

# PERSPECTIVES on Science and Christian Faith

JOURNAL OF THE AMERICAN SCIENTIFIC AFFILIATION

## *In This Animals as Fellow Creatures Theme Issue ...*

Living Relationally with Creation: Animals and Christian Faith

God's Creation Wild and Violent, and Our Care for  
Other Animals

C. S. Lewis and Animal Experimentation

Deep History, Amnesia, and Animal Ethics:  
A Case for Inter-Morality

The Ways of Jesus and Science at an IVGCF Meeting

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

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## Editor

JAMES C. PETERSON (Roanoke College and  
Virginia Tech Carilion School of Medicine)  
221 College Lane  
Salem, VA 24153  
jpeterson@roanoke.edu

## Animals as Fellow Creatures Issue Co-editor

KERI MCFARLANE (The King's University)  
9125 - 50th Street  
Edmonton, AB T6B 2H3  
Keri.McFarlane@kingsu.ca

## Book Review Editors

PATRICK FRANKLIN (Providence University College  
and Seminary), Coordinating Editor  
10 College Crescent  
Otterburne, MB R0A 1G0  
patrick.franklin@prov.ca

ARIE LEEGWATER (Calvin College)  
1726 Knollcrest Circle SE  
Grand Rapids, MI 49546  
leeg@calvin.edu

SARA SYBESMA TOLSMA (Northwestern College)  
101 7th St SW  
Orange City, IA 51041  
stolsma@nwciowa.edu

HEATHER LOOY (The King's University)  
9125 - 50th Street  
Edmonton, AB T6B 2H3  
heather.looy@kingsu.ca

DEREK SCHUURMAN (Redeemer University College)  
777 Garner Rd E  
Ancaster, ON L9K 1J4  
dschuurman@cs.redeemer.ca

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James C. Peterson

# Reviewing Book Reviews

**A**s coeditor for this theme issue, Keri McFarlane has triggered with her invitation essay, and ably helped to shepherd with peer review and editing, four articles of insightful reflection on the role of animals in God's creation. In particular, as animals in the image of God, how should we treat other animals? In our communications section, Matthew Fleenor lets us listen in on his address to a meeting at Virginia Tech of the InterVarsity Graduate Christian Fellowship. His essay is notable both for its content and how it is communicated.

That makes for a worthy issue already, but then we have seventeen book reviews. The readers of *PSCF* have long appreciated this section. It offers a head start on noticing and evaluating the influential new works within one's own fields as they interact with Christian faith, and on across the disciplines.

There was a time when this key task was mainly carried, heroically, by one book review editor who occasionally posted a list of books received from hopeful publishers. Whoever then had the fastest surface mail to receive the list in the quarterly issue of the journal, and reply with a requested choice, would receive the book to review. We had MDs reviewing books on cosmology, and physicists evaluating the latest developments in anthropology. As always, thank you to each one who so contributed. The reviews were often insightful and appreciated, but they were not always as informed and informative as they could have been, had they been written by reviewers with more specifically relevant expertise.

Today, the journal scours the latest announcements and submissions of new publications to recognize the most important developments, and solicits review for each book by an expert on some aspect

of its interdisciplinary contribution. No one person could keep track of the most important works in all the sciences and Christian thought, and then have the knowledge and awareness to offer the books for review to insightful experts across every field. That effort is today pursued by the five book review editors, each covering specific subject areas, who are listed on the inside front cover. Each one still has a daunting, but more manageable, range of disciplines to track. We owe them much, and we can help.

They welcome notice and advice from readers on works that are particularly important, and guide reviewers to be sure that each resulting review is engaging, accurate, and insightful, as it summarizes and critiques the book's main contribution. In particular, Patrick Franklin, as the book review coordinator, welcomes hearing from readers who are glad to be in the reviewer database. The reviewer database lists people interested in writing reviews, along with their areas of particular knowledge. Book review editors can consult that database when thinking about who could best evaluate a particular work. The goal is to recognize people for each book who know the subject, communicate well, and bring the amazingly broad and deep resources of the association to the discussion. You will see reviews in *PSCF* by men and women—scientists, engineers, philosophers, and theologians; scholars from Christian institutions, state universities, professions, government, and industry; and writers with postmarks from all over North America and beyond.

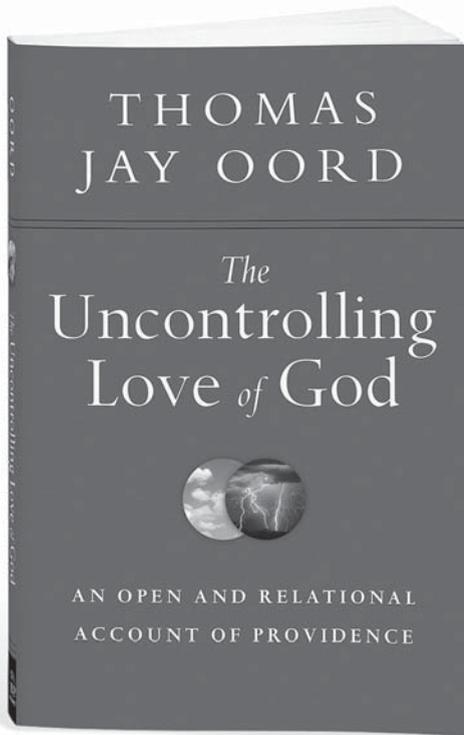
On behalf of the readers, many thanks to all that contribute to the book reviews so admirably at every stage. It is a vital and appreciated service. ◇

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Keri McFarlane

# Living Relationally with Creation: Animals and Christian Faith

Keri McFarlane

*Across the extraordinarily diverse natural world, our strongest association has always been with animals. Indeed, our story is largely told through our interactions with them – in agriculture and medicine, as companions, as food. These creatures are more like us than any other (e.g., plants, fungi, or prokaryotes). We belong taxonomically within the same group (Domain Eukarya, Kingdom Animalia), and yet we set ourselves apart. Thus, it makes sense to view our journey and to discuss our great moral, ethical, and philosophical questions in relation to them.*

*Foundational to most issues surrounding animals and Christian faith are several debated questions: How are other animals distinct from humans? Do animals possess rationality and the capacity for consciousness? Should animals have rights? In this article, I delve into these important debates, and then explore how they pertain to contemporary problems facing Christians: vegetarianism, food acquisition, laboratory animals, and pets. Throughout this article, I explore factors that influence how we think about and relate to nonhuman creatures. This is by no means an exhaustive discussion, but rather an invitation to engage some of the essential questions surrounding animals.*

## Human Beings as Animals

Animals represent a diverse taxonomic group, with species ranging from small to large, aquatic to terrestrial, sessile (at least for a part of their life cycle) to motile, limbless to many-limbed. The group is characterized by common structural (multicellular, cell wall-less eukaryotes) and functional properties, such as nutritional requirements. And yet, despite their wide diversity, people recognize among most of the animals a common “animal character.” This is evident within the name itself; the Latin origin, *animalis*, means “having the breath of life.” This intangible quality strongly influences our relationships with animals.

Each animal taxon is defined, mostly, by a collection of traits that set the group apart from other animals. For example, birds are feathered, winged tetrapods. But defining a taxon, such as a species, is

not a straightforward task. Even the *species* concept varies greatly and all species definitions have fuzzy boundaries.<sup>1</sup> For instance, one of the more common biological definitions of *species* is a group of individuals with the capacity for natural reproduction and production of viable, fertile offspring<sup>2</sup>—but this definition does not apply for all species (e.g., brown bears, *Ursus arctos*, are considered a distinct species from polar bears, *U. maritimus*, and yet they can interbreed). Delimitation of a taxonomic unit presents a challenging task because it assumes a clear distinction among groups of organisms, whereas, in most cases, nature occurs as a continuum.

**Keri McFarlane** is an associate professor of biology at The King’s University in Edmonton, Canada. She received her PhD in systematics and evolution from the University of Alberta. Her research focus is on conservation and sustainability, with an emphasis on population genetics, biochemistry, and evolutionary theory.

# Article

## *Living Relationally with Creation: Animals and Christian Faith*

Biologically, humans (*Homo sapiens*) are a species within the kingdom *Animalia*. Therefore, what separates us from other animals—particularly since nature occurs as a continuum? The question of what it means to be human often arises in the context of evolution. If humans are animals, and if we coevolved with other animals from common ancestors, then what aspects of being human set us apart as image-bearers of God? This raises challenging questions if the *image of God* pertains to our morphology or human abilities, such as communication or rationality. For instance, some humans do not possess the ability to communicate or act rationally, such as people who have suffered strokes, babies who are not yet able to deal rationally with the world, and adults with dementia, whereas some animals do have the ability to communicate or perform basic problem-solving skills.<sup>3</sup> When exploring definitions of *personhood*, David DeGrazia points out the challenges when it comes to other hominids, language-trained animals, and other complex and highly functioning creatures such as great apes and dolphins.<sup>4</sup> Some theologians, such as John Calvin in his *Commentaries on Genesis*, suggest that the image of God reflects our ability to live in relationship with God.<sup>5</sup> Others suggest that the image of God signifies that we have been called to be stewards of God's earthly kingdom.<sup>6</sup> Thus, our relationship with God's creation may be the most accurate reflection of our Christ-like image.

Christians engaged in this discussion would be wise to consider what is the significance of the definition of human species. Does it matter, morally, for humans to be viewed as distinct from nonhuman animals? Jason Robert and Françoise Baylis warn that crossing taxonomic boundaries may present moral confusion regarding social and ethical obligations.<sup>7</sup> Yet, when the rest of creation occurs as a continuum, might there be dangers in viewing humans as uniquely distinct? There are risks in an "us and them" mentality. As all of God's creatures likely evolved by similar processes, we ought to focus more on commonalities and ask, instead, what we can do to reduce suffering on God's earth, rather than unintentionally contribute to it.

### Rationality and Consciousness

Philosophical debates about whether animals have the capacity for rationality and consciousness have

been ongoing, and scientific investigations continue to provide further insight on the intellectual capacity of various species of animals.<sup>8</sup> Many of the abilities once thought to be uniquely human have been found, in varying degrees, in a range of animals. Thus, for people who feel that the human species maintains superiority, the debate about animal rationality and consciousness is an important one if any of these properties form the basis for characterizing humans as distinct from other animals.

Among many philosophers, rationality and consciousness are tightly connected to moral value. Aristotle, for example, defined humans by their ability for rational thought (i.e., the ability to connect ideas and make decisions in a directed manner). According to Aristotle, if rationality is the basis for intrinsic worth, and only humans possess rationality, then animals do not have intrinsic worth. Christian thinkers, such as Saint Augustine and Thomas Aquinas adhered to Aristotle's idea that only humans have the capacity for rational thought. Their perspective implies that humans must be treated with dignity and respect and as moral agents, while other components of creation exist for our own purposes (e.g., for food, medicine, or research) and only have value as commodities to improve our own lives (see also the section *Contemporary Problems*). In comparison, David Hume did not agree with this view and argued that animals do have the capacity—albeit a limited one—for rational thought and basic learned behavior.<sup>9</sup> Thus, according to Hume, both human and animal reasoning can be virtuous and provide moral value.<sup>10</sup>

Descartes used "consciousness" (i.e., an awareness of thought and self) as the key defining principle separating humans from animals. He claimed that consciousness is a property of an immaterial mind, or "soul." Descartes argued that animals do not possess this type of awareness—rather, they respond automatically to stimuli—and, therefore, cannot be aware of anything, including pain. Some philosophers would argue that humans are not so different from animals and that we are also simple machines responding to stimuli.<sup>11</sup> From that perspective, humans are no more capable of consciousness and suffering than animals, and the whole concept of consciousness as the key to human-animal distinctions becomes meaningless.

