanations of a difficult biblical issue (such as Abraham's sacrifice of Isaac or the strange nature of many Old Testament laws). While some chapters contain as few as five or six of these "points," others contain as



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many as ten or twelve. After discussing each issue with a series of points, Copan reviews the contents of each chapter with a list of summary statements. Each chapter then concludes with a brief bibliography for further reading. Notes are organized by chapter at the end of the book.

In the introduction, Copan summarizes a threefold strategy for defending and dealing with objections to the Christian worldview. First, we need to help people understand that we cannot escape from the objectivity of truth and the reality to which truth claims correspond. Second, if people see that truth and reality are inescapable, then we can deal with the next level, the level of worldviews. If theism is the best option among competing worldviews, then the third stage is to determine which theistic option is the most viable. It is at this stage that we can begin to deal with Christian apologetics.

It is the author's hope, as stated in the introduction, that the material in this book will encourage Christians in general, but particularly Christian students in high schools and universities (and their parents) who regularly face skeptical challenges to their faith. While some of Copan's arguments may be difficult for high school students to follow, college students and other adult Christians should find this book to be very helpful. Not only does it provide answers to a number of challenging issues and questions, it also provides the reader with a helpful strategy for dealing with those who raise questions about Christian beliefs. According to Copan, we must not only be prepared with wise and informed answers. We must also be prepared to listen and to ask probing questions (as Jesus often did). This approach can help believers discover where an unbeliever is coming from. It can also help unbelievers to understand the inadequacies of their own worldviews. Anyone who wants to be better prepared to defend the Christian faith will benefit from reading this book.

*Reviewed by J. David Holland, 868 Oxford Drive, Chatham, IL 62629.*



### HEALTH & MEDICINE

**HOPE OR HYPE: The Obsession with Medical Advances and the High Cost of False Promises** by Richard A. Deyo and Donald L. Patrick. New York: AMACOM, 2005. 336 pages, index. Hardcover; \$24.95. ISBN: 0814408451.

Deyo and Patrick are faculty members at the University of Washington in Seattle and are among highly-cited researchers in the social sciences designated by Thompson ISI. Deyo co-edited *Evidence-Based Clinical Medicine* (1999). Patrick is a member of the Institute of Medicine and founding president of the International Society for Quality of Life Research. He co-authored *Health Status and Health Policy* (1993).

The authors point out that there are many unnecessary medical procedures which create additional risk and cost. They hope to generate discussion about the health care policy and practice in the United States and to encourage changes in doctors' practice, patients' behavior, corporate marketing, media news coverage, and government regulations.

This book has four parts. Part one, "Can there be too much of a good thing?" gives reasons why Americans want new medical treatments. New treatments are a major reason that the health-care cost is increasing in the US, and many new treatments are unnecessary and sometimes harmful. Part two, "How do things really work?" explains the strategies used by drug companies, the media, doctors, hospitals, and advocacy groups to push us into the current mess. Drug manufacturers comprise the most profitable industry in the US, and between 1997 and 2001, research spending on drugs rose 59%, while investments in drug advertising rose 145%.

Part three, "Useless, harmful, or marginal," provides examples where popular treatments caused unnecessary disability and/or dollar costs. Examples given include calcium-channel blockers to treat high blood pressure, the drugs encainide and flecainide to prevent cardiac arrest, and pulmonary artery catheters used in intensive care settings. One recent research suggested that complications and deaths from prescription drugs in the US cost more than \$177 billion a year, whereas Americans spent an estimated \$184 billion on drugs in 2003. Part four, "Crossing the threshold," gives recommendations to doctors, insurers, researchers, decision makers, government officials, and consumers to do their part in solving the problem.

This book describes the problem and proposes solutions. It emphasizes the importance of evidence-based clinical medicine and gives many examples of false, but accepted, medical advances. It recommends important changes to correct the current health care problem in the US. Systematic scientific investigation flourished in seventeenth-century Christian Europe, because it was closely related to the medieval Christian world view. Scientific and careful examination of nature and data is consistent with a Christian diligent study of Scripture since nature and the Bible are two books given by God.

To study nature, scientists carry out laboratory experiments or natural observations. Controlled experiments in the laboratory can provide unbiased data and reach more reliable conclusions than just natural observations. In the mid-twentieth century, controlled clinical experiment methodology was first introduced into medicine, and it revolutionized the discovery of new medical advances. The increase in human life-span and decrease of death rates due to cancer and AIDS are the results of new methods of clinical experimentation.

For the readers of *PSCF*, the scientific approach can be applied to the study of Scripture. Many theories, based purely on scholarly conjectures, have been proposed about different aspects of the Bible. The recent popular book, *The Da Vinci Code* was written as fiction, and some people are willing to accept it as a historical book. Since the beginning of the nineteenth century, scholars have proposed various theories to deny the truth contained in the Bible. The results have harmed the church. The mistakes made in the medical field from lack of collecting unbiased data can be duplicated in the field of Christianity and result in falsehoods. Christians should therefore be more discerning regarding so-called advances in the areas of medicine and of biblical knowledge.

*Reviewed by T. Timothy Chen, St. Louis Chinese Gospel Church, Manchester, MO 63017.*



**WHEN SICKNESS HEALS: The Place of Religious Belief in Healthcare** by Siroj Sorajjakool. Philadelphia, PA: Templeton Foundation Press, 2006. 149 pages, bibliography and index. Paperback; \$19.95. ISBN: 9781599470900.

Sorajjakool is professor of religion, psychology, and counseling at Loma Linda University and pastoral counseling supervisor at Loma Linda and Claremont School of Theology. He has published extensively in Thai and English.

The main point of *When Sickness Heals* is that people need to find purpose or meaning in their illness to begin recovering from it. Illness leads us to question our sense of meaning and then gaining a sense of meaning heals. Therefore, some peoples' illness are extended or worsened by their inability to make theological sense of it. For example, some Christians' expect that God will clearly answer "Why me?" but this impedes recovery because it inhibits integration. I would not have expected Chinese or Buddhist patients to share with Westerners this intense need for meaning from illness, but Sorajjakool's references and defense were convincing that this is a universal experience that crosses cultures and religious viewpoints.

Sorajjakool writes that "healthy people are those who learn to accept and integrate pain and suffering into their system of meaning, because ultimately there is no life without death, no health without sickness, and no pleasure without pain." As one who works in health care, I share Sorajjakool's perspective that illness leads a person to spiritual introspection, and whole health requires some level of metaphysical coherence and integration. Sorajjakool thinks that "Perhaps more is happening theologically in these locations (hospitals, hospices, and rehabilitation centers) than in seminaries." Those of us who work in health care could do so much more to minister to and learn from people going through health crises.

I found this book helpful in how to understand the process people go through spiritually when they fall ill, but it does not represent orthodox Christianity. Sorajjakool was raised in a strong Christian home, but he seems to be theologically eclectic now. His Christian convictions are not evident in this book, and he does not acknowledge a theistic viewpoint.

*When Sickness Heals* includes three appendices, including a fascinating introduction to the spirituality of Raimundo Panikkar, Paul Tillich and Carl Jung. Appendix 3 was a proposed diagnosis of Soren Kierkegaard's mental illness, which I did not find helpful. The bibliography and extensive notes are helpful.

I was somewhat disappointed by chapter five, "Theological Integration." Sorajjakool summarized the thoughts of widely disparate thinkers including Tillich, Bonhoeffer, John Macquarrie and Panikkar, including descriptions of the spiritual content of alchemy and the story of the goddess Kali. I was unable to integrate these issues, even with the author's help. It felt like a compilation of vaguely related thoughts on the role of the spirit in health, but it was not integrated in a way that ASA readers are accustomed to.

The main strength of *When Sickness Heals* is that it allows the reader a chance to "listen in" on the thoughts and experiences of people going through illness experiences, especially mental illness. Although the title of the

book implies the role of faith in disease in general, it mainly focused on terminal illness and mental illness. Being Thai himself, Sorajjakool is able to relate to the Asian experience and incorporates it well into his writing. Chapter eight, "Spiritual Assessment," aims to help caregivers assess the spiritual situation of their patients to assist them in the healing process. The chapter was not organized as well as it might have been, but the content was helpful.

People working in health care should be interested in this book's focus on the spiritual experience of patients. It might stimulate researchers to consider research projects at the interface of illness and spiritual experience. I came away with several questions that I hope to pursue in my work and reading.

Reviewed by Mark A. Strand, Shanxi Evergreen Service, Yuci, Shanxi, China, 030600.



## NATURAL SCIENCES

**UNDERWATER TO GET OUT OF THE RAIN** by Trevor Norton. Cambridge, MA: Da Capo Press, 2006. 385 pages. Hardcover; \$25.00. ISBN: 0306814870.

This is a magnificent book. It is not loaded with theological insight, but with its wonderful observations on nature and God's creation, it is easy to infuse your own. Norton is an evolutionist who is well aware of and comments on biblical topics such as the Flood and Creation. This book is autobiographical and full of interesting adventures taken by the author and others. It is full of observations, some humorous, about education, travel, science, history, etymology, and the varieties of earthly life.