In contrast to Descartes, Michel de Montaigne argued that if animals can communicate with one another, then they cannot be mere machines.<sup>12</sup> Studies have shown that, in addition to the ability to communicate, some animals possess an ability for problem solving, decision making, creativity, and self-awareness (i.e., the capacity to recognize oneself as separate from others).<sup>13</sup> Evidence also suggests that animals can indicate preferences.<sup>14</sup> If animals can have preferences, then potentially they can suffer pain. From a biological perspective, many animals, and especially vertebrates, likely have the capacity to suffer pain because they, like humans, have specialized pain receptors as part of their nervous systems, and they respond to painful stimuli in similar ways as humans.

How significant are rationality and consciousness in our relationship with animals? As expressed above, our biological and social relationship with animals can reveal a great deal about ourselves. For example, when we study nonhuman creatures—for physiology, psychology, neurology, et cetera—we learn about our own physical nature due to our biological similarities. Thus, our interactions with other animals and our understanding of their rationality, consciousness, and potential for communication and suffering provide a means for learning about ourselves as image-bearers. Again, an attempt to define the differences between humans and nonhumans is proving to be difficult, as our understanding of distinctive criteria continues to shift in the light of ethological scientific advancements.

## Animal Rights

The moral status of animals has long been debated. Three major foundational thinkers in this debate are Immanuel Kant, Tom Regan, and Peter Singer. Kant argued that only rational beings have intrinsic moral worth and, therefore, animals do not have moral rights.<sup>15</sup> Kant's assumption is that there are no rational nonhuman animals (see the previous section, *Rationality and Consciousness*). However, Kant also stated that due to our rationality, humans are morally obligated to treat animals with kindness, and that to fail to do so would adversely affect our own moral standing.<sup>16</sup> On the other hand, Regan—also addressing the inherent value of beings—supports equal rights among animals and humans, asserting

that humans and animals share properties that Regan views as essential to moral beings, such as memories, preferences, and a sense of a future.<sup>17</sup> As a third perspective, Singer presents a utilitarian argument to advocate animal rights based on their preference for survival.<sup>18</sup> Although his argument lacks Kant's notion of intrinsic worth, Singer claims that animals have moral status based on their capacity to suffer. He argues that to kill an animal possessing self-consciousness—or, more specifically, an animal's awareness of its preference for its own survival—is unethical because the interests of the “greatest number” are not maximized when the animal is killed, even if the killing does not involve suffering.<sup>19</sup> Thus, even humane rearing or humane killing of animals is not supported by his utilitarian-based argument.

Views and interpretations about animal rights present an important topic for Christian dialogue. Some Christians declare that God's covenants include animals, too,<sup>20</sup> and therefore, animals should be afforded the same consideration as humans.<sup>21</sup> Scripture informs us that “all flesh shall see the salvation of God” (Luke 3:6) and that all of God's creatures (we all who have met God) “are being transformed into the same image from one degree of glory to another” (2 Cor. 3:18). Thus, the questions raised here directly relate to our interactions with animals and how we address contemporary issues, such as food choices, food acquisition, and our reliance on animals. Humans often rely on animals as a component of our own servanthood, such as for feeding and clothing the world, and developing life-saving medical advancements. Yet, is not God's glory diminished when we cause any creature suffering and death for unnecessary purposes, such as our own vanity and recreation?

These are not solely Christian issues, but for Christians engaging these arguments, we have resources in scripture and tradition that can help us navigate. For example, “Love your neighbor as you love yourself” (Lev. 19:18; Matt. 19:19; 22:39; Mark 12:31; Luke 10:27). Do our neighbors include animals? Henry David Thoreau argues that loving our neighbor also involves a love for nature, which Christians could extend to all of God's creation, both organic and inorganic, and of which we, too, are a part.<sup>22</sup> Should we extend our blanket of moral rights across all creatures, including nonhumans, even if they are not deemed to be moral beings?

# Article

## *Living Relationally with Creation: Animals and Christian Faith*

### Contemporary Problems

Animals have long served in support roles for humans. As companions and commodities, in agriculture and medicine, animals have been utilized for our ends. As Christians, we have an obligation to ask, by what right do we coerce them to serve our needs and wants? For what purposes (e.g., biodiversity, food, companionship) are animals intended? Are they meant for our uses at all? Stephen Vantassel suggests that humans should rely on the use of animals within limits, and that our actions should resemble Christ's own treatment of animals.<sup>23</sup> However, critics of Vantassel's position have pointed out that this view favors the use of wildlife for human benefits over the protection of wildlife for ecological benefits.<sup>24</sup> Thus, what roles should animals play in our own servanthood? The issues outlined in the previous sections can shed some light on these questions and how they relate to several contemporary issues facing Christians in our daily lives, as introduced below.

#### *Vegetarianism*

Eating (including eating other living things) is an embedded component in creation. Animals and all other heterotrophic creatures exist by consuming other life. For humans, eating also has deeply important cultural, relational, and symbolic roles. Emotionally, food can revitalize memories, hopes, and happiness. Christians utilize food to nourish us spiritually by fostering fellowship and, for those in the Roman Catholic tradition, through the transubstantiation of the Eucharist. As omnivores, we do not typically eat all types of edible foods available to us, but rather a subset that is based largely on tradition and values. Among different cultural and religious groups, we see diverse philosophies about eating patterns and diets. An important question that follows, then, is, does the type of food we eat matter?

Traditionally, the moral and ethical debates around vegetarianism have centered around two main issues: the issue of inflicting suffering and the issue of causing death.<sup>25</sup> Recently, environmental stewardship has surfaced as a third contending issue. The environmental issue is primarily based on reducing pollution<sup>26</sup> and preserving resources.<sup>27</sup> In 2010, a UN report from the International Panel for Sustainable Resource Management urged that a dietary shift toward veganism would significantly reduce contri-

butions to climate change.<sup>28</sup> However, some argue that animal production is necessary to prevent desertification,<sup>29</sup> although the issue is contentious.<sup>30</sup> Furthermore, although monoculture plant cropping is economically efficient, it also leads to serious environmental problems (e.g., soil depletion, increased pest loads, and loss of biodiversity). These perspectives impart important dialogue for Christians. In what ways do our Christian responsibilities play a role in the food we eat? We can find insight to these questions and problems through both scripture and biology.

Interpretations about scriptural dietary guidelines vary. In the Old Testament, we read that all life was created vegetarian (Gen. 1:29–30; 2:9, 15–17), and then after the Flood, humans were permitted to consume meat (Gen. 9:3). In the New Testament, Jesus fed the five thousand with bread and fish (Matt. 14:13–21; Mark 6:30–44; John 6:1–14), and consumed fish himself with his disciples after the resurrection (Luke 24:41–43). Some believe that meat is only permissible to eat depending on how or from where it is obtained (e.g., “Only, you shall not eat flesh with its life, that is, its blood,” Gen. 9:4; clean and unclean foods, Leviticus 11). Many theologians argue that the sacrifice of Jesus freed humankind from the dietary restrictions of the Old Testament, particularly with reference to Peter's vision on the rooftop (Acts 10:9–16). Some people view these biblical messages as though we are encouraged to eat meat, while others believe that we are *permitted* to eat meat, although vegetarianism would be preferred.

Biological evidence suggests that human physiology is suited for the consumption of meat. From a biochemical perspective, protein is an essential component of our diet. Nutritionally, meat provides a complete range of essential amino acids (those amino acids that we must obtain from our diet and cannot be synthesized *de novo*). However, meat is not the only way to obtain a full range of amino acids, and a vegetarian approach simply requires a greater diversity and range of vegetables, pulses, and grains. Therefore, meat provides merely a *convenient* protein source. From a physiological perspective, humans possess short digestive tracts and canine teeth, both of which are characteristic of carnivorous lifestyles. Canine teeth, for example, are well structured for tearing tough tissues, such as meat, and resemble the canines of carnivores. Humans appear to have evolved to be omnivores.

With this range of guidelines and interpretations, how might a Christian engage the topic of vegetarianism? To what extent is it acceptable to rely upon animals to provide us with food, either as beasts of burden or as meat?

### *Food Acquisition*

If one is to accept that one need not be a vegetarian, a subsequent question emerges about how those animals should be raised and killed. Two options for acquiring animals for food are hunting and farming. These two approaches to food procurement differ by how they influence—and are influenced by—the relationship between humans and animals.

In what ways might hunting affect how we live in right relationship with the earth and all its resources? Traditional hunting forces people to spend time in creation, potentially leading to a deeper appreciation of God's world. Some Christians have referred to hunting as an opportunity to recognize patterns and cycles in nature.<sup>31</sup> In this way, hunting provides the possibility of bringing us into closer relationship with wild animals within their habitat. However, the face of hunting has changed considerably over time, occurring initially for subsistence and utility (i.e., for tools, clothing, and protection), and more recently, for recreation and wildlife management. Does the change in purpose over time also reflect a shift in our relationship with animals?

Christian perspectives on hunting are influenced by interpretation of scripture, views on ethics and animal rights, and scientific research. The Bible tells us that hunting arose after the Fall. While the Bible does not forbid hunting, we encounter some guidelines and cautions about permissive approaches to hunting (e.g., Gen. 27:3; 21:20; Acts 15:28–29). In 1 Timothy 4:4, we are reminded that “for everything created by God is good, and nothing is to be rejected, provided it is received with thanksgiving.” Hunting involves similar ethical considerations as vegetarianism, raising questions about animal death, suffering, and environmental impact. Death is an embedded component of life, but as image bearers, can we purposely kill a part of creation? In what ways do we respect our God-given gifts by minimizing animal suffering as a component of hunting practices? Christian proponents of hunting remind us that hunting offers a means to become active, respectful participants within God's creation and the cycles of

life.<sup>32</sup> Similarly, conservation research has shown that hunting can serve as an essential part of creation care in the form of wildlife management.<sup>33</sup>

Thus, the issue of hunting is not straightforward and demands consideration of some deep questions. Is hunting permissible in the eyes of God if it brings enjoyment? Or is it better if remorse is felt over the intentional death of one of God's creatures? To what extent do underlying reasons and personal response to hunting matter if hunting contributes to ecological stewardship of God's creation?

We belong to an interconnected biological community, and we must be reminded of this network when we consume food. Yet, the reality is that most of us are at a distance from our food production. This shift away from a close connection with our food and its source becomes particularly evident when we look at farming.

Humans have been farming for thousands of years. Traditionally, farming primarily occurred for subsistence, thus placing great importance on each farm animal as an essential commodity. However, humans' relationship with farm animals has shifted as the face of farming has changed drastically, particularly during the past century. In 2014, animal production in the USA was valued at over \$100 billion.<sup>34</sup> To achieve these levels, most animal products in the developed world are now produced in factory-style systems, referred to as Concentrated Animal Feeding Operations (CAFOs) by the US Environmental Protection Agency (EPA).

The shift toward factory farming was largely driven by economic forces, but in close concert with increasing demand from population growth. By farming animals in a factory-style system, animal products can be produced rapidly, cost effectively, and in large quantities, thus resulting in vastly reduced labor and stricter control of livestock. Presumably, this approach to farming could assist a nation to feed more people. Unfortunately, despite the lower costs, widespread hunger persists. Most CAFOs occur in regions where people have abundant food, and production often far exceeds their consumption needs. As people in developing countries increase their meat consumption, demands on CAFOs will intensify. But our diet and desire for meat far outstrips our needs and, more importantly, the capacity of the planet to produce enough for the growing demand.

# Article

## *Living Relationally with Creation: Animals and Christian Faith*

As the industry has grown, so too have the problems, including excess animal wastes, reduced water and air quality, increased risk of infectious diseases (of both livestock and humans), and increased animal suffering (e.g., due to cramped living conditions, restricted diets, lack of fresh air and sunlight). In recent years, in recognition of these problems, several improvements have been made to mitigate some of the human health concerns caused by factory farming (e.g., bovine growth hormones have been banned in several countries, certain antibiotics have been phased out, some fast food chains claim they will no longer purchase animals treated with antibiotics). In addition, improved regulations have been established and alternative management measures have been researched and developed in response to concerns about animal welfare. Nonetheless, arguments against factory farms continue to be numerous and persuasive, often centering on animal rights and suffering, human health, environmental stewardship and conservation, resource use and distribution, employment, and economics.

As James MacDonald and William McBride point out, factory farms essentially substitute technology for land and labor.<sup>35</sup> Thus, the human-animal relationship has been drastically changed by these developments. Jim Mason and Mary Finelli claim that farmed animal production is disconnecting us from our proper relationship with nature and the earth's creatures, and that humanity and environmental concern have retreated, particularly as developments and "improvements" are sought by technologists.<sup>36</sup> Within these circumstances, value is no longer placed on individuals, but rather on certain coveted characteristics; individuals are reduced to the equivalent of a mere commodity. What should be the Christian response to a system that makes vulnerable our ability to live relationally with the rest of God's creation?

With such a multifaceted issue—especially one so tightly linked to the economy—how might we respond while also recognizing that factory-farmed animal products are heavily ingrained in our daily lives? There exists a complex entanglement of our view of animals and our approach to economics, food distribution, and dietary habits.

We are quite possibly living at a pivotal moment in history. Two decades ago, Bill McKibben proposed that our actions regarding animal farms will have

dramatic effects on humanity, the earth, and its climate.<sup>37</sup> Thus, the discussion must continue. For Christians, this dialogue can teach us something about our own brokenness. We have an opportunity to carefully evaluate our views about the utility of animals. Are animals intended to nourish us? Should they be viewed as commodities that contribute to the Christian mission, such as feeding the world? How does our response to this issue influence our ability to live in relationship with animals and the rest of creation?

### *Laboratory Animals*

Stephen Webster proposes three foundations for discussing the use of animals in laboratories: the suitability of animal use, the significance of animal use, and the importance of human suffering.<sup>38</sup> For Christians, on what basis should decisions about animal experimentation be made?

Animals are used in laboratories for a range of purposes, both medical and nonmedical. Experimentation on live animals for the purpose of scientific progress can be useful for learning anatomy, practicing surgical techniques, assessing medical treatments, and examining animals' functioning (such as studying brain lesions, assessing the use of chemical or biological agents, manipulating diet or living conditions, and psychological testing). Animals are also used to supply humans with appropriate products for various medical treatments, such as skin grafts, heart valves, and hormones (e.g., insulin).

Scientists rely on animal models because animals are genetically, morphologically, and physiologically similar to humans. However, some Christians, who perceive a discontinuity between humans and other animals, dispute the suitability of animals as "human models." Thus, one's perspective on humans as animals (discussed in the first section) influences the role animals may play in medical developments. Beyond morphological similarities, what other ways might animals reflect our image back to us? What else can we learn about ourselves from animals?

Proponents for the use of laboratory animals argue that animal experimentation saves human lives. Over the past few centuries, substantial medical advancements and improvements to human welfare have occurred. Some argue that these improvements owe

much of their success to the use of animals, while others have questioned how significant the role of animals has actually been in these improvements. For example, better sanitation, nutrition, and living conditions may be equally, if not more, responsible for such achievements.

Even if human suffering has been alleviated via the use of laboratory animals, is it acceptable to inflict suffering on animals to prevent our own? This question brings us back to the issues of animal rights and an animal's capacity for suffering, rationality, and consciousness (discussed in previous sections). What are our Christian responsibilities? Where do animals fit with our own servanthood, or, more importantly, within God's covenants?

### *Pets*

The story of pet ownership begins with our intentional relationship with the rest of creation. Our perception of pet ownership reflects how we know, understand, and value nonhuman creatures.

The history of pets is intertwined with the history of animal domestication. Domesticated animals provide a source of nourishment (e.g., milk, meat) or helpful companionship and labor (e.g., herding, riding, carrying loads). In the past, pet ownership was limited to wealthy families who had resources to keep animals for pleasure rather than solely for food or work, because feeding pets required resources that would otherwise have been used to feed family members.

The close rapport between people and their pets reflects a reverence and affection for animals that does not characteristically transpire in the same manner with other creatures (e.g., plants, fungi) or inorganic entities (e.g., rocks, water). According to Katherine Grier, different types of pets provide different emotional and psychological benefits for their owners, such as aesthetic (e.g., fish) or ideological appeal (e.g., birds, due to their harmonious music, monogamous reproduction, and parental care).<sup>39</sup> Working and service animals are appreciated for their love, loyalty, and duty.

The pet industry may be, in part, a substitute for a more holistic relationship with the rest of creation and the rhythms of life. Historians suggest that growth in pet ownership served as a substitute for rich human community, particularly during times

when society became increasingly impersonal and adversarial.<sup>40</sup> Thus, growth in pet ownership might signify some of the brokenness that has resulted from our disconnection from the natural world.

Disputes about pet ownership are complex and intricately connected to debates about animal rights, human distinctness, and whether animals have souls. In support of pet ownership, many Christian pet owners and several prominent Christian thinkers (e.g., C. S. Lewis<sup>41</sup>) believe that animals can be received in Heaven. Might our understanding of eternal life be influenced by beliefs about the existence of an afterlife for animals?

One common argument against pet ownership states that we cannot morally appeal for expenditures of costs and energy toward animals when human suffering persists.<sup>42</sup> That is, if animals are soulless then these costs are misspent because time and money attributed to pets could be better used to alleviate human suffering. But, arguably, human suffering and nonhuman animal suffering are deeply connected. As discussed above in the Animal Rights section, scripture informs us that all creatures—not just humans—are transformed by the redemptive power of Christ (2 Cor. 3:18), and we are promised salvation for all flesh (Luke 3:6).

The Bible commands us to exhibit dominion over creation (Gen. 1:26, 28). In what ways do caring for and "owning" pets exemplify this dominion? Acts of dominion should be healing and freeing, rather than oppressive and disabling. In his book *Christianity and the Rights of Animals*, Andrew Linzey advises us to view all of nature as a gift from God and treat it accordingly.<sup>43</sup> He argues that we infringe on God's rights when we alter the natural state of life. This, too, applies when humans repress or modify a pet's natural behavior. How might we achieve equal consideration and respect among all gifts from God? In our actions as the "servant species,"<sup>44</sup> what level of importance should we afford the distinction—biological or otherwise—between humans and other animals?

### Conclusions

The questions and issues raised in this article outline some of the key themes and controversies in biology and specifically touch on our responsibilities as Christians and as scientists. While the specific issues

# Article

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pertaining to nonhuman animals are numerous and varied, we find common threads throughout. Most especially, there is the theme of our relationship with the rest of creation. Throughout the articles that follow, we engage the foundational matter of how Christians, in expressing their faith daily, should live relationally with other animals.

The relationship between humans and God's earthly kingdom is complex. The resources are God's, yet he also created physical and ethical dimensions of his creation. While we aim to live in proper relationship with the rest of creation, we should be humbly aware that the ways in which we give power to science and the alienation we experience from the natural world have created many of the problems and questions that are raised in this article.

We should honor God by caring for all his gifts and making decisions that reflect Christ's priorities. In the end, Christianity is about love. Our actions should manifest love, stewardship, and humility. In what ways might this be achieved? A first step should be to recognize ourselves as part of a larger community. A second step should be to continually strive to notice the ways in which our actions are not reflecting love, stewardship, and humility. For example, we would do well to remember that many animals are best left alone. Furthermore, with ongoing accumulation of scientific information, we should engage continual shifts in our understanding and knowledge about animals—their phylogeny, rationality and consciousness, rights, and roles in our contemporary society. We should rely on scientific information in the way it is intended—as a factual way of knowing about our natural world and learning about ourselves. We should rely on our faith as a source of moral guidelines. Our moral responsibility can be manifested through humans forming respectful relationships with other animals and recognizing animals as sentient beings, rather than viewing them as secondary to our superiority. We also must acknowledge that human encroachment and intrusion—albeit unintended in many instances—have been primary sources of harm for other animals. We ought to view ourselves as servants to—rather than masters of—a wider community. Only then can we cease our actions that cause harm and exploitation. Overall, we must allow other animals to provide glory to creation in their own way.

## Acknowledgments

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## Notes

<sup>1</sup>Reviewed in Kevin De Queiroz, "Species Concepts and Species Delimitation," *Systematic Biology* 56, no. 6 (2007): 879–86.

<sup>2</sup>Theodosius Dobzhansky, "Mendelian Populations and Their Evolution," *American Naturalist* 84, no. 819 (1950): 401–18; Ernst Mayr, *Systematics and the Origin of Species* (New York: Columbia University Press, 1942); and Sewall Wright, "The Statistical Consequences of Mendelian Heredity in Relation to Speciation," in *The New Systematics*, ed. Julian Huxley (London: Oxford University Press, 1940).

<sup>3</sup>See, for example, Wolfgang Köhler, *The Mentality of Apes*, trans. Ella Winter (1917; Oxford: Routledge, 1999); Vicki G. Morwitz, "Insights from the Animal Kingdom," *Journal of Consumer Psychology* 24, no. 4 (2014): 572–85; <http://dx.doi.org/10.1016/j.jcps.2014.01.004>; Alex H. Taylor, Gavin R. Hunt, Felipe S. Medina, and Russell D. Gray, "Do New Caledonian Crows Solve Physical Problems through Causal Reasoning?," *Proceedings of the Royal Society B: Biological Sciences* 276, no. 1655 (2009): 247–54; and Sabine Tebbich, Amanda M. Seed, Nathan J. Emery, and Nicola S. Clayton, "Non-Tool-Using Rooks, *Corvus frugilegus*, Solve the Trap-Tube Problem," *Animal Cognition* 10, no. 2 (2007): 225–31.

<sup>4</sup>David DeGrazia, "On the Question of Personhood beyond *Homo sapiens*," in *In Defense of Animals: The Second Wave*, ed. Peter Singer (Malden, MA: Blackwell, 2006), 40–53.

<sup>5</sup>John Calvin, *A Commentary on Genesis*, ed. and trans. John King (Calvin Translation Society edition of 1847/1965; Carlisle, PA: Banner of Truth Trust, 1975).