Norton has been in love with the sea all of his life. After his first dive under water, he observed that the experience was more exciting than he had imagined as "a kaleidoscope of new images overwhelmed me." After this, underwater became to Norton the real world, not the air-bound attic up there. He observes that "the ocean reminds me that I have no right to be there and, if careless, might be invited to stay."

Norton has a way with words. For example, of his French teacher, he wrote: "Although she never dusted an external surface, no sentence emerged until it had been polished for public view" (p. 11). Of the ocean, he writes that it was "a wild aquarium, a laboratory, a cemetery for men and ships, and an anthology of legends" (p. 17).

Of his invitation to have tea with his landlord, he writes: "Mrs. B had excavated some ancient biscuits from the back of a cupboard. When she proffered them, I thought she was going to ask if I could get them carbon dated at the university" (p. 37).

Of one of his eccentric teachers, Norton wrote that he "used to lecture with his shoes off and his feet lodged in a desk drawer" (p. 41). Of Lord Nelson, it was reported that when the surgeon removed Nelson's arm, Nelson's only complaint was that the knife was uncomfortably cold (p. 106). Nelson ordered that henceforth the surgeon's cutting tools be warmed. Norton observed that time moves so

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slowly on the Isle of Coll, that a local, when asked what time it was, replied, "August."

Norton shares some amazing facts and observations. For example, sea hares copulate 65% of the time and can lay 470 million eggs in its lifetime; for the oyster, only one egg in 10 million survives to become a breeding adult; a single pair of rats can generate 1,000 offspring per year; the fragile starfish, *Luidia*, shivers itself to bits when caught; every year 70 people drown in the River Thames; and only 1% of the ocean floor has been explored.

In medieval Ireland, geese were designated as fish so they could be eaten on religious holy days; the sun and moon appear to be the same size in the sky although the sun is 400 times as far away and 400 times as big; divers in Japan can hold their breath for two minutes searching for clams; free divers stay underwater eight minutes without breathing; some whales and seals can hold their breath over one hour; hypothermia killed all the Titanic passengers in the water wearing life jackets; humans are the plumpiest primates and the only ones with chubby babies.

The book has no table of contents or index; bibliographical books are classified via geography (e.g., Northumberland, Illfracombe, Sweden, Isle of Man). Because the book has lots of short chapters, they make for easy reading and quick closure. Norton spells like the Englishman he is, e.g., humour and honour.

Trevor Norton is professor of marine biology at the University of Liverpool and the author of many books of popular natural history. These include *Reflections on a Summer Sea* and *Stars Beneath the Sea*. Norton has been dubbed "Bill Bryson underwater" (Bryson is the author of *A Short History of Nearly Everything*, the most interesting science book I have ever read).

John Banville has written that this book "is erudite, funny, weird and endearing." The *London Daily Mail* says it's "wonderfully readable ... full of amazing facts and funny stories ..." You will agree after reading this book.

Reviewed by Richard Ruble, John Brown University, Siloam Springs, AR 72761.



### ORIGINS & COSMOLOGY

**CREATION REGAINED: Biblical Basics for a Reformational Worldview** by Albert M. Wolters. Grand Rapids, MI: Eerdmans, 2005. 145 pages. Paperback; \$12.00. ISBN: 0802829694.

This is a revised and expanded edition of *Creation Regained*, a book which has been in print for twenty years and translated into eight languages. It has high praise from Nicholas Wolterstorff who evaluates it as "the best statement ... of the reformational worldview." The book's five chapters have a good many scriptural references, but the book has no footnotes, index, or bibliography.

Why did Wolters write this book?

*Creation Regained* is offered to the church to equip her in a world that desperately needs to see and hear the good news that God's kingdom has come: God is

renewing the creation and the whole of human life in the work of Jesus Christ by the Spirit (p. 143).

The chapter most likely to appeal to PSCF readers is also the longest and is entitled "Creation." Wolters defines creation as "the correlation of the sovereign activity of the Creator and the created order" (p. 14). He does not believe in a deist god who forsakes creation after setting it in motion. While God created the planets, oversees the seasons, and makes plants grow and animals reproduce, God has entrusted to humans the jobs of making tools, exercising justice, creating art, and seeking knowledge.

Wolters uses the word "law" to refer to the totality of God's ordaining acts toward the cosmos. He thinks the word "creation" is too broad in referring to created things and too narrow in excluding God's providence (p. 15). Creation law includes general revelation, which implies that creation is *knowable*.

There is some disagreement among Christians as to whether social sciences and humanities are as knowable as natural science. God's rule of law, while immediate in nature, is mediate in culture and society. Creation without sin is "wholly and unambiguously good" (p. 48).

The other chapters in this book deal with worldview and its practical implications, the Fall, and Redemption. The important issue is how Christians should arrive at biblical views about technology, aggression, political revolution, dance, education, and sexuality (p. 87). On the latter, Wolters observes: "Sexual immorality should be opposed not to repress sex but to show forth its true glory" (p. 111).

This book is widely used in academic settings, and it would be an appropriate book for seminary students, graduate students, pastors, teachers, or informed laypersons.

Wolters is professor of religion, theology, and classical languages at Redeemer University College, Ancaster, Ontario. Mike Goheen, Geneva Chair of Reformational Worldview Studies at Trinity Western University, assisted Wolters in writing the postscript, "Worldview between Story and Mission."

Reviewed by Richard Ruble, John Brown University, Siloam Springs, AR 72761.



### PHILOSOPHY & THEOLOGY

**THE LIMITATIONS OF SCIENTIFIC TRUTH** by Nigel Brush. Grand Rapids, MI: Kregel Publications, 2005. 280 pages, references, index. Paperback; \$14.99. ISBN: 0825422531.

Nigel Brush has a Ph.D. in archeology from UCLA. He is currently an Assistant Professor of Geology at Ashland University in Ohio. In the epilogue of the book, he states:

I have attempted to address one of the greatest fears that has assailed many Christians, including me—the fear of science. Has science disproved the Bible? Will science someday discover absolute proof and undeniable evidence that there is no God? (p. 279).

Brush's answer is a definitive no: that unlike biblical truth, scientific knowledge is tentative and transitory. He further argues that the image of science popularly presented to the public, that of logical, impartial systematic investigation, is false. Science is a subjective and value laden human undertaking.

The book is divided into seven parts. Part one examines the concept of absolute truth and contrasts the epistemologies of philosophy, theology, and science. Part two discusses the idea of revolutions in science and how scientific knowledge is constantly changing. Part three looks at the methods of science and the difficulties of philosophically and logically grounding scientific truth claims. Part four examines the human and cultural biases in science. The fifth part of the book examines the ultimate limitations imposed on scientific knowledge imposed by quantum theory, special relativity, and the temporal and spatial limits of the cosmos itself. The last two parts consider the failure of scientists to deal honestly with the theological implications of their discoveries, and the failure of theologians to be honest about the limits of our ability to understand and interpret Scripture.

Brush states that he is not critical of science, but rather of a materialistic scientism that claims to supplant biblical truth. I agree with Brush's statement that "Today, many people believe that scientific truth is not only superior to religious or philosophical truth but is also the *only* truth" (p. 253). Brush, however, makes little distinction between scientism and science proper. Some of his points are well made, for example, the limits of science in establishing ultimate cause or purpose, the cultural biases in science, and the appropriation of science for political and social purposes. Other arguments in the book are less convincing.

The argument that science is a failed epistemology because it has no mechanism for establishing "ultimate truth" is something of a red herring; the same could be said of philosophy, theology, and even mathematics. For those who accept a critical realist view of Creation, scientific methodology is well grounded and scientific knowledge is supported by its reproducibility and success. External validation would be nice, but it is not essential.

Brush stumbles in his claim that Special Relativity rejects the "clockwork universe" of Newton. It is true that a relativistic worldview is more complex than a Newtonian view. It is true that relativity rejects the idea of absolute time and simultaneity, but it does not negate the flow of time (in any reference frame) or the idea of causality. Scientific laws still operate in a relativistic universe.

My greatest concern is with Brush's argument that scientific truths are tentative and transitory. This claim is largely based on Thomas Kuhn's theory of scientific revolutions. Kuhn's use of the term revolution, however, is based on the way new theories change the way we understand (see) the universe and the types of questions scientists ask about that universe. Kuhn does not claim that new theories necessarily destroy or negate old theories. It is true that initial scientific understanding (such as Newtonian mechanics) completely replaced pre-scientific worldviews (such as Aristotelian metaphysics). It is not true that later scientific theories "replaced" the preceding theories. Special Relativity maintained the concepts and framework of Newtonian mechanics, but added the

Lorentz transform to all of the equations. It can be argued that scientific knowledge is incomplete, but I take issue with Brush's negative representation of scientific truth.