<sup>6</sup>See, for example, Joshua M. Moritz, "Evolution, the End of Human Uniqueness, and the Election of the *Imago Dei*," *Theology and Science* 9, no. 3 (2011): 307–39; and Andrew Linzey, *Animal Theology* (Champaign, IL: University of Illinois Press, 1995).

<sup>7</sup>Jason Scott Robert and Françoise Baylis, "Crossing Species Boundaries," *American Journal of Bioethics* 3, no. 3 (2003): 1–13.

<sup>8</sup>See, for example, Vicki G. Morwitz, "Insights from the Animal Kingdom,"; Taylor et al., "Do New Caledonian Crows Solve Physical Problems through Causal Reasoning?"; and Tebbich et al., "Non-Tool-Using Rooks."

<sup>9</sup>David Hume, "Of the Reason of Animals," in *A Treatise of Human Nature* (1739; Project Gutenberg EBook, 2012), 1.3.16, <http://www.gutenberg.org/files/4705/4705-h/4705-h.htm>.

<sup>10</sup>Deborah Boyle, "Hume on Animal Reason," *Hume Studies* 29, no. 1 (2003): 3–28.

<sup>11</sup>See, for example, John A. Bargh, "The Four Horsemen of Automaticity: Awareness, Intention, Efficiency, and Control in Social Cognition," in *Handbook of Social Cognition*, 2nd edition, ed. Robert S. Wyer and Thomas K. Srull (Hillsdale, NJ: Erlbaum, 1994), 1–40; and John A. Bargh, Peter M. Gollwitzer, Annette Lee-Chai, Kimberly

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- <sup>12</sup>Michel de Montaigne, "An Apology of Raymond Sebond," in *The Essays of Michel de Montaigne*, trans. William Hazlitt (1865; Cambridge, MA: Harvard College Library, 2010).
- <sup>13</sup>See, for example, Marc Bekoff, "Awareness: Animal Reflections," *Nature* 419, no. 6904 (2002): 255; Donald R. Griffin and Gayle B. Speck, "New Evidence of Animal Consciousness," *Animal Cognition* 7, no. 1 (2004): 5–18; Helmut Prior, Ariane Schwarz, and Onur Güntürkün, "Mirror-Induced Behavior in the Magpie (*Pica pica*): Evidence of Self-Recognition," *PLoS Biology* 6, no. 8 (2008): e202; and Carolyn A. Ristau and Peter Marler, eds., *Cognitive Ethology: The Minds of Other Animals* (New York: Psychology Press, 2014).
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- <sup>15</sup>Immanuel Kant, "Foundations of the Metaphysics of Morals," trans. Thomas Kingsmill Abbott, in *Environmental Ethics*, 6th ed., ed. Louis P. Pojman and Paul Pojman (1873; Boston, MA: Wadsworth, 2012), 60–61.
- <sup>16</sup>Summarized in J. B. Schneewind, "Autonomy, Obligation, and Virtue: An Overview of Kant's Moral Philosophy," in *The Cambridge Companion to Kant*, ed. Paul Guyer (Cambridge, MA: Cambridge University Press, 1992), 309–41.
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- <sup>18</sup>Peter Singer, "A Utilitarian Defense of Animal Liberation," in *Environmental Ethics*, 6th ed., 71–80.
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- <sup>20</sup>See, for example, David Dillard-Wright, "The Third Covenant: People, Animals, and Land in the Jewish and Christian Scriptures," *Journal of Scriptural Reasoning* 10, no. 1 (2011): e06, <http://jsr.shanti.virginia.edu/back-issues/vol-10-no-1-august-2011-people-and-places/the-third-covenant-people-animals-and-land-in-the-jewish-and-christian-scriptures/>.
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- <sup>23</sup>Stephen M. Vantassel, *Dominion over Wildlife? An Environmental-Theology of Human-Wildlife Relations* (Eugene, OR: Wipf and Stock, 2009); and Vantassel, "Book Review Response Letter," *Perspectives on Science and Christian Faith* 62, no. 3 (2010): 231.
- <sup>24</sup>Rolf Bouma, a review of *Dominion over Wildlife? An Environmental-Theology of Human-Wildlife Relations* by Stephen M. Vantassel, *Perspectives on Science and Christian Faith* 62, no. 1 (2010): 62.
- <sup>25</sup>Tom Regan, "Utilitarianism, Vegetarianism, and Animal Rights," *Philosophy & Public Affairs* 9, no. 4 (1980): 305–24; and Peter Singer, *Animal Liberation: Towards an End to Man's Inhumanity to Animals* (New York: HarperCollins, 1975) and reviewed in Thomas Young, "The Morality of Killing Animals: Four Arguments," *Ethics and Animals* 5, no. 4 (1984): 88–101.
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- <sup>28</sup>Edgar Hertwich et al., *Assessing the Environmental Impacts of Consumption and Production: Priority Products and Materials*, A Report of the Working Group on the Environmental Impacts of Products and Materials, presented to the International Panel for Sustainable Resource Management (New York: UNEP [United Nations Environment Programme], 2010).
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- <sup>31</sup>See, for example, Mark Sprinkle, "The Purpose of Dogs," blog entry, *The BioLogos Forum: Science and Faith in Dialogue* (blog), October 16, 2011, <http://biologos.org/blog/the-purpose-of-dogs>; and Dennis Venema, "From Intelligent Design to BioLogos," BioLogos Foundation Scholar Essays, July 20, 2011, <http://biologos.org/blog/from-intelligent-design-to-biologos-part-1-early-years>.
- <sup>32</sup>See, for example, Steve Chapman, *A Look at Life from a Deer Stand* (Eugene, OR: Harvest House, 1998); Michael Lipford, "Being Fruitful," blog entry, *The BioLogos Forum: Science and Faith in Dialogue* (blog), June 12, 2012, <http://biologos.org/blog/being-fruitful>; and Dean Ohlman, "Christians and Hunting," *Wonder of Creation* (November 5, 2010), <http://wonderofcreation.org/2010/11/05/christians-and-hunting/>.
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# Article

## Living Relationally with Creation: Animals and Christian Faith

<sup>34</sup>Kenneth Mathews, "Livestock, Dairy, and Poultry Outlook," Economic Research Service (ERS), United States Department of Agriculture (January 16, 2014), <http://www.thepoultrysite.com/reports/?id=3327>.

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<sup>36</sup>Jim Mason and Mary Finelli, "Brave New Farm?," in *In Defense of Animals: The Second Wave*, ed. Singer, 104–22.

<sup>37</sup>Bill McKibben, "A Special Moment in History," *The Atlantic Monthly* (May 1998), <http://www.theatlantic.com/past/docs/issues/98may/special1.htm>.

<sup>38</sup>Stephen Webster, *Thinking about Biology* (Cambridge: Cambridge University Press, 2006).

<sup>39</sup>Katherine C. Grier, *Pets in America: A History* (Chapel Hill, NC: The University of North Carolina Press, 2006).

<sup>40</sup>Grier, *Pets in America*; Kathleen Kete, *The Beast in the Boudoir: Petkeeping in Nineteenth-Century Paris* (Oakland, CA: University of California Press, 1995); and reviewed in Steven Mintz, review of *Pets in America: A History* by

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<sup>41</sup>Clive Staples Lewis, *The Problem of Pain* (1940; New York: Harper Collins, 1996).

<sup>42</sup>Charles Colson and Anne Morse, "Keeping Pets in Their Place," *Christianity Today* 52, no. 4 (April 29, 2008): 80; Wesley Smith, Karen Swallow Prior, and Ben DeVries, "Do Pets Go to Heaven?," *Christianity Today* 56, no. 4 (April 12, 2012): 66; and Kay Warren, "Puppies Aren't People," blog entry, *Her-meneutics Blog*, *Christianity Today* (April 22, 2009), <http://www.christianitytoday.com/women/2009/april/kay-warren-puppies-arent-people.html?paging=off>.

<sup>43</sup>Andrew Linzey, *Christianity and the Rights of Animals* (New York: Crossroad Publishing, 1987).

<sup>44</sup>Andrew Linzey, *Animal Theology* (Champaign, IL: University of Illinois Press, 1995).

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Chris Rios is an assistant dean for graduate studies at Baylor University. He wrote most recently *After the Monkey Trial: Evangelical Scientists and a New Creationism* (Fordham University Press, 2014). His essay at <http://www.csa.ca/wp-content/uploads/2015/09/Rios2015ASA75.pdf> describes some of the first fifty years of ASA along with an invitation to carry that story forward to the present, and to discuss what the ASA might become and pursue in the future. The essay is intended as an invitation. Readers are encouraged to take up one of the insights or challenges, or maybe a related one that was not mentioned, and draft an article (typically about 5,000–8,000 words) that contributes to the conversation.

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Christopher Southgate

# God's Creation Wild and Violent, and Our Care for Other Animals

Christopher Southgate

*In this article I give examples of violence, and ingenuity in the service of violence, in predation in the natural world. I consider various types of argument that ascribe this violence to different types of fall-event, and show that these arguments are to be rejected on both scientific and theological grounds, and that an honest theology of wild nature needs to concede that God is the author of an ambiguous world. I further reject, however, the idea that violence in nature licenses human violence, and propose instead an eschatological ethic of Christian care for creation based on ethical kenosis after the example of Jesus and the values of the Kingdom, an ethic much influenced by Romans 8:19–22.*

On a bend of the Wye Valley in the English county of Gloucestershire is a spectacular place known as Symonds Yat, where the river runs through a steep gorge and round a tall island of rock. The place is famous for its wild peregrines (*Falco peregrinus*). I have had two visits to Symonds Yat. On the first, a peregrine could be seen sitting in a tree that protruded from a cliff, and not three feet away sat a crow, natural prey for peregrines. It was a reminder that predation takes place only in specialized circumstances in which the predator needs to feed, and in which its abilities allow it to outperform the prey in some way.

But it is the second visit that so sticks in the mind. Then I saw a peregrine wind itself up the sky until it was almost out of sight at the head of the valley. A pigeon flew across the gorge by the promontory and passed behind the rock. The peregrine could suddenly be seen in a long flat stoop, tightening and accelerating as it neared the island. It caught the pigeon as it emerged from the other side of the rock, knocking it down into the woods. My guess is that the pigeon, literally, never saw what hit it. As a piece of ambush,

based on calculating—from perhaps a mile away—the precise moment at which the pigeon would emerge from cover, it was stunning. Whether the pigeon was killed outright, or only maimed, and whether the peregrine found its victim among the trees, I could not see. The prey may have endured a long slow death, if the fox was slow to come.

In my home city of Exeter, there are wild peregrines, nesting on the spire of the church of St. Michael and All Angels, Mount Dinham. A friend of mine is involved in a long study of their diet and territorial behavior. He recently reported that the peregrines had been cooperating to kill a number of hawks of a type common in the area, known as a common buzzard (*Buteo buteo*, N.B., this is a different bird from an American buzzard). The first falcon stoops onto the buzzard, causing the hawk to flip upside down to show its talons, the usual response to mobbing

**Christopher Southgate**, PhD, trained in biochemistry at Cambridge and UNC-Chapel Hill and is still active in origin of life research (<http://www.biomedcentral.com/1471-2148/14/248>). He is Senior Lecturer in Theology at the University of Exeter, UK, author of *The Groaning of Creation* (WJK 2008), and editor of the textbook, *God, Humanity and the Cosmos* (3rd ed., T&T Clark, 2011).

# Article

## *God's Creation Wild and Violent, and Our Care for Other Animals*

by other birds. As it rights itself the buzzard is unprotected, and the second peregrine strikes, aiming to hit the buzzard on the back or head. Seriously disabled by its injury, the buzzard now falls victim to the first peregrine stooping again for another strike. Again, the prey creature may suffer intensely, if only briefly, as its powers are destroyed by violent attack and it falls traumatized to the ground. This new observation of peregrines cooperating and coordinating attacks<sup>1</sup> is also a reminder that cooperation, which is sometimes advanced as more characteristic of evolution than the competition Darwin so stressed, is always itself a form of disguised competition. Natural selection always has losers; cooperation merely changes the nature of the winning entity.<sup>2</sup>

The first part of this article reflects on humans' relation to those sufferings in the nonhuman world that have no human cause. The problem for Christian thinkers is that it was, presumably, God who created the evolutionary process, and therefore God who is responsible for the creaturely sufferings of a world "red in tooth and claw." I have written extensively on the implications for Christian theology of taking Darwinian evolution seriously, and update my thinking here.<sup>3</sup> In the second part, I go on to consider what implications there might be within such a theology for our treatment of nonhuman animals.

### The Problem of Suffering within Evolution

I say that it was presumably God who created the suffering in evolution. It is important to recognize the strands of thought that try to avoid that unpalatable conclusion. Very few thinkers who accept the scientific consensus on evolution seek to deploy the ancient answer that human sin introduced violence into the world. The chronology of such answer is hugely problematic, given that we now know that animals were tearing each other apart, and suffering from chronic disease, millions of years before modern humans evolved. The only two thinkers still to invoke human sin as the dominant cause of creaturely suffering within an evolutionary framework are (a) William Dembski, with his strange model of retroactive causation—this seems to me to make the problem worse rather than better, since Dembski's God inflicts suffering on myriad creatures because

humans will one day sin; and (b) Stephen Webb, who isolates Eden from the rest of the world to make human moral choice determinative. But there is not the slightest evidence that his proposed "dome" ever existed, or that any humans ever lived in a violence-free world (or yet, of course, that two humans were, in any meaningful sense, the origin of the species).<sup>4</sup>

It remains to consider proposals that invoke some other type of fall-event, or fallenness, to "get God off the hook" of blame for the suffering within evolution. Perhaps there was "fallenness" introduced into creation without a definite fall-event. This is the line taken, in effect, by Celia Deane-Drummond in her writing on "Shadow Sophia," and by Nicola Hoggard Creegan in her analogy with the parable of the wheat and the tares. Evil exists in creation, for which God is not to blame, but of which the cause is ultimately mysterious.<sup>5</sup> Unless some cause can be identified, however compatible with the rest of Christian theology's understanding of the world, such proposals seem to lack explanatory power, and God remains "on the hook."

Michael Lloyd has also made a proposal in this area. He comes to the conclusion that it is unthinkable that the God of our Lord Jesus Christ could be the author of violent processes, so the best explanation in his view is the rebellious angels.<sup>6</sup> This is obviously tempting—it taps into long-established patterns of Christian thought in which what is ugly about the world can be laid at the door of Satan and his coworkers. But we should be very careful about embracing such an explanation. What it would imply is that God set out to create straw-eating lions, and was unable to do so because of the angels. That is a much more powerless God than I for one believe in, and hardly seems consonant with our understanding of the God who was able to bring everything into existence from absolutely nothing, as is the classical Christian confession. Also, the notion of a straw-eating lion seems dubiously coherent, for the very good reason that the very evolutionary processes that made lions the violent, flesh-ripping creatures are the *same processes* that made them the strong majestic creatures to which humans have always looked as symbols of power and majesty. The same processes that made peregrines magnificent flyers also made them the destroyers of pigeons and maimers of buzzards. It is a common Christian mistake to dissect out what we love about life and attribute it to God,

and then to take the uglier bits and attribute them to Satan. To do so in respect of the natural world is both theologically dubious, and risks closing down the conversation with science that is so vital both to Christian learning and to apologetics.<sup>7</sup>

Neil Messer has made a very sophisticated effort to get God off the hook of blame for evolutionary suffering, writing of the “nothingness” that, in the thought of Karl Barth, necessarily attends any process of creation. It is this nothingness that results in violent processes that God could not have willed.<sup>8</sup> The reader will see that this proposal suffers from the same difficulties as attend the proposals of Deane-Drummond, Creegan, and Lloyd. The nothingness is inherently mysterious; indeed, Messer says that it has no real existence, and yet it is puzzlingly able to prevent the sovereign God acting as God chooses. And again, Messer’s account begs the question as to where, in a single set of processes as science understands them, we can split off what God willed from what God did not.

I am always intrigued by Messer’s work. But I regret that his desire, which I thoroughly share, to give full weight to the Christian doctrinal tradition, when combined with his predilection for the theology of Karl Barth, leads him away from a willingness to learn from science about the way things really are. I do agree with him, however, that the theologian of creation faces very difficult choices in this area. In Messer’s Barth-based view, there is a resistance, inseparable from the possibility of creation, but having itself no ontological status, that prevents God creating a violence-free world. In my own position, there is also a presumption of a sort of constraint on God. Because my faith tells me that a loving God created this cosmos out of absolutely nothing, and my understanding of evolutionary biology (and of thermodynamics) tells me that, in a cosmos such as this, suffering is an inevitable concomitant of sophisticated sentience, I presume that the only way a God of love could have created a world of complex and feeling creatures—a world, moreover, capable of being redeemed by love—was by a process to which suffering was intrinsic. The constraint is therefore a plausible, if tentative, inference from theological reflection on the science, rather than a mysterious theological claim stemming out of Barth, and behind him the tradition that evil is only a privation of the good (*privatio boni*).<sup>9</sup>

I freely acknowledge that there are difficulties either way. Both strategies seem to compromise the absoluteness of the sovereignty of God—it is to circumvent this that I postulate that the constraint on God is a logical one, even though the logic is beyond human powers to demonstrate. Where I have a particular problem with Messer is that I cannot see *which* properties of the natural world can be assigned to the operation of resistance to God. This is an important test of the two views, because without these distinctions, a *privatio boni* approach to natural evil defaults to a vague assertion that the world is not all it should be, an assertion lacking all explanatory power. The “only way” position, in contrast, is clear that values and disvalues are inseparable—it is the same processes that lead to the refinement of creaturely characteristics that also lead to suffering and extinction.

In his most recent essay in this area, in which he responds to my work with characteristic generosity and care, Messer alludes to the antitheodicist’s critique found, for example, in Kenneth Surin, Terrence Tilley, D. Z. Phillips, and John Swinton.<sup>10</sup> Antitheodicies include the challenge that to suppose that God makes some sort of calculation as to the balance of goods and harms in a world that might be created is to reduce God to a moral agent like human beings.<sup>11</sup> It is not for us to put God on hooks, or to measure God as though God were a creature. They also include the yet more disturbing thought that to justify violence in the world as caused by God is to run the risk of desensitizing humans to the reality of particular acts of violence,<sup>12</sup> or worse, justifying human violence against other creatures.

Both of these are serious charges, and both stress the importance of our responding, as moral agents, to the experience of suffering creatures rather than defaulting to armchair speculations. The charges are particularly telling, I believe, against theodicies that attempt rational demonstrations from first principles of the plausibility of the God of theism. But the person of faith who, out of that faith, seeks to explore the ways of God with the world, knowing that her answers will only ever be partial and provisional, is not judging God from an armchair, and she knows that God can never be considered as though God were a creature. I note in passing that the two types of antitheodicist charges, in a sense, operate in contrary directions—the first is concerned that God

# Article

## *God's Creation Wild and Violent, and Our Care for Other Animals*

might be reduced to comparison with humans; the second, that humans might elevate themselves to godlike status and behavior. So a solidly constructed theology of the distinction between God and the world should be antidote against both.

Moreover, when we consider suffering in wild nature through evolutionary history, we are thinking about myriad sufferers to whom we can be of no help (and some to which we might but perhaps should not—we could shoot out the peregrines of St. Michael's or euthanize their chicks, but buzzards would then pounce on more rabbits in the city's suburban gardens). It thus seems to me valid to pursue a very careful (and always humble) theological exploration of evolutionary theodicy, in the hope, among other things, that it might promote good ethics in the relation to our treatment of nonhuman creatures, the subject to which I shall turn in the second half of this article.

Messer also commends Swinton's fourfold response to evil in that fine book, *Raging with Compassion*. The vocation of Christians, on this account, is to resist evil by such distinctive practices as lament, forgiveness, thoughtfulness, and hospitality.<sup>13</sup> These are hugely important resources in human relationships, but the difficulty in applying them in any straightforward way to wild nature reflects just how different our theological ethics needs to be when considering the nonhuman creation in its ordinary operation. Was there lament in my heart for the pigeon at Symonds Yat? Perhaps a flicker, but it was accompanied by an enormous admiration for what evolution has made possible in the peregrine falcon and a sense of zest that creation contains such wonders. Was there lament for the buzzard at Mount Dinham? Perhaps more, because I so delight in the soaring of buzzards over my own valley. But again, I can only admire the intricacy and skill of the peregrines' tactics.

Forgiveness, too, does not seem quite pertinent when human agents are not involved, though David Clough has made a determined case for the sinfulness of other animals, and Joshua Moritz has argued toward the same conclusion.<sup>14</sup> I must set down here that I am completely unpersuaded by this case. There seems to me no demonstrable parallel to the human sense of knowing the right and yet doing the wrong, or yet of knowing (from revelation) what God might desire and turning along the opposite

path, and these, to my mind, constitute the essence of human sin. Nor are humans actors in the drama of these natural processes in a way that would involve us as forgivers.<sup>15</sup> So, in considering purely the actions of peregrines and other predators, forgiveness does not seem relevant.

Thoughtfulness, the concentrated attention of the contemplative, is highly pertinent to this work at the boundary of theodicy and theological ethics. I wrote above of my instinctive responses to scenes of predation involving creaturely suffering. But our instincts can be honed, refined, and indeed modified by scientific understanding of creaturely behavior and by patient observation. This will also inform our sense of the space and habitat creatures need to be themselves in an increasingly human-crowded world.<sup>16</sup>

This brings me to hospitality. This is a tricky term, because it might seem to play back into the anthropocentrism that has so dogged our relation to nonhuman creatures. To say that we should evince hospitality might suggest that the earth was *our* particular home, and other creatures only guests, instead of the reality that we are the destructive latecomers into a biosphere that has been a home for other creatures (albeit a temporary one for almost all species that have ever lived) for billions of years. But perhaps the concept merits more exploration. We may be latecomers, but in most contexts on the surface of the planet we have the power to choose whether to give space to other creatures to be themselves or take all that space for ourselves, ending up with no tigers or rhinoceroses, no leopards or lemurs. The terrifying prediction of the Stern Review on climate change was that extinction levels might be as high as 25–60% in mammals at a rise in global mean surface temperature of 3°C.<sup>17</sup> If anything, our assessment of the likelihood and impact of climate change has become yet more alarming since that report was written. We are taking other animals' space subtly and obliquely, but in terrifyingly deadly fashion, by allowing our forcing of the climate to eliminate habitat throughout the world. This is the reverse of hospitality. I return to the concept of hospitality below, in relation to our treatment of domestic animals.