Despite these concerns, I found *The Limitations of Scientific Truth* to be thorough, scholarly, and well written. The book raises important questions which deserve reflection and debate. For those new to the science and faith discussion, this book provides a good introduction to philosophy of science and some of the seminal writers in the field. A more technical and complete book along these lines is McGrath's *Science and Religion: An Introduction*.

*Reviewed by Lawrence Olsen, Professor of Chemistry, Asbury College, Wilmore, KY 40390.*

**CHRISTIANITY AND PROCESS THOUGHT: Spirituality for a Changing World** by Joseph A. Bracken. Philadelphia, PA: Templeton Foundation Press, 2006. 176 pages, index. Paperback; \$19.95. ISBN: 1932031987.

Bracken is a retired professor of theology and director emeritus of the Edward B. Brueggeman Center for Dialogue at Xavier University. His recent works focus on process theology. He has been the editor or co-editor of two other works in philosophical theology and the author of seven books.

One would expect that the theological work of a Jesuit, apart from its philosophical trappings, would be strictly orthodox in its development and presentation. However, my immediate experience of the book was not one of the logical structure or the interesting ideas, but of the continuous dilution of essential Christian truth. However, I only wish to make a point. One must not expect that uniting real philosophy with the faith must somehow presuppose a deteriorated version of Christianity.

The central project of this book is to present a coherent theology that correctly integrates Alfred N. Whitehead's process philosophy and Christian belief. Importantly, Bracken is well aware that this must not be a completely abstract ontological schema but one that impacts Christians in the world. In the tradition, starting with Plato and progressing through the Moderns, the still and solid is the real object of truth. Systems are set up in such a way that only the stable is worthy of true contemplation. However, our world is not one that is persistently unchanging; it is a world of constant change. As Heraclitus realized, we never step into the same river twice. Whitehead's process philosophy parts from this tradition, and suggests it is not the solid self-reflective stabilities that the world *really* consists of, but relations. Bracken employs this line of reasoning throughout his work.

Opening the text, Bracken lays out a very fitting description of the Trinity as fundamentally in "relationship." This also applies to our relationship to God. Bordering on panentheism and using Acts 17:28 as a backdrop, Bracken discusses how God's community of relation ultimately encompasses everything, including humanity. Whitehead's ideas are ideal for this type of an account and also for uniting the Trinity within this account. The change and spontaneity of our world is ultimately the creativity from God.

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Chapter 3 addresses the Incarnation. Here, Bracken is correct to stress *one* reason why the Word was made flesh—namely to show us the way of self-denial or surrendering ourselves to God's will. However, as important as it is to our individual spiritual lives and ultimately the goodness of community, it does *not* supersede the objective reality of Christ's redemption—the Paschal Mystery. The idea of self-denial and subjective redemption is continued in the next chapter with a discussion on community, essential for a world consisting of "societies" of relational movement. Bracken develops the idea that communities are good or bad insofar as they can commune with God's will and deny their own motives for success.

Insightfully, he depicts Christendom at large, seeking the Kingdom of God. Yet, inside this larger community are denominational "societies" overlapping at various places empowered by their difference, if they seek God first and self survival second. Bracken says that the practical wish to survive as an organization must give way to the greater Way of Christ. This gives way to a troubling dialogue on the multiplicity of truth, which culminates in a defense of emergent truth and a statement that we cannot know truth apart from our own experience. A debate has been and should be had about the harmoniousness of this particular metaepistemological idea with Christian doctrine. Although some might think that I am being too sensitive about such topics, I see no sensitivity in the inability to reconcile traditional orthodox Christianity of the ancient creeds and Scripture to Bracken's statements about salvation being self-acceptance.

Bracken ends with two stimulating chapters on the need of altruism, a metaphysical necessity in his treatment of Whitehead's philosophy, while incorporating a fresh perspective on biologists Dawkins and Wilson. In closing, Bracken echoes Solomon in saying that ultimately the only way is to trust God.

Process theology is interesting, but it usually seems to create a mere shadow of our faith. It is good to see Christians engaged in serious philosophical questions and Bracken has a good treatment; yet, I cannot support the seemingly unorthodox viewpoints. I will continue reading Whitehead himself and the Bible.

*Reviewed by Jonathan D. Parker, student, University of Alabama-Huntsville, Huntsville, AL 35802.*

**WHAT GOD KNOWS: Time and the Question of Divine Knowledge** by Harry Lee Poe and Stanley Mattson, eds. Waco, TX: Baylor University Press, 2005. 175 pages, notes, index. Paperback. ISBN: 1932792120.

In the Introduction, the editors, noting that "... theology, philosophy and science have not reached a consensus within their own disciplines about what time is," observe that the implications (of time's nature) are "strikingly important" (p. 2). Based on this claim, and driven by Harry Blamires's 1963 book, *The Christian Mind*, which rebuked Christian scholars for an abandonment of their intellectual heritage, the C. S. Lewis Foundation began a series of summer conferences. This book comes from the 2002 conference. It is must reading for ASA members.

Poe is a professor at Union University; Mattson is president of the C. S. Lewis Foundation. Mattson's preface explains the conference's origins and why the C. S. Lewis Foundation was involved. It is an interesting micro-history. The papers in this book are transcripts of the 2002 conference talks. The preface is marred by an off-the-subject paragraph castigating "the enemy," namely, secular classrooms, hostile faculty, irresponsible media and activist courts. But this diversion is momentary, and not repeated elsewhere.

Poe begins with "The Problem of Time in Biblical Perspective." He treats the difference between "kairos time" (the Hebrew concept of quality) and "chronos time" (the Greek concept of quantity), arguing that when these two ideas are confused, scripture gets misinterpreted as in the instance of Ussher's calculation of the date of creation.

The second paper, "St. Augustine and the Mystery of Time," by Timothy George, expounds on how one of our most revered theologians looked at time and how his insights are still pertinent to our modern age.

Russell Stannard comes next, with "On the Developing Scientific Standard of Time." He unfolds the idea that God's experience of time must be much different from ours. He claims that many of our "common sense" ideas about time are simply wrong and that modern physics has now proven them wrong. His claims include the counterintuitive idea that, in some sense, the future is fixed, waiting for us.

Perhaps the most useful paper comes fourth, "Time in Physics and Theology" by John Polkinghorne. Polkinghorne disagrees with Stannard's "fixed future," and argues that time's nature is a metaphysical issue, and cannot be settled by unaided science. He has a marvelous discussion of how the basic laws of physics are reversible. Yet, we never see them reverse; instead we are aware of five different "arrows" pointing from the past to the future. These are: (1) the thermodynamic arrow of increasing entropy in an isolated system; (2) the arrow of increasing complexity in a non-isolated system; (3) the expansion of the universe; (4) cause to effect; and (5) human temporal experience. All five arrows point the same direction; there is no general agreement on why this is so. Polkinghorne then explores time as just a psychological trick, time as a measure of a closed universe, time as the unfolding of an open universe, time as a many worlds' speculations, and concludes with his own theological perspective (in the end, God wins).

William Craig, in "God, Time and Eternity," begins with the observation (agreeing with Polkinghorne) that relativity teaches us nothing about the nature of time; only about how we measure it. He describes two ways in which God could exist eternally: (1) omnitemporally (at every point in time); and (2) timeless (outside of time). Claiming that scripture can be interpreted in either way, and that thinking about the differences between the two ways is apologetically important, he identifies Newton, Scotus, Ockham and several contemporary philosophers as arguing for the former and Augustine, Anselm, Aquinas and other modern thinkers as claiming the latter. Both cannot be correct; Craig examines the arguments both for and against each view. To appreciate his resolution of the issues, you need to read his papers.

Robert John Russell, with "Eschatology and Scientific Cosmology: From Conflict to Interaction," discusses how the natural sciences affect theology. This is followed by Hugh Ross writing on "Time and the Physics of Sin." Ross points out that both science and scripture agree on time's origin. Then Tony Compolo addresses "Meeting the Cosmic God in the Existential Now." Among other observations, Compolo notes that for God everything is the "eternal now." Finally, Poe summarizes the book, noting that no consensus has been reached. This is a difficult book, but a rewarding one. Highly recommended.

*Reviewed by John W. Burgeson, Rico Community Church, Rico, CO 81332.*



## RELIGION & BIBLICAL STUDIES

**THE REST OF GOD: Restoring Your Soul by Restoring the Sabbath** by Mark Buchanan. Nashville, TN: W Publishing Group, 2006. 256 pages. Hardcover; \$17.99. ISBN: 0849918480.

Buchanan is an author and pastor who lives on Vancouver Island in Canada. He graduated from the University of British Columbia's creative writing department and also holds a masters degree from Regent College. He is the author of three other books: *Your God is Too Safe*, *Things Unseen*, and *The Holy Wild*. He has published numerous articles in magazines and periodicals, including *Christianity Today*, *Leadership Journal*, *The Christian Century*, and *Discipleship Journal*.

As the title implies, the author's purpose in writing this book is to convince the reader that keeping Sabbath is as essential to one's well-being as food and water. Buchanan begins his book by admitting that he learned to keep Sabbath the hard way, in the "crucible of breaking it." He then explains that Sabbath is not only a day but also an attitude. "It is both time on a calendar and a disposition of the heart. It is a day we enter, but just as much a way we see. Sabbath imparts the rest of God—actual physical, mental, spiritual rest, but also the rest of God—the things of God's nature and presence we miss in our busyness" (p. 3). Both aspects of Sabbath keeping are developed and illustrated in the fourteen chapters which follow the introduction.

Buchanan cites an interesting difference in the wording that Exodus and Deuteronomy use in prescribing the fourth commandment. Exodus calls us to remember the Sabbath while Deuteronomy encourages us to observe it. According to rabbinical teaching, the three days that follow Sabbath are to be spent remembering the one just past while the three days leading up to Sabbath are to be spent preparing (observing) for the one that is approaching. In other words, Sabbath makes claim on all the other days while they make none on it. With this perspective in mind, Buchanan proposes two "golden rules" of Sabbath keeping. The first golden rule is "to cease from that which is necessary" (p. 126). While there are six other days in the week to do what you ought to do, the Sabbath is "the one day when the only thing you must do is not to do the things you must." The Sabbath's second golden rule is "to embrace that which gives life" (p. 127). This helps us to know not only what we should avoid, but also what we

should pursue. We need to stop creating on the Sabbath (as God did) and instead be involved in "re-creating." Any activity that involves "re-creating" also "gives life" and is therefore an appropriate activity for the Sabbath.

Buchanan is an excellent writer who uses a wide variety of examples to illustrate his points. These examples are gleaned from the writings of many different authors, from a number of well-known movies, and from his own personal experience. The book is also biblically based as every chapter contains Scripture references and stories. Every chapter consists of two parts, first a longer section which explains the "theology" of Sabbath keeping, followed by a shorter section that is designed to help the reader put this theology into practice. This book could be used in a small group Bible study or an adult Sunday School class. It could also be used as a personal devotional guide. It is a book that challenges our view of work, of leisure, and of time itself. Anyone who is either legalistic or indifferent about Sabbath keeping should definitely read this book. It is also written for Christians who are faced with the challenge of living in a culture where busyness is a disease of epidemic proportions.

*Reviewed by J. David Holland, 868 Oxford Drive, Chatham, IL 62629.*

**IS THE BIBLE INTOLERANT? Sexist? Oppressive? Homophobic? Outdated? Irrelevant?** by Amy Orr-Ewing. Downers Grove, IL: InterVarsity Press, 2006. 142 pages. Paperback; \$12.00. ISBN: 083083351X.

Orr-Ewing is in charge of the apologetics training program for the Zacharias Trust in Europe, a ministry which seeks to remove the objections of skeptics and instill apologetical arguments in Christians. She studied the New Testament at Oxford University.

The book has seven pages of endnotes, a fifty-six book bibliography, and a two-page index of Bible references. It receives high praise from its blurps, including one from Alister McGrath of Oxford University, a well-published Christian apologist.

*Is the Bible Intolerant?* resulted from Orr-Ewing's search to determine whether the Bible is believable. In this book, she deals with the ten questions she is most frequently asked. Her answers to these ten questions are found in the following declarations: (1) words have meaning; (2) history can be known; (3) biblical manuscripts are reliable; (4) contents of the biblical manuscripts are reliable; (5) the canon is authoritative; (6) the Bible is unique among religious writings; (7) the Bible is not sexist; (8) just-war theory prevails; (9) biblical teaching on sex is relevant today; and (10) it is possible to know what is true. Orr-Ewing's account of her own salvation experience is very personal and moving, and its intention to persuade the reader is enhanced by its irenic and caring tone.

On the other hand, it is possible that Orr-Ewing's sometimes pejorative descriptions of some unbelievers may make the book less inviting to seekers. She writes that they are capable of "believing anything at all" (p. 7), "unyielding" (p. 8), "prejudice(d)" (p. 13), and possess "closed mindedness" (p. 52). This, unfortunately, too often also describes some believers.

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Orr-Ewing asks, "Why do people believe that, when it comes to the Bible, everything is a matter of interpretation?" (p. 17). Of course, the answer she shies away from is that everything is a matter of interpretation. For anyone to contend that "they just take the Bible for what it says" is to contend for a hermeneutic which always produces one meaning. In actuality, the Bible does not say anything until it is interpreted. This helps explain the variety of beliefs reflected in commentaries, denominations, religious institutions, and believers.

Biblical truth is not as obvious and lucid as it is sometimes represented to be. If it were, it would not require years of training in linguistics, history, archaeology, culture, sociology, and other related fields by scholars who still fail to come to a consensus. This view is not an argument that all views are equally valid, just that there is no agreed upon interpretation on many significant and minor doctrines. The lack of admission on this point seems to be a weakness of this book. My point, however, does not deny that the orthodox church has come to a fair consensus as to what constitutes salvation, although even in that area some diversity of belief exists as to its essentials.

However, the book has many strengths. The chapters are relatively brief, easy to read, filled with interesting quotes and observations, and definitely evangelistic in nature. It certainly makes many valid points on a variety of topics, and could be profitably read by both the converted and those still seeking.

*Reviewed by Richard Ruble, John Brown University, Siloam Springs, AR 72761.*

**BUT IS IT ALL TRUE? The Bible and the Question of Truth** by Alan G. Padgett and Patrick R. Keifert, eds. Grand Rapids, MI: Eerdmans, 2006. 175 pages. Paperback; \$16.00. ISBN: 0802863167.

This book is a collection of nine essays; the editors each contributed one. The other seven authors are: David Bartlett, Ellen Charry, Stephen David, Ben Ollenburger, Dennis Olson, Mark Wallace, and Nicholas Wolterstorff. Included are an index of names and Scripture references. Padgett, author of *Science and the Study of God*, and Keifert, author of *Talking About Our Faith and Welcoming Strangers*, are professors of systematic theology at Luther Seminary in St. Paul, MN.

The essayists take on the task of defining truth and what it means in reference to the Scriptures. The reader might assume that after two millennia, the church would have come to a consensus on the truth's relationship to the Bible. Alas, it may be wishful or naive thinking. The authors, reflecting the variety of ways of looking at truth and Scriptures, do not always agree. Coming from Eerdmans Publishing Company, the reader might expect that all the authors hold a high view of the Bible with the concomitant belief that the Bible is authoritative and trustworthy. They do. Nevertheless, they reflect no consensus on the nature and veracity of Scripture.

The blurb that accompanies this edited volume states that its "penetrating chapters reject stale, simplistic, answers in favor of fresh, invigorating perspectives." This

provides plenty of opportunities for dissent and dialogue. The discussion is not entirely theoretical: Bartlett's article explores preaching the truth; Charry's article directs the discussion to walking in the truth and knowing God.

While it is not within the scope of this review to give a synopsis of each essay, perhaps one thought will motivate the reader to investigate this book further. Stephen Davis, in his article, "What Do We Mean When We Say, 'The Bible Is True?'" discusses a view of Nicholas Wolterstorff, professor emeritus at Yale University Divinity School. Wolterstorff suggests that the gospels contain at least two kinds of content: (1) recordings of what actually happened; and (2) recordings of what might have happened called "illuminating plausibility." Davis, denying "illuminating plausibility" content, thinks the evangelists recorded only what actually happened. Davis has two problems with Wolterstorff's suggestion: (1) what hermeneutic provides the ability for dividing texts into the actual and the plausible; (2) if crucial accounts, like the resurrection, fall into the plausible category, it undermines the gospels' salvation content.

This book's topic, cost, and concise chapters make it a worthy purchase for those who are concerned about what is meant when individuals say "the Bible is true." It will stimulate, inform, and perhaps provoke the reader to further study on a most important, if not the most important, topic of Christian faith.

*Reviewed by Richard Ruble, John Brown University, Siloam Springs, AR 72761.*

**SOCIAL-SCIENCE COMMENTARY ON THE LETTERS OF PAUL** by Bruce J. Malina and John J. Pilch. Minneapolis, MN: Fortress Press, 2006. 418 pages. Paperback; \$27.00. ISBN: 0800636406.

The authors are both teachers. Malina is professor of New Testament at Creighton University; Pilch teaches biblical literature in the theology department of Georgetown University. The book has an extensive bibliography but no Scripture or topical index. Illustrations, charts, and a map are included to evoke the world of Paul's time.

The purpose of this book is to apply to Paul's letters (or epistles, which is a more accurate title) insights from the social sciences including anthropology, social psychology, and sociolinguistics. The authors' approach is sometimes called form criticism, a form of biblical criticism seeking to relate a biblical text to its sociological context.

According to the authors, Paul did not have modern readers in mind when he wrote his letters. Thus, this book, to aid understanding, attempts to give the letters a cultural setting. This is intended to act as a bulwark against selective perception in which the reader's interpretation of the text may be inaccurately understood because of personal attitudes.