There remains the charge, the most troubling of all those I have listed, that to attribute the creation of violent processes to God is to desensitize us to violence or, even worse, to license violence. I need to

challenge this inference for precisely the same reason that the critics of theodicy have such reservations about our explanations of evil. We are not God. There is no parallel in human life to the choices God made about the creation of the cosmos. We cannot imagine those choices, except in believing they were made out of love.

It is proverbial in ethical theory that we cannot argue satisfactorily from the way nature is to principles of right action. What I have argued above is that we cannot, either, argue from what God has done in creating the world to how we should act in it as creatures. Where we are given, as Christians, clues as to how we should act, they come especially from two sources, our knowledge of Jesus the Lord, and the scriptures as interpreted for us by the Spirit in the light of Jesus's teaching and example. Again, insights from those sources teach us the importance of lament, forgiveness, thoughtfulness, and hospitality, all of which we can see in Christ and in the Hebrew scriptures he loved. But again, they remind us that we are not God, and cannot bring anything into existence out of nothing. We therefore cannot draw any inference from the constraint on God, postulated above, that values in the biosphere necessarily arise only in association with the disvalues of violence and suffering.

The other powerful teaching the New Testament, and particularly the Pauline letters, gives us is that the cross and resurrection of Christ mark the hinge of history, the entry into the eschatological age in which God will bring in the new creation, of which we are already a part as Christians, but for whose final consummation we can only long as Jesus taught us to long—"thy kingdom come, thy will be done, on earth as it is in heaven" (Matt. 6:10).

Frustratingly, for the point of view of this issue of the journal, the New Testament gives us very little guidance on how other animals fit into this picture. That they must have a place is clear to me—how barren a place would heaven be without other creatures? How lacking in hospitality, come to that, would be a God who saved into a redeemed life only human beings? How hollow would the great coda of the Colossian hymn seem if "all things" do not find their place with God, when God, as Paul tells us, will be "all in all" (Col. 1:20; 1 Cor. 15:28). But that issue is not the one that engages us here, which is how we

should act toward other creatures in the interim phase in which the eschaton is "already but not yet."

It is natural to turn to that other famous, if enigmatic, passage on the nonhuman creation in Romans 8:

For the creation waits with eager longing for the revealing of the children of God; for the creation was subjected to futility, not of its own will but by the will of the one who subjected it, in hope that the creation itself will be set free from its bondage to decay and will obtain the freedom of the glory of the children of God. We know that the whole creation has been groaning in labor pains until now. (Rom. 8:19–22, NRSV)<sup>18</sup>

A key focus of the debate about animals is human uniqueness. Our theological uniqueness seems clearly established by Genesis 1:26–28 and Psalm 8. But all parties in the debate would concede that, scientifically, claims to human uniqueness have been eroded alike by discoveries of abilities in other animals such as language, theory of mind, tool-use, et cetera, and also by the new genetic studies showing that most modern human genomes contain Neanderthal and Denisovan DNA. As so often, science helps us to see that things are more complex than any ancient writer could have imagined. However, foundational texts such as this one from Romans take Christian reflection in a different direction. The issue is not our scientific distinctiveness, but our calling in Christ, our status and role as inferred from eschatological theology. Uniqueness is given by God to humans in order to enable them to participate in God's saving purposes, not for their own status or for them to abuse. This is in keeping with Moritz's recent work on the *imago Dei*, which brings to the fore our election for a role (therefore falling within the "functional" category in Noreen Herzfeld's helpful classification of understanding of the *imago*—and also within the "eschatological").<sup>19</sup>

## Our Treatment of Animals

So, we are in need of an eschatological ethic that we can apply both to our treatment of wild nature and of domestic animals. I began to develop this in an essay on stewardship published in 2006,<sup>20</sup> and in the closing section of my monograph *The Groaning of Creation*. In the latter, I suggested that the key instincts of an eschatological Christian ethic were kenotic. We should have the same mind that was in

# Article

## *God's Creation Wild and Violent, and Our Care for Other Animals*

Christ Jesus when he “emptied himself taking the form of a servant” (Phil. 2:7). I quote here how I have come to understand the ethical kenosis that should arise from having the mind that was in Christ Jesus.

The first element in such ethical kenosis, after the example of Christ, is what I call kenosis of aspiration. Like Christ, the believer is called not to make of status a “snatching-matter” ..., not to aspire to a status beyond that which is most helpful to other creatures. The essence of a kenosis of aspiration is of resisting the temptation to grasp at a role which is not God-given, not part of the calling of the individual believer or community. The consequence of such grasping is at once to fail to respect fully the status of the other creature, and to fail to receive our situation as gift from God. This is the sense in which I believe the Genesis 3 account of “the Fall” has a profound wisdom to it. It is an account of the tendency in human nature to grasp at more than is freely given, to seek to elevate our status beyond what is appropriate and helpful, to seek to be “as Gods.” So Simone Weil writes: true love means “to empty ourselves of our false divinity, to deny ourselves, to give up being the centre of the world ...”<sup>21</sup>

With kenosis of aspiration, however, must go a kenosis of appetite. It is possible to think of sin as “a compulsion towards attitudes and actions not always of [humans’] own willing or approving,” a power which prevents humankind from recognizing its own nature.<sup>22</sup> This may be a compulsion to desire status over against God—the greatest and most pernicious of sins, and therefore the one on which the Genesis 3 account focuses. But it may be for power over others or for sex for sex’s sake or for an excess of intake of alcohol, drugs, food or sensation of whatever kind. All these draw us into idolatry—they make of a substance or experience a kind of substitute god. All drain away the freedom that comes from worshipful dependence on God. Particularly evidently in respect of the ecological crisis, disordered appetite harms our freedom to contemplate appropriately and relate lovingly to the nonhuman creation. Such appetite consumes more of the world’s fullness<sup>23</sup> than is our share. The application of this principle of kenosis of appetite is widespread—it applies to deforestation to expand farmland for excess export crops, but also to the high-food-mile demands of the West which fuel so many unsustainable practices, to the taking of spurious long-haul flights as well as the fritter-

ing away of carbon-intensive energy in so many human dwellings.

A particular aspect of the kenosis of appetite, which links it to the kenosis of aspiration, is the kenosis of acquisitiveness. Just as we must be willing to order our ambitions and our experiences in accord with the freedom of the redeemed order, so we must order our acquisition of the material trappings of life, which again are often acquired at the expense of the well-being of others, be it through sweated labor to make trainers or printed circuit boards, or the mining that delivers exotic metals and other raw materials at great expense to human health and natural ecosystems.<sup>24</sup>

Romans 8:19–22 is a significant passage also for Andrew Linzey, who like me wants to argue for an eschatological ethic. Linzey’s approach is very important as we turn from wild nature to domestic animals. For Linzey, a sign of our liberty in the Gospel would be to liberate other animals by ceasing to make any use of them for our purposes, whether that be laboratory testing, labor, or food.<sup>25</sup> Though this is a very plausible argument, I fear it has theological problems. My issue with Linzey’s theology is that it is—like others we found wanting earlier in this article—based on the notion of a fall from a primordial harmony. I suggested above that all we know about the evolution of the biosphere and of humanity suggests that there was no such event. Moreover, the biblical narrative does not suggest that the eschaton is a return to such an Edenic harmony—it is rather a *new* creation, made possible by the Cross and Resurrection. Eschatological ethics cannot therefore be a retreat from the complexities of relationship that developed within the old creation; rather, it must be about their transformation.

Again, it seems to me that the principal guide for Christians on the path to that transformation must be the example of our Lord and the work of the Spirit in the early church. Radical as that example was in all sorts of ways, we do not see an innovative departure in Jesus’s treatment of domestic animals. The ox may be rescued on the Sabbath (Luke 14:5), but there is no suggestion that it is not to be put to work on other days. Nor is there any suggestion that the radical gesture of the Messianic entry into Jerusalem was further radicalized by Jesus leading, rather than riding, the colt (cf. Matt. 21:5–7). Nor that the Passover can be eaten without a lamb. Jesus, then, does not

abandon those complex relationships that humans have with animals they live with, use, and care for. Rather, relationships worked out within life in Christ must be characterized by those kenotic virtues that I began to outline above.

One of Messer's great contributions to bioethics is his list of criteria for the evaluation of a new proposal in biotechnology. He asks:

- Is the project good news to the poor?
- Is the project an attempt to be "like God," or does it conform to the image of God?
- What attitude does the project embody toward the material world (including our own bodies)?
- What attitude does the project embody toward past failures?<sup>26</sup>

This can be helpfully applied as a test of proposals for ways of treating domestic animals. Is what is proposed something that exploits the labor of the farmer, or makes her treat animals in ways that degrade both her and them? Is the proposal—crucial question in the light of the distinctions I drew above—"playing God" in the lives of creatures, or does it conform to the sort of kenotic ethic I began to outline above? Does it recognize the creatureliness of other creatures and the giftedness of the material world? Does it recognize that we ourselves are embodied symbionts, absolutely dependent on other creatures for our flourishing? And does the proposal lament and repent of ways in which animals have been treated, such as are so graphically depicted by Michael Pollan in his book *The Omnivore's Dilemma*.<sup>27</sup> Does it—to pick up on Pollan's metaphor—make the walls of abattoirs out of glass, or does it rather hide cruelty away and package neatly and anonymously the products of its industry?

But I submit that there can be ways of rearing and living with domestic animals—and yes, killing them for food—that do pass Messer's criteria. For Messer himself, hospitality is the reason why there is a Christian imperative to be vegetarian. It cannot be hospitable to another animal, in his view, to keep it and care for it when ultimately it will be killed for food. I am less sure of this. It seems to me that farm animals kept under low-intensity conditions, where each can be known by name, cared for throughout its life, and enabled to flourish after the manner of its kind, are indeed the recipients of hospitality. Indeed, hospitality is one way to describe that voca-

tion in farmers that led even men in their seventies to use their compensation money to go out and restock their land after the UK foot and mouth crisis in 2001. That was certainly not an economic decision; it was about a deeply-felt desire for relationship with animals, animals that would not exist otherwise, as they are bred only because of their use by humans. Of course, I recognize that the majority of farming in the Western world is not of this kind, but the principle remains.

An eschatological ethic of animal care, then, will need to be free of the greed and commodification that is currently rife within Western agriculture. It needs to make different calculations about the balance between profit and welfare, not, for example, moving sheep around a country for tiny margins (a practice that greatly contributed to foot and mouth in the UK). It needs to meet Messer's very helpful criteria, being oriented toward the Kingdom of God rather than that of Mammon. It needs, as Anne Primavesi has so helpfully emphasized, to be received as gift rather than grasping as entitlement.<sup>28</sup> And it needs—to return to the Romans passage—to be received in freedom from idolatry and compulsiveness so that the freedom of other creatures, within the constraints of the relationship that humans themselves create by domesticating and breeding farm animals, is at its greatest.