The authors think that the New Testament was written in a high context culture (contrasted with the USA and Europe which are low context cultures) in which there was an assumed understanding of the background of oral and written communication. Since modern readers may be unaware of this background, false conclusions and inaccuracies



rate grasps of the material are possible and likely. As the authors put it:

Low context readers in the United States frequently mistake biblical documents for low context documents and erroneously assume the authors have provided all of the contextual information needed to understand it. [Further, misery can result] ... from reading and misinterpreting a high context set of documents as though they were low context documents from God (p. 8).

To the authors, the New Testament contains seven authentic letters of Paul: 1 Thessalonians, 1 and 2 Corinthians, Galatians, Romans, Philippians, and Philemon. This excludes seven letters the authors dismiss as non-Pauline: Ephesians, Colossians, 2 Thessalonians, 1 and 2 Timothy, Titus, and Hebrews.

The authors do not take all of the New Testament literally. For example of Acts they write: "Perhaps what the author of Acts describes may not have happened in the way he says ..." (p. 22). They believe that "To focus on Paul's 'theology' rather than on the social interrelationship between the change agent and his clients is to miss the thrust of his letters" (p. 24). They do not believe that the Old Testament is the actual history of Israel (p. 337).

In an interesting box (p. 25), the authors list ten commonly held "received views" contrasted with ten less commonly held "social-science views." For example, the received views hold that Paul was the apostle to the Gentiles, the source of theology, and a monotheist; the social-science views hold that Paul was the apostle to Israelites living among non-Israelite peoples outside Judea, focused on interpersonal relations, and a henotheist (one who is devoted to a single god while accepting the existence of other gods).

This book has two types of material: (1) short textual notes which comment on each of Paul's letters in historical sequence; (2) a collection of reading scenarios from anthropological studies of the Mediterranean social system (which occupy 78 pages and pp. ix, x). According to the authors, these two types of materials help prevent the reader from "imposing on that author's work interpretations that would be culturally incompatible" (p. x).

The scenarios, which deal with a variety of topics in alphabetical order, are perhaps the most innovative and helpful part of the book. They may also be the most controversial. To take one example, "the Old Testament law about infant circumcision ... is a legend collated by Persian-period Judean scribes" (p. 338).

The authors present extensive commentary with historical and linguistic information. Some of it challenges orthodox views on many biblical topics and in the process may lead the reader to reassess some personal views. Christians are committed to truth and therefore should be audacious explorers as they seek to come to a better understanding of the Bible. This book may help.

While the views presented tend toward what some might think liberal, the authors intention is to set (some of) Paul's letters in their first century environment. The many ancient citations, quotes, and insights are helpful in achieving this. This book exposes readers to the contemporary thinking of two New Testament scholars,

and stimulates further thinking and study. For this reason, it is recommended.

*Reviewed by Richard Ruble, John Brown University, Siloam Springs, AR 72761.*

**A HISTORY OF APOLOGETICS** by Avery Cardinal Dulles. San Francisco, CA: Ignatius Press, 2005. 416 pages, bibliography, index. Paperback; \$18.95. ISBN: 0898709334.

Avery Cardinal Dulles, S.J., is a son of former Secretary of State John Foster Dulles. Raised a nominal Presbyterian, he converted to Catholicism while a student at Harvard University. He is the author of over 700 articles and twenty-two books. Dulles has served on the International Theological Commission and as a member of the United States Lutheran/Roman Catholic Coordinating Committee. He is presently an advisor to the Committee on Doctrine of the National Council of Catholic Bishops, a member of Evangelicals and Catholics Together, and—at the age of 88—a professor at Fordham University.

*A History of Apologetics* aims "simply to tell the story of the various ways in which thoughtful Christians, in different ages and cultures, have striven to 'give a reason for the hope that was in them.'" Dulles begins with apologetics in the New Testament itself. The apostles were chiefly concerned with demonstrating to the Jews that Jesus was the promised Messiah, though Paul's Areopagus speech shows that he was ready to argue Christ from common ground he found with the pagan Athenians.

Dulles moves on to the Patristic Era, the period from the end of the apostolic age till the end of the Roman Empire in the West. He reviews the arguments of the Church Fathers as they contend with Roman authorities, pagan philosophers, Jews, and Christian heretics. He next surveys apologetics in the Middle Ages, from 500 CE until the Renaissance. In this era, Christians, in many cases living under Muslim rule, dialogued with Muslims and continued to argue with Jews. Here Dulles devotes considerable space to Anselm and Thomas Aquinas, not because they were personally engaged in apologetics with unbelievers, but because they developed powerful arguments on behalf of basic Christian beliefs.

Dulles's treatment of the sixteenth through eighteenth centuries, the era of the Renaissance, Reformation, Counter-Reformation, and Enlightenment deliberately excludes polemical apologetics of Protestants and Catholics directed at each other. Instead, he describes the efforts of both Catholic and Protestant scholars to provide stronger arguments for the existence of God, his activity in the world, and the truth of biblical revelation and of basic Christian doctrines. Catholics and Protestants alike found it necessary to respond to growing religious skepticism and unbelief, deism, and rationalism:

Apologetics in the early modern period takes on a very different shape than it had in earlier centuries. For the Fathers, it was a debate about the relative merits of paganism, Judaism, and Christianity. For the medieval theologians, apologetics was a contest among the three great monotheistic faiths—Judaism, Christianity, and Islam ... But after the Renaissance, apologetics had to address thinkers who rejected

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revelation entirely and who in some cases denied the existence or knowability of God. For the first time in history, orthodox Christians felt constrained to prove the existence of God and the possibility and fact of revelation (pp. 205–6)

Apologetics in the nineteenth and twentieth centuries has continued in this vein, except for the presuppositionalism of Cornelius Van Til (which Dulles duly notes). Dulles carries his history up to the beginning of the twenty-first century (even touching on Alvin Plantinga, a PSCF contributor.)

Why a history of apologetics? As Dulles points out in his foreword:

A careful reading of the old masters in the field reveals that the same basic problems continually recur and that it is almost impossible to say anything substantially new. In such a time as our own, when many Christians find it especially difficult to articulate the reasonableness of their faith, it can be particularly profitable to review the record of the past (xx–xxi).

I trust that PSCF readers count themselves among those who strongly desire to articulate the reasonableness of their faith. Christians in America who agree with Henry Ford — “history is more or less bunk” — will not be interested in this book. *A History of Apologetics* is irenic, magisterial, lucid — and reasonably priced. Of all the excellent books I have reviewed for PSCF in the past ten years, I consider this one the most rewarding.

*Reviewed by Robert Rogland, science teacher, Covenant High School, Tacoma, WA 98405.*



## SOCIAL SCIENCE

**THE TRUTH ABOUT TOLERANCE: Pluralism, Diversity and the Culture Wars** by Brad Stetson and Joseph G. Conti. Downers Grove, IL: InterVarsity Press, 2005. 183 pages, notes, index. Paperback; \$16.00. ISBN: 0820827870.

One definition of the word “tolerance” (as a social concept) is this: “... a social, cultural and religious term applied to the collective and individual practice of not persecuting those who may believe, behave or act in ways of which one may not approve” (Source: *Wikipedia*, the free encyclopedia, online). It is generally regarded as an Aristotelian virtue, midway between narrow-mindedness and soft-headedness.

Stetson, a teacher at Azusa Pacific University, and Conti, a lecturer in religious studies at California State University at Fullerton, address this subject with a world view that sees only highly conservative evangelical Christianity and secular liberalism as being of importance in debates about the subject. All other voices, of whatever source, are summarily discounted. The book, therefore, sheds little light on how to view the subject, being rather a polemic against the secular liberalism worldview of the “elite,” the “media,” the “university,” the “Democrat (sic) Party,” mainline Christians, the ACLU, and others. The authors rely heavily on newspaper and Internet accounts.

They appear to me, at least superficially, to be misuses of the tolerance concept, but do so almost exclusively with a “view with alarm” approach, never looking at any of them in depth to explore other sides of the problem. It is obvious to them that a practicing gay person cannot be a Christian, that both pluralism and diversity are, at best, evils one must put up with, and that claims to truth are almost always met with derision and hatred by those not holding them.

For better, i.e., more responsible, treatments of tolerance, John Rawls’s *A Theory of Justice* and Voltaire’s *Treatise on Tolerance* are two older works that are worth study. More recently, T. M. Scanlon’s *The Difficulty of Tolerance* and W. Paul Vogt’s *Tolerance and Education* appear to have lasting value. This book does not. The trees that died to publish this book deserved a better fate.

*Reviewed by John W. Burgeson, Rico Community Church, Rico, CO 81332.*

**FREAKONOMICS: A Rogue Economist Explores the Hidden Side of Everything** by Steven D. Levitt and Stephen J. Dubner. New York: HarperCollins Publishers, 2005. 207 pages, notes, index. Hardcover; \$25.95. ISBN: 006073132X.

This book is politically incorrect, in the best sense of that term. Levitt, who teaches economics at the University of Chicago, recently received recognition as “the best American economist under the age of forty.” Dubner is a writer for the *New York Times*. The book teases out many surprising (and counterintuitive) relationships. Economics, the authors argue, is simply the study of incentives, often hidden incentives. If one is willing to view the world in a rational way, several “truths” are revealed, some that fly in the face of conventional wisdom.

This is not a “scholarly” book; there are no discussions of methodologies; for these one must turn to Levitt’s professional papers. The book is written in understandable language, including a good “baby” description of regression analysis, causality, and correlation for the non-scientific reader.

There are six chapters, plus an epilogue. In chapter 1, “What do Schoolteachers and Sumo Wrestlers Have in Common?” the topic of cheating is explored. How did seven million American children disappear on April 15, 1957? Why are most people, most of the time, honest, when they could get away with cheating?

In chapter 2, “How Is the Klu Klux Klan Like a Group of Real-Estate Agents?” the authors discuss the power of information, and how it can be abused. They describe, briefly, the Klan’s history, including the story of Stetson Kennedy, who infiltrated the Klan after World War II. With the help of the producers of the radio program *Superman*, Kennedy effectively destroyed the Klan (revealed their private information) in just four short weeks. Fascinating reading. Selling your house? The book offers five terms correlated to a high price and five terms to avoid. For instance, never use “great neighborhood” in the ads!

Chapter 3, “Why Do Drug Dealers Still Live with Their Moms?” is based on extensive studies among Chicago’s gangs by Sudhir Venkatesh. It seems that a gang organization chart resembles closely that of a McDonald’s

franchise. The people at the top make a lot of money; the "foot soldiers" live with their moms because they cannot afford a place of their own. A case study is shown, including actual financials.

Chapter 4, "Where Have All the Criminals Gone?" is provocative. While there are several factors in the reduction of the crime rate over the past twenty years, the chief one, say the authors, is the Roe vs. Wade decision! I do not "like" that answer, but as one whose profession was market research and statistics, I have to admit the case the authors make is very persuasive.

Chapters 5 and 6, on parenting, asks the question, "Do parents really matter?" The answer is "yes," but perhaps not the way one usually thinks. In exploring this question, the authors point out that a backyard swimming pool is more dangerous than a handgun, a "good school" is not as good as one might think, having highly educated parents matters and having an intact family does not.

Other factors that do not seem to matter: the mother working between the child's birth and kindergarten, the child being taken to museums, and the child regularly watching television. Factors that *do* matter: Having your first child after age 30, having many books in the home, and being involved in the school PTA. The topic of naming one's offspring is also analyzed; the strange case of two boys, Winner Lane and Loser Lane is described. Contrary to "what everyone knows," the name you give your child seems to have no effect on that child's future economic future.

The epilogue, three pages, sums up the book's thesis: Be skeptical of conventional wisdom. Ask a lot of questions. And when you have done all (as a parent), recognize that parenting methods (mostly) do not matter much and that random factors are perhaps the most important in your child's life. This book is a keeper.

*Reviewed by John W. Burgeson, Rico Community Church, Rico, CO 81332.*

**WONDER: From Emotion to Spirituality** by Robert C. Fuller. Chapel Hill, NC: University of North Carolina Press, 2006. 188 pages. Hardcover; \$24.95. ISBN: 0807829951.

Robert Fuller, Caterpillar Professor of Religious Studies at Bradley University, has authored ten books including *Religious Revolutionaries and Spiritual, But Not Religious*. This present book contains nine chapters, an index, endnotes, and suggestions for further reading.

After some investigation, Fuller determined there were few, if any, books on wonder. Therefore, this book! Without wonder, life lacks "certain sensibilities that enrich the texture of human existence" (p. viii). Fuller delves into evolutionary biology, developmental psychology, and historical biography to relate how wonder functions in people.

The author has studied and discussed the psychology of religion for over thirty years. This has led him to the conclusion that religions are not about factual truth in the same way that science is. Rather, religious beliefs "renew our fundamental sense of mystery concerning the origin and meaning of existence" (p. vii). One of religion's most

important functions is to "rekindle the wonder that makes a child's eyes wide and grownups gasp" (p. 136).

Fuller identifies two goals for his book: (1) to show that wonder is one of the defining parts of spirituality; and (2) to show that a life influenced by wonder is superior to one devoid of it. Fuller defines spirituality as a motivation to align life with a higher order of existence; wonder leads to cognitive reflection on how different parts relate to a greater, perhaps unobserved, whole.

The question wonder prompts is "Why is there anything at all and not, rather, nothing?" While many people live without contemplating the "mystery of existence," Fuller describes the lives of three who did: John Muir, William James, and Rachel Carson. Muir, according to Fuller, was the earliest leader of the American nature preservation movement. Muir taught that experiencing wonder is the first step in becoming a citizen of an ecologically healthy universe. Fuller opines that no one better illustrates the transforming power of wonder than William James. Rachel Carson's life was shaped by wonder; she became the leading voice of the environmental movement in the 1960s.

If you have ever wondered about wonder, this may be the book for you. It gathers a lot of interesting material together on the subject, offers some speculations, and consequently may be the most complete thesis ever written on the subject. Fuller concludes "that a life shaped by wonder is attuned to the widest possible world of personal fulfillment" (p. 158).

*Reviewed by Richard Ruble, John Brown University, Siloam Springs, AR 72761.*

**SOCIAL WORK AND DIVINITY** by Daniel Lee and Robert O'Gorman, eds. New York: The Haworth Social Work Press, 2005. 164 pages. Paperback; \$12.95. ISBN: 0789027577.

The editors of *Social Work and Divinity*, Lee and O'Gorman, are both professors at Loyola University, a Catholic university. In 2002 they convened the First National Symposium on Social Work and Divinity Dual Degree Programs at Loyola University. The conference theme was "Toward Building Compassionate Communities: An Interaction of Theology and Social Work in Professional Education and Practice." This book is a compilation of selected papers from that conference. As such, the style of the chapters varies and I found the content somewhat repetitive.

*Social Work and Divinity* is for academicians and for people already involved in integrating social sciences and pastoral care. It is concerned mainly with curriculum development in a dual program of social work and theology. Although this book is about the integration of social work and Christian ministry, it is stronger on the former than the latter. There is virtually no use of the Bible in this book, which questions whether the authors consider it a necessary part of pastoral social work. It is in the Catholic tradition, so that many evangelicals would find the spiritual emphasis to be somewhat diluted. Pastors hoping to be more effective counselors or social workers would find this book lacking in practical application.



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The book is written for the purpose of setting up or managing a dual curriculum in social work and pastoral care. The intent is to assist teachers to better integrate the dual disciplines so that they are both effective social workers (relying on the social sciences) and effective spiritual pastors (providing spiritual guidance for clients being served). It is closely tied to the Clinical Pastoral Experience (CPE) that is common in many ministry training courses in seminary.

Written by academicians, the content of these chapters tends to be quite theoretical for the practitioner or lay reader. My interest in the book was spurred by the fact that I am now coordinating a series of in-service workshops for Chinese medical social workers. Social work does not yet exist in China. Our medical work in China has created the need for social workers, so my colleague, a nurse from the U.S. and I, are coordinating a year-long course with invited speakers and trainers. These workers are Christians providing assistance to mostly non-Christians, so I had hoped this book would help us strike a balance in how to provide good social service, but in a way that would also be a spiritual blessing to these clients. To this end, I was disappointed. But those involved in clinical training and counseling for pastors would find useful perspectives to improve their work.

I appreciated the commitment to holistic care advocated by most of these authors, as well as the social role that the church can and should play. In my theological training in two evangelical seminaries, it seemed as if the only purpose in serving people was evangelism. But now that I work in a country where very few of the patients and clients we serve are Christian, I have felt more keenly the need for broader, more humanistic resources to serve these people in their time of need.

This book explores the possibility of integrating social work with spiritual ministry from many different angles. It is well indexed and with many reference notes for further reading, some of which I intend to follow up on. I believe interest in this book among ASAers would be limited to those involved in social work research or education.

*Reviewed by Mark A. Strand, Shanxi Evergreen Service, Yuci, Shanxi, China, 030600.*



## Letters

### Intelligent Design from an Old Earth Creationist Perspective

I write as an old earth creationist, although I was formerly a theistic evolutionist, (*PSCF* 49, no. 4 [Dec 1999]: 252–63). As such, I certainly accept Phillip Johnson's rejection of "the creation myth of scientific naturalism" and "Darwinism," with the corollary that I allow for, and recognize, a "Creator" (Phillip Johnson, *Darwin on Trial*, 1991, p. 153).

Notwithstanding Henrickson's concerns (*PSCF* 57, no. 4 [Dec 2005]: 284–300) with Intelligent Design (ID), that for Johnson "'more than science' is at stake," I do not accept

that Johnson's Darwin on Trial e.g., his criticisms of Darwinian natural selection (pp. 15–31), mutations (pp. 32–44), fossil problems (pp. 42–62), or vertebrate sequence (pp. 73–85), is fundamentally unscientific.