Is there, then, anything to be learned from wild nature? Not, certainly, the lesson that success depends on violence—the lesson I am implicitly accused by Messer of wanting to learn—but two other subtler lessons. First, the value of biodiversity. This is so often celebrated and insisted upon by ecologists that it is easy to forget that this is not necessarily obvious. A diverse ecosystem is one rich in relationships (albeit many of them predatory or parasitic). But it is also one rich in strategies for responding to perturbations of the system, such as the advent of a new pathogen or a shift in climatic conditions. Human agriculture has been slow to learn both the importance of the "wisdom" contained within wild-type strains of domesticated crops, and the agricultural (and cultural) perils of monocropping.

One of the great threats of climate change is that it may stress systems too suddenly and radically for their frameworks to respond. Humans can, up to a

# Article

## *God's Creation Wild and Violent, and Our Care for Other Animals*

point, move individual species, and may have to as the effects of climate change become more severe,<sup>29</sup> but it is extremely difficult to move, or yet to engender, the complexity and diversity that can arise in a system in evolutionary time. Hence the need for even an eschatological ethic to contain the precautionary wisdom that has been such a helpful theme of Deane-Drummond.<sup>30</sup> Wild nature also gives us a sense—increasingly elusive as humans change the world and do all sorts of things that would have seemed impossible even a generation ago—of what is “natural,” and hence what is likely to “work” biologically. Failure to heed these lessons, and the search, once again, for easy profit, led to the feeding of animal proteins to cattle, and hence to the BSE/“mad cow disease” crisis of the 1990s.

At a time when, two years after huge concern over bird-borne influenza, the Ebola virus is devastating nations in Western Africa, it is very evident how easily human (and other animal) health can be jeopardized by pathogens jumping species, and therefore, again, how prudent humans need to be in their choice of the ways by which we feed ourselves and the animals on which we rely. (The same considerations, also, are one of the reasons why, sadly, an element of experimentation on other animals will continue to be necessary, albeit in the most prudent, careful, and limited form possible.)

So, the lessons wild nature teaches us tend to be precautionary—it is a vast reservoir of “wisdom” as to “what works” in the biosphere. But what the New Testament teaches us is the radical character of the possibilities that arise when humans come into their freedom and pursue their vocation humbly and kenotically. It is this combination of an ethic of practical wisdom, combined with a vision of human transformation in which humility and concern for the poor are at the forefront, that is the particular contribution Christian ethics can offer into our present dire predicament. I have tried to show that this ethic can be derived from consideration of what ecology on the one hand, and the New Testament on the other, tell us about life—past, present, and future—and that these conclusions survive the realization that the violence and suffering in nature are products not of a fall-event, but of the way God gave rise to the amazing world in which we live and move and have our being. ◇

## Notes

- <sup>1</sup>N. Dixon and A. Gibbs, “Cooperative Attacks by Urban Peregrines on Common Buzzards,” *British Birds* 108 (2015): 253–63.
- <sup>2</sup>This is important to note in relation to Sarah Coakley’s fascinating 2012 Gifford Lectures on cooperation, see S. Coakley, “Sacrifice Regained: Evolution, Cooperation, and God,” <http://www.faith-theology.com/2012/05/sarah-coakley-2012-gifford-lectures.html>.
- <sup>3</sup>C. Southgate, *The Groaning of Creation: God, Evolution, and the Problem of Evil* (Louisville, KY: Westminster John Knox Press, 2008); ———, “Rereading Genesis, John and Job: A Christian’s Response to Darwinism,” *Zygon* 46, no. 2 (2011): 365–90; ———, “Does God’s Care Make Any Difference? Theological Reflection on the Suffering of God’s Creatures,” in *Christian Faith and the Earth: Current Paths and Emerging Horizons in Ecotheology*, ed. E. M. Conradie, S. Bergmann, C. Deane-Drummond, and D. Edwards (London: Bloomsbury, 2014), 97–114; and ———, “Cosmic Evolution and Evil,” in *The Cambridge Companion to the Problem of Evil*, ed. C. Meister and P. Moser (Cambridge: Cambridge University Press, forthcoming).
- <sup>4</sup>W. A. Dembski, *The End of Christianity: Finding a Good God in an Evil World* (Nashville, TN: Broadman and Holman, 2009); and S. Webb, *The Dome of Eden: A New Solution to the Problem of Creation and Evolution* (Eugene, OR: Wipf and Stock, 2010).
- <sup>5</sup>C. Deane-Drummond, *Christ and Evolution: Wonder and Wisdom* (Minneapolis, MN: Fortress Press, 2009), 185–91; and N. Hoggard Creegan, *Animal Suffering and the Problem of Evil* (New York: Oxford University Press, 2013).
- <sup>6</sup>M. Lloyd, “Are Animals Fallen?,” in *Animals on the Agenda: Questions about Animals in Theology and Ethics*, ed. A. Linzey and D. Yamamoto (London: SCM Press, 1998), 147–60; and ———, “The Humanity of Fallenness,” in *Grace and Truth in a Secular Age*, ed. T. Bradshaw (Grand Rapids, MI: Eerdmans, 1998), 66–82.
- <sup>7</sup>This objection must also be raised against an article just published by Nathan O’Halloran, S.J. See N. O’Halloran, “Cosmic Alienation and the Origin of Evil: Rejecting the ‘Only Way’ Option,” *Theology and Science* 13, no. 1 (2015): 43–63.
- <sup>8</sup>N. Messer, “Natural Evil after Darwin,” in *Theology after Darwin*, ed. M. S. Northcott and R. J. Berry (Milton Keynes, UK: Paternoster, 2009), 139–54. This thinking is taken up in some important work on animal theology—see D. Clough, *On Animals: Volume 1 – Systematic Theology* (London: Continuum, 2012).
- <sup>9</sup>Going back to Augustine of Hippo, *Enchiridion* xi, available at <http://www.ccel.org/ccel/schaff/npnf103.iv.ii.xiii.html>.
- <sup>10</sup>N. Messer, “Evolution, Animal Suffering, and Ethics: A Response to Christopher Southgate,” forthcoming; K. Surin, *Theology and the Problem of Evil* (Oxford: Basil Blackwell, 1986); T. Tilley, *The Evils of Theodicy* (Georgetown, VA: Georgetown University Press, 1991); D. Z. Phillips, *The Problem of Evil and the Problem of God* (London: SCM Press, 2004); and J. Swinton, *Raging with Compassion: Pastoral Responses to the Problem of Evil* (Grand Rapids, MI: Eerdmans, 2007).
- <sup>11</sup>Cf. Phillips, *The Problem of Evil and the Problem of God*, 35.
- <sup>12</sup>Tilley, *The Evils of Theodicy*, 221–57; and Swinton, *Raging with Compassion*, 27–28.
- <sup>13</sup>Swinton, *Raging with Compassion*, 80–243.

- <sup>14</sup>Clough, *On Animals*; and J. Moritz, "Animal Suffering, Evolution, and the Origins of Evil: Toward a 'Free Creatures' Defense," *Zygon* 49, no. 2 (2014): 348–80.
- <sup>15</sup>I have written elsewhere about humans' priestly role in respect of creation (*The Groaning of Creation*, chap. 6), but for me this involves the offering up of all creatures' praise, rather than any element of declaring forgiveness to them.
- <sup>16</sup>D. G. Horrell, C. Hunt, and C. Southgate, "Pauline Ethics through an Ecotheological Lens," chap. 8 in *Greening Paul: Rereading the Apostle in a Time of Ecological Crisis* (Waco, TX: Baylor University Press, 2010).
- <sup>17</sup>N. Stern, *The Economics of Climate Change: The Stern Review* (Cambridge: Cambridge University Press, 2007).
- <sup>18</sup>For detailed consideration of the interpretation of this passage in an age of ecological crisis, see Horrell et al., "The Groaning and Liberation of Creation (Romans 8:1–23)," "The Construction of a Pauline Hermeneutical Lens," "An Ecological Reading of Pauline Theology," chaps. 4, 6, and 7 in *Greening Paul*.
- <sup>19</sup>J. M. Moritz, "Evolution, the End of Human Uniqueness, and the Election of the *Imago Dei*," *Theology and Science* 9, no. 3 (2011): 307–39; and N. Herzfeld, *In Our Image: Artificial Intelligence and the Human Spirit* (Minneapolis, MN: Fortress Press, 2002).
- <sup>20</sup>C. Southgate, "Stewardship and Its Competitors: A Spectrum of Relationships between Humans and the Non-human Creation," in *Environmental Stewardship: Critical Perspectives – Past and Present*, ed. R. J. Berry (London: T&T Clark/Continuum, 2006), 185–195; and cf. also Southgate, "The Call of Humanity," chap. 6 in *The Groaning of Creation*, 92–115.
- <sup>21</sup>Simone Weil, *Waiting for God*, trans. E. Craufurd (New York: G. P. Putnam's Sons, 1951), 159–60.
- <sup>22</sup>Cf. James D. G. Dunn, *The Theology of Paul the Apostle* (Grand Rapids, MI: Eerdmans, 1998), 112.
- <sup>23</sup>I avoid the term "resources" here as that carries the implication that the good things of the world are defined by their availability for use by human beings.
- <sup>24</sup>Southgate, *The Groaning of Creation*, 101–102.
- <sup>25</sup>A. Linzey, *Animal Theology* (London: SCM Press, 1994); and ———, *Animal Gospel: Christian Faith as Though Animals Mattered* (London: Hodder and Stoughton, 1998).
- <sup>26</sup>N. Messer, *Selfish Genes and Christian Ethics: The Theological-Ethical Implications of Evolutionary Biology* (London: SCM Press, 2007), 231–33.
- <sup>27</sup>M. Pollan, *The Omnivore's Dilemma: A Natural History of Four Meals* (New York: Penguin, 2006).
- <sup>28</sup>A. Primavesi, *Gaia's Gift: Earth, Ourselves and God after Copernicus* (London: Routledge, 2003).
- <sup>29</sup>C. Southgate, "The New Days of Noah? Assisted Migration as an Ethical Imperative in an Era of Climate Change," in *Creaturely Theology: On God, Humans and Other Animals*, ed. C. Deane-Drummond and D. Clough (London: SCM Press, 2009), 249–265.
- <sup>30</sup>For example, in C. Deane-Drummond, *Creation through Wisdom: Theology and the New Biology* (Edinburgh: T&T Clark, 2000).

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Michael J. Gilmour

## Article

# C. S. Lewis and Animal Experimentation

Michael J. Gilmour

*C. S. Lewis is one of those rare Christian thinkers giving careful attention to the place of nonhuman animals in theology and the religious life. We find this career-long concern for animal well-being across diverse genres, and also in his public opposition to vivisection. This article proposes a particular link between Lewis's reflections on animal cruelty and wartime, and identifies certain theological assumptions informing his ideas.*

The Christian tradition is curiously ambivalent about animals and their place in theology and ethics. This is somewhat surprising given the New Testament's high view of nonhuman sentient life, as is evident in Jesus's remarks about donkeys and sparrows (Luke 13:15; Matt. 10:29), and the Pauline tradition's repeated use of the inclusive *ta panta* ("all things," Col. 1:15–20; cf. Rom. 8:18–23) when speaking of the eschatological hope of restoration in Christ. To be sure, there are passages appearing to indicate indifference toward animals and animal suffering (Mark 5:1–20; 1 Cor. 9:9–10), but it is not so obvious that these and other texts devalue nonhuman creation as so often supposed.<sup>1</sup>

On the whole, the New Testament affirms the priestly view that all creation, including its endlessly diverse creatures of water, sky, and land, are "good" (Gen. 1:20–25). And not only are they good, but also proper treatment of those animals is a moral obligation imposed on the people of God in the Torah and elsewhere (e.g., Exod. 23:4–5, 10–12; Num. 22:27–34; Deut. 5:13–14; 22:4, 6–7, 10; Prov. 12:10). That God cares for the well-being of animal life is unambiguous: "And should I not be concerned

about Nineveh ... in which there are more than a hundred and twenty thousand persons ... and also many animals?" (Jonah 4:11).