To say that Darwinian anti-supernaturalism is one way humans spurn God's common grace and become immoral, is not to say this is the only way, so that Henrickson's pre-Darwin illegitimacy figures are flawed. Moreover, to say that God gives idolaters or Darwinists over to immorality (Romans 1), is not to say that he always gives all idolaters or all Darwinists over to suchlike. But, "Thou shalt not tempt the Lord thy God" (Matt. 4:7).

Henrickson's attempt to contrast ID men like Johnson (b. 1940) with Thomas Chalmers (1780–1847), fails to recognize that Chalmers, an old earth creationist, accepted the role of the supernatural in science. In fact, Johnson's concerns about the anti-supernaturalist presupposition of modern "science" and immorality have antecedents in nineteenth century scientific criticism of Darwinism.

In 1859 Charles Darwin sent a copy of his *Origin of Species* to the man he recognized as one of "our greatest geologists," the old earth creationist, Adam Sedgwick (1785–1873). Sedgwick was Professor of Geology at Cambridge University (1818–1873), England, UK. He read the book "with more pain than pleasure," and says to Darwin in one of the first scientific critiques of *Origin of Species*:

Parts of it I admired greatly, parts I laughed at till my sides were almost sore; other parts I read with absolute sorrow, because I think them utterly false and grievously mischievous. You have deserted ... the true method of induction. ... Many of your conclusions are based upon assumptions. ... As to your grand principle—natural selection—what is it but a secondary consequence of supposed, or known, primary facts? ... Acting by law, ... comprehends ... your whole principle [that is, creation by law]. ... I think, in speculating on organic descent, you overstate the evidence of geology; and that you understate it while you are talking of the broken links of your natural pedigree.

There is a moral or metaphysical part of nature as well as a physical. A man who denies this is deep in the mire of folly. 'Tis the crown and glory of organic sciences that it does, through final causes, link material to moral; and yet does not allow us to mingle them in our first conception of laws, and our classification of such laws, whether we consider one side of nature or the other. You have ignored this link; and ... you have done your best in one or two pregnant cases to break it. Were it possible (which, thank God, it is not) to break it, humanity, in my mind, would suffer a damage that might brutalize it, and sink the human race into a lower grade of degradation than any into which it has fallen since its written records tell us of its history ... I humbly accept God's revelation of himself both in his works and in his word, and do my best to act in conformity with that knowledge which he only can give me, and he only can sustain me in doing (J. W. Clark and T. M. Hughes, *The Life and Letters of the Reverend Adam Sedgwick* 2 [Cambridge: Cambridge University Press, 1890], 357–9).

Sedgwick's understanding of natural law was opposed at the geological and scientific level by Lyell and Darwin, and at the moral level by the libertine John Stuart Mill. Sedgwick's understanding was defended by the old earth creationist William Whewell (1794–1866) of Trinity College, Cambridge University (Professor of Mineralogy, 1828–1832, Professor of Moral Philosophy, 1838–55) (*Ibid.*, Vol. 1, pp. 25, 95, 404–5; Whewell's *Of Induction*, p. 79).

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## Correction:

### Values in Millimeters, Not Inches!

In my recent article on "Qualitative Hydrology of Noah's Flood" (*PSCF* 58, no. 2 [June 2006]: 120–9), I made a mistake on p. 122 concerning the average precipitation values for cities in the Iraq/Southern Turkey region. The values should be in *millimeters*, not inches. My thanks to Robert Rogland, who pointed out the correct values, and my apologies to all of those service men and women in Iraq who know better!

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### Titanic Deck Chairs and the "Real" Adam

John McIntyre's illustrious background in physics has probably conditioned him to believe that novel—or at least highly interesting—concepts win Nobel Prizes! However, in theology, ideas that have not been accepted by the church through the ages are more than likely to be dangerously wrong.

McIntyre proposes that Adam needed to sin to change from "an 'it' within the creation" to "an 'I' outside creation" who had "taken on the character of the Creator" (*PSCF* 58, no. 2 [June 2006]: 90–8). The idea is not new. It was articulated by Joseph Smith nearly 200 years ago.

This all follows, of course, from the premise that evolution and standard dating are indisputable facts. Adam then becomes a hominid, with perhaps only a dim awareness of God, chosen from among his animalistic peers to receive the breath of life. Ignored are the biblical record of long life and rapid invention of technology and the scientific crumbling of the evolutionary façade.

It is a shame that so much brain power is wasted, essentially arranging the deck chairs on the Titanic, by tying theology to a contemporary paradigm, as the Scholastics did in assuming Aristotle to be infallible.

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## The Two Books: An Appreciated Article

Thank you very much, Giuseppe Tanzella-Nitti, for your article on "The Two Books Prior to the Scientific Revolution" (*PSCF* 57, no. 3 [Sep 2005]: 235–48). I have just finished re-reading your article and remembered that I should send you a thank you note. Your article was delightful, informative, and in impeccable English. Not a hint of an "accent" or a misused word! Another strong point is that your faith is thoroughly infused into the article. That is often very difficult for the believing scientist. (I am a chemist.)

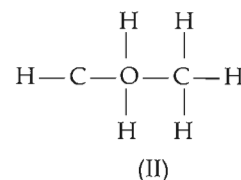
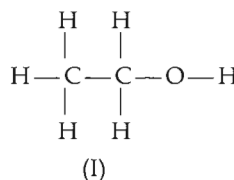
Your article is timely. Many churches and leaders have trouble with accepting (good) science and wish to take a literal meaning of the holy Scriptures. In this way, they may make arbitrary statements about science, for example, the age of the earth. Your article is an excellent reference for a balanced and objective view on the issue. Any forthcoming articles, say on astronomy? Thank you again.

In Christ our Lord,  
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## Reduction in Science

I agree with Roy Clouser about the inadequacy of reductionist descriptions of natural systems, though not with his solution.<sup>1</sup> As the following examples show, the behavior of a multicomponent system is generally determined not only by that of its components, but also by the *relationship* between them.

1. Consider the wave emitted by an oscillator undergoing a combination of oscillations. The shape of this wave is determined not only by the amplitude and frequency of the components, but also by their *phase*. If identical oscillations are in phase, they reinforce each other, if out of phase they cancel.  $N$  components require the specification of  $N-1$  phases. This specification is at the level of the system, not the components.
2. Consider a gas. The properties of this can be derived from the motions of the molecules making up the gas. To do this, however, it is necessary to specify the relationship between these motions—namely, that they are *chaotic*.<sup>2</sup> A different relationship would result in different behavior. For example, if the motions were confined to a single direction within a pencil, the molecules would comprise a molecular beam.
3. Consider the substance ethanol (ethyl alcohol). Chemists describe this as being made up of molecules comprising two carbon atoms (C), six hydrogen atoms (H), and one oxygen atom (O). This specification is, however, incomplete. Chemists have also to specify the *arrangement* of the atoms in the molecule, as pictured in (I) below:



If the arrangement was as in (II), the substance would be different [it would be methoxymethane (dimethyl ether), a gas at room temperature].

4. The preceding example is a paradigm of DNA. In a DNA molecule the *order* of a large number of groups of atoms of four different types (A, C, G, and T) determines the particular proteins that can be synthesized on it.
5. Consider finally a metal crystal. Einstein attempted to reproduce the heat capacity of this by considering the vibrations of the individual atoms. His equation, however, fails at low temperatures. To get a better fit, Debye showed that it is necessary to consider the vibrations of the set of atoms *as a whole*.<sup>3</sup>

These examples show that the behavior of multi-component systems cannot be reduced *completely* to that of their components. Reduction is a useful tactic in science, but a false strategy. This does not mean that individual atoms can have supervenient properties as Clouser suggests. But *assemblies* of atoms can.

This conclusion has considerable bearing on creation, providence, and free will as I discuss elsewhere.<sup>4</sup>

## Notes

<sup>1</sup>Roy Clouser, "Prospects for Theistic Science," *Perspectives on Science and Christian Faith* 58, no. 1 (2006): 2–15.

<sup>2</sup>See, e.g., J. H. Jeans, *The Dynamical Theory of Gases*, 4th ed. (Cambridge University Press, 1925).

<sup>3</sup>P. Debye, *Annalen der Physik* 39 (1912): 789–839.

<sup>4</sup>P. G. Nelson, *Big Bang, Small Voice: Reconciling Genesis and Modern Science* (Latheronwheel, Caithness, Scotland: Whittles, 1999); *God's Control over the Universe: Providence and Judgment in Relation to Modern Science*, 2d ed. (Whittles, 2000); "Neuroscience, Free Will, and the Incarnation," *Perspectives on Science and Christian Faith* 58, no. 1 (2006): 86–7. I can supply copies of the books on request.

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## Set Theoretic Analysis of the Whole of Reality

Roy Clouser<sup>1</sup> presents theistic science as a necessary synthesis between science and religious beliefs. Criticisms of this attempt are based on Clouser's definition of religious belief itself,<sup>2</sup> the very notion of the possibility of theistic science,<sup>3</sup> and the shakiness of Clouser's philosophy of science vis-à-vis how scientific theories carry the "impact" of belief in God.<sup>4</sup>

A theistic science would have to represent the integration of all kinds of knowledge intent on explaining the whole of reality. These would include, at least, history, metaphysics, theology, formal logic, mathematics, and experimental sciences. However, what is the whole of reality that one wants to explain?

The notion of set theory is useful to depict the physical (P) and the nonphysical (NP) aspects of Nature (N).<sup>5</sup> Nature is given by the union  $N = P \cup NP$ , where their non-zero intersection  $P \cap NP \neq \emptyset$ , where  $\emptyset$  is the empty set, represents elements of reality with both physical and non-

physical aspects. Therefore, the content of all that there is in Nature are elements that are either: (1) purely physical, (2) purely nonphysical, or (3) both, viz., physical/non-physical.<sup>5</sup>

The purely physical constitutes the subject matter of science<sup>6</sup> whereas human consciousness and rationality, information, mental models and abstractions, etc., characterize the nonphysical aspect of Nature. Purely physical devices detect that which is purely physical. However, it is humans, and not physical devices, that "detect" self, mathematical and mental concepts, etc.<sup>7</sup> Religious concepts and beliefs, which are "detected" by humans, are based on the notion of Divinity and so one must posit the existence of the supernatural (SN), which transcends Nature but may contain parts or the whole of Nature.<sup>8</sup>

One is supposing  $NP \neq \emptyset$  and that the intersection of  $P \cap NP \neq \emptyset$ , which contains all living beings as elements. That is to say, certain aspects of living beings, say life itself, consciousness, rationality, etc., are not derivable from the purely physical otherwise  $N = P$  and  $NP = \emptyset$ , which is the apex of reductionism. Clouser claims, "that divinity beliefs regulate an ontology, which in turn regulates scientific theories."<sup>9</sup>

Reductionism is understood as equating some sets or else supposing a set has no elements, viz. the set is empty.<sup>10</sup> Note that  $SN = \emptyset$  is the only form of reductionism that is theistically objectionable whereas all other forms of reductions are acceptable in science since science does not deal with ontological questions.<sup>11</sup> This notion of reductionism is consistent with Clouser's.

Is  $N \cap SN \neq \emptyset$  indicating that there are elements or properties common to the Supernatural and to Nature or, instead,  $N \cap SN = \emptyset$  with the two sets disjoint? The former allows for the existence of spiritual beings in Nature while the latter does not. Surely, the most general consideration of Clouser is that all elements of Nature are part of the supernatural and that the two sets are not equal. Otherwise one would be supposing some sort of pantheism  $N = SN$ , i.e., Nature is either identical with the supernatural or in some way a self-expression of its nature.

Our characterization of reality contains the whole gamut of what Clouser considers divine. From atheism with  $SN = \emptyset$  to Christianity where SN consists of nested subsets whose elements are all sorts of creatures with the Supreme Being containing the whole of creation. This is the set-theoretic depiction of God as creator Who upholds all things.<sup>12</sup> This notion of God as infinite is reminiscent of Georg Cantor's concept<sup>13</sup> of *Absolute Infinity*, the limiting transfinite number constructed from smaller numbers whose existence is in the mind of God and not man.

God created man as well as the physical aspect of Nature. It may be that mathematical descriptions of nature work because mathematics is a human creation.<sup>14</sup> Mathematical theory underlying the laws of Nature, although directly containing no notion of human consciousness and rationality, carry the creative imprint of God through the creative power endowed in humans. Thus, the existence of self, which "detects" the spiritual, exemplifies the image of God in humans and points to theological and mathematical truths innate to humans. This answers the question raised by Eugene Wigner<sup>15</sup> of the unreasonable effective-



ness of mathematics in the natural sciences and justifies Clouser's argument on how God "impacts" human development of scientific theories.

## Notes

- <sup>1</sup>R. Clouser, "Prospects for Theistic Science," *PSCF* 58 (2006): 2-15.
- <sup>2</sup>P. Le Morvan, "Is Clouser's Definition of Religious Belief Itself Religiously Neutral," *PSCF* 58 (2006): 16-7.
- <sup>3</sup>H. Halvorson, "Comments on Clouser's Claims for Theistic Science," *PSCF* 58 (2006): 18-9.
- <sup>4</sup>D. Ratzsch, "On Reducing Nearly Everything to Reductionism," *PSCF* 58 (2006): 20-2.
- <sup>5</sup>M. Alexanian, "Physical and Nonphysical Aspects of Nature," *PSCF* 54 (2002): 287-8.
- <sup>6</sup>*Ibid.*
- <sup>7</sup>*Ibid.*
- <sup>8</sup>It is important to remark that some religions consider parts of Nature as divine and so worship the creature rather than the Creator. Therefore, for such religions the set SN is not empty but contains those deified objects in Nature as elements of SN.
- <sup>9</sup>Clouser ought to indicate that theology plays no role in science. However, metaphysics is indeed regulative of science, history, formal logic, and mathematics and constitutive of some aspects of theology.
- <sup>10</sup>Nihilism is the more proper term when some forms of knowledge are eliminated.
- <sup>11</sup>The choice of Clouser of what constitutes "religious beliefs" obfuscates the issue properly raised by his detractors. The generic term "supernatural" allows one to consider existence that goes beyond Nature or what cannot be properly termed as natural.
- <sup>12</sup>The finite number of creatures is described as elements of sets, whereas God is characterized by a set of infinite order that contains all sets, which together encompass the whole of his creation. Therefore, the existence of all that is depends on God's self-existence.
- <sup>13</sup>B. A. Hedman, "Cantor's Concept of Infinity: Implications of Infinity for Contingence," *PSCF* 46 (1993): 8-16.
- <sup>14</sup>Science does not deal with first causes. The scientist qua human being creates scientific theories that deal only with secondary causes. However, the human elements of consciousness and rationality are not an integral part of the laws and models themselves. Note that theoretical models of Nature and the predictions that follow from them are exactly like mathematical systems with axioms and theorems like Euclidean geometry. However, logical connections, which may or may not correspond to causal physical influences, propagate equally well in either direction. Therefore, the choice of what constitutes an axiom or a theorem is arbitrary.
- <sup>15</sup>Eugene P. Wigner, "The Unreasonable Effectiveness of Mathematics in the Natural Sciences," *Communications on Pure and Applied Mathematics* 13, no. 1 (1960), 1-14.

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## Reading God's Works in a Non-Christian Context

I wish to thank George Murphy for again stimulating my thinking about general revelation in his article "Reading God's Two Books" (*PSCF* 58, no. 1 [March 2006]: 64-7). His recommendation, which I agree with, is that people need to read the book of God's Word before reading the book of God's Works, for natural theology is dependent on revelation for its validity. While this approach is theologically sound, and appropriate for Christian theologians, it is practically inadequate in the normal experience of

people in the real world. I spend most of my time working with scientists and medical personnel who are not Christians and who have no knowledge of the Bible.

First, many people around the world are not interested in reading the Bible, which they perceive as being "owned" by Christians and is just for Christians. But these people will read and observe and marvel at nature, which they all equally enjoy (Matt. 5:45). Therefore, where we meet most unbelievers is at the interface of God's works and his Words, they having already read the former but not the latter. We do not have the luxury of organizing their order of reading these two books. Furthermore, I find many people's interest especially piqued when they see the way in which the Bible logically and systematically explains the origins and meaning of the natural world which they had only previously observed.

Second, few cultures that I am familiar with find the god behind nature to be "cruel and ruthless." They may find this god to be capricious, but not evil. *Attitudes to Nature* (Jean Holm, ed. [New York: Pinter Publishers, 1994]), which I reviewed in these pages several years ago, introduced the views to nature of the main world religions. Virtually all of the religions introduced reflected a sense of harmony and unity between humans and the created world. Therefore I do not share Murphy's concern that reading nature before reading God's Word will prejudice people toward erroneous or unchangeable views of God.

Within this context, how can we successfully lead people to do what Murphy is suggesting, to read God's Word, first and foremost? My challenge for scientists interested in engaging unbelievers in reading God's Word with interest, is to employ what Reinhold Niebuhr dubbed "middle level axioms," to wit, to use the jargon and concepts we have in common with these people to present the beliefs we hold as Christians. For example, one might use the word "environment" rather than "creation," and then pour into the word "environment" all that you know to be true about that creation from the Word of God. This way you will not be discredited by listeners who perceive you to blindly hold to your pet, Christian words. This approach is useful when talking with unbelievers from other cultural contexts, and I might add, it is increasingly necessary when talking with people in the US and other Western countries who have been raised in a post-Christian context. I have spent considerable time working out how this works in the Chinese context, where I live and work, and would be willing to share a manuscript I have on this topic with interested readers (email me).

I am pleased to see Murphy accepting, albeit reluctantly, the value of the classical view of building Christian theology on the foundation of natural theology. Even though it is not his preference, we must admit the common experience of the people in the world is to read God's two books backwards. Finally, I want to thank Dr. Murphy for helping me with my thoughts and writing on these issues currently and in the past.

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