So why, in light of this, does Christianity largely ignore animal ethics? Why are the vast majority of churches silent regarding unnecessary, human-caused animal pain? There is not space here to do justice to such important questions though the views of certain highly influential theologians contribute to Christianity's tendency toward anthropocentrism. Augustine and Thomas Aquinas, to name just two, argue that humans have no moral obligations to irrational animals, views owing much to questionable assumptions about the meaning of the *imago dei* and the "dominion" language of Genesis 1:26–28.<sup>2</sup> Yet, despite the enormous sway of thinkers such as Aquinas and many others who ignore animals or minimize their importance for the religious life, there are a few—a very few—who celebrate them, and bring a robust understanding of "love thy neighbor" to questions about animal well-being. C.S. Lewis is among them.

## A Soldier and a Poet

Lewis rarely mentions his experiences on the battlefields of World War I, but on one occasion he recalls an incident

**Michael Gilmour** earned his PhD at McGill University and teaches New Testament at Providence University College in Manitoba, Canada. He is also a Fellow of the Oxford Centre for Animal Ethics.

that apparently lingered in memory for almost forty years before he put pen to paper.

Until the great German attack came in the Spring [of 1918] we had a pretty quiet time. Even then they attacked not us but the Canadians on our right, merely “keeping us quiet” by pouring shells into our line about three a minute all day. I think it was that day I noticed how a greater terror overcomes a less: a mouse that I met (and a poor shivering mouse it was, as I was a poor shivering man) made no attempt to run from me.<sup>3</sup>

The scene shows remarkable tenderness for the plight of a suffering animal, and it is certainly not the only time we find such empathy in his work.

Consider a poem published only a year after that encounter with the mouse. Here again we find Lewis contemplating the mysteries of animal life and its kinship with humanity, building on the premise that all living things are offspring of “earth, our mother.” The poem in question appears in *Spirits in Bondage: A Cycle of Lyrics* (1919), Lewis’s first book. Though published a decade or so before his conversion to Christianity, he still borrows a theological vocabulary to give expression to his thoughts. His narrator says to a donkey,

“For, brother, the depth of your gentle eyes  
Is strange and mystic as the skies,

...

“Can it be true, as the wise men tell,  
That you are a mask of God as well[?]”<sup>4</sup>

In the story from *Surprised by Joy*, a terrifying German bombardment reveals the common plight of a poor shivering mouse and a poor shivering soldier in the trenches of France. In the 1919 donkey poem, Lewis’s narrator wonders about commonalities among sentient beings, including a shared capacity for distress. The latter ponders:

In a field where the dew lay cold and deep  
I met an ass, new roused from sleep.

I stroked his nose and I tickled his ears,  
And spoke soft words to quiet his fears.

...

“And do you rejoice in the dawn divine  
With a heart that is glad no less than mine?”

...

“What are the thoughts that grope behind,  
Down in the mist of a donkey mind?”

...

“God send you peace and delight thereof,  
And all green meat of the waste you love,

“And guard you well from violent men  
Who’d put you back in the shafts again.”<sup>5</sup>

Here a sense of kinship, however mysterious; here an awareness that human-caused suffering of animal life is an undeserved affront to decency; and here a moment of interspecies harmony. A mouse feels no terror for a terrified soldier; a donkey welcomes a tickle of the ear from one not inclined to hurt him, to place him in the shafts again.

So what do mice and donkeys have to do with soldiers and poets? And what is more, do humans have moral responsibilities to nonhuman creatures? Lewis contemplates these and related questions in a variety of diverse contexts, but it is interesting to observe that many of his most explicit and sustained statements on animals and animal ethics occur during times of war and its immediate aftermath: the mouse incident of 1918; the donkey poem of 1919. Jump ahead to a later conflict and we have a chapter on animal suffering in *The Problem of Pain* (1940). In the 1943 novel *Perelandra*, we read of a demonic figure that rips open frog-like creatures but leaves them alive to suffer agonies. The description of “V-shaped” wounds inevitably brings vivisection to mind:

The whole back had been ripped open in a sort of V-shaped gash, the point of the V being a little behind the head. Some thing had torn a widening wound backward... [Elwin Ransom] told himself that a creature of that kind probably had very little sensation. But it did not much mend matters. It was not merely pity for pain that had suddenly changed the rhythm of his heart-beats. The thing was an intolerable obscenity which afflicted him with shame.<sup>6</sup>

In his 1945 novel *That Hideous Strength*, the villains of the tale experiment on living animals, and in a 1947 essay, Lewis articulates explicitly his impassioned opposition to vivisection. The timing is suggestive, though it is difficult to know what to make of it. Perhaps for Lewis there is a connection between war and cruelty to animals, a continuum between disregard for nonhuman life and disregard for human life. Said differently, humanity at its worse during the World Wars offers Lewis a fitting occasion to contemplate the infliction of horrific and wholly unnecessary cruelties toward other living things.

# Article

## *C. S. Lewis and Animal Experimentation*

### Human-Caused Animal Suffering and Violence toward Other People

The link between cruelty to animals in childhood and aggression in later life is well established in the present day. “Virtually every serial killer in recent memory had a history of torturing and killing animals,” writes Holly Hazard of the Humane Society of the United States, and “the... Federal Bureau of Investigation (FBI) has added cruelty to animals as one of the factors it uses in developing a profile of behavior patterns in violent criminals.”<sup>7</sup> Though I am not sure whether the statistical and scientific data in Lewis’s day supported the link, he was at least intuitively aware of a connection between the ill treatment of vulnerable nonhumans and vulnerable humans. More specifically, a willingness to perform torturous experiments on the one is a possible indicator of a willingness to disregard the other.

Lewis wrote the 1947 essay mentioned above for the New England Anti-Vivisection Society, and in it he connects experimentation on living animals and the horrors of war:

The victory of vivisection marks a great advance in the triumph of ruthless, non-moral utilitarianism over the old world of ethical law, a triumph in which we, as well as animals, are already the victims, and of which Dachau and Hiroshima mark the more recent achievements. In justifying cruelty to animals we put ourselves also on the animal level. We choose the jungle and must abide by our choice.<sup>8</sup>

This is not, however, the only place where he articulates the notion of moral regress in these terms, associating cruelty to animals with violence toward people. Consider, for instance, the opening pages to his 1955 Chronicles of Narnia prequel *The Magician’s Nephew* in which the creepy Andrew Ketterley explains to Digory and Polly that he is in the middle of a great experiment.<sup>9</sup> “I’ve tried it on a guinea pig and it seemed to work. But then a guinea-pig can’t tell you anything.”<sup>10</sup> Naturally, the children become an obvious solution, becoming themselves the “guinea pigs” with a capacity for speech that he wants.

Recall also the early pages of his Space Trilogy in which the heartless Professor Weston says to his partner in crime, “We ought to have a dog in this place.” His friend reminds him that there was a dog

once, and still would be had Weston not killed it in an earlier experiment.<sup>11</sup> Like Uncle Andrew in *The Magician’s Nephew*, Weston also turns to a human subject as a replacement, but this time there is a particularly dark implication in the scientist’s choice of victim. It is a boy earlier described by his mother as “a little simple,” and by Weston himself as “incapable of serving humanity and only too likely to propagate idiocy.” He is the kind of person, Weston continues, “who in a civilized community would be automatically handed over to a state laboratory for experimental purposes.”<sup>12</sup> Like the dog, the boy has no intrinsic value for Weston, and only escapes the scientist because the appropriately named Elwin Ransom takes his place in that villain’s murderous scheme, in effect paying the price for the boy’s life.

Such willingness to turn from animal to human experimental subjects implies a view of creation that sees some life as expendable. Uncle Andrew places knowledge over the well-being of a guinea pig and children. Weston places scientific research that may benefit *some* members of society over the well-being of a dog and one deemed mentally deficient and therefore unable to make meaningful contributions to that society. Different victims, both human and nonhuman, but the same distorted view of creation lies behind the violence. And grounding his concerns in the memories of recent wartime traumas, Lewis connects cruelty to animals for research purposes with the same mindset resulting in Dachau and Hiroshima, the Holocaust and the atomic bomb drops on Japan that represent the grim potential of unbridled human aggression.

For Lewis the storyteller, animals and people alike experience fear (mice, soldiers) and are vulnerable to the abuses and self-serving agendas of the strong (donkeys in shafts, guinea pigs, children, those deemed inferior, Dachau, Hiroshima). By frequently aligning the plight of all animate life in poetry (e.g., “The Ass”), nonfiction (e.g., “Vivisection”), and fiction (e.g., the Space Trilogy, the Chronicles of Narnia), he subtly challenges readers’ ambivalence or indifference to animal cruelty, reminding them that what happens to one may happen to the other. Returning to the example of 1938’s *Out of the Silent Planet*, a further detail deserves notice. The dog-killer Weston and his partner kidnap Ransom and take him to Mars because the residents of that planet demand a human subject. Owing to their

limited abilities with the Martian languages, they assume they want this human for experimental purposes. Ransom overhears their speculations, and their use of the terms pet, vivisection, and human sacrifice terrify him as he realizes he is soon to be vivisected and sacrificed.<sup>13</sup> Ransom's short-lived terror at being so abused by the H. G. Wells-inspired bogies of his imaginings—short-lived because he soon discovers the inhabitants of Mars/Malacandra are perfectly benevolent—serves, at the very least, to create sympathy between readers and the living subjects of real-world scientific research. Lewis achieves the same effect when the vivisectionists in his 1945 novel *That Hideous Strength* capture the beloved bear Mr. Bultitude.

Though Lewis offers in these and other stories a fictive approach to animal ethics, he grounds his opposition to vivisection and other cruelties in theological presuppositions. We find in his writings that most-rare convergence of religious faith and concern for animals. On this issue, he is a fascinating, if somewhat lonely, voice crying in the wilderness. To be sure, his position on animal experimentation was not a popular one. As Alister McGrath observes in a recent biography,

Lewis's views on this matter lost him many friends at Oxford and elsewhere, as vivisection was then widely regarded as morally justified by its outcomes. Animal pain was the price paid for human progress.<sup>14</sup>

So what was the basis of Lewis's theologically motivated objection to this widespread practice? For the purposes of this brief survey, I highlight just three themes found in his diverse writings, though there is much more to be said about his views on the subject.

## Christian Community and Kindness toward Animals

To begin with, we find in Lewis's writings an all-encompassing understanding of community that assumes the Bible's high view of nonhuman creation described at the outset. The heroes and villains of the 1945 novel *That Hideous Strength*, to illustrate, differ widely in their treatment of animals. On the one hand, Elwin Ransom and his friends share their home with a bear named Mr. Bultitude, and they

are hospitable to mice, finding in the arrangement a mutual respect and mutual benefit. Put succinctly, "Humans want crumbs removed; mice are anxious to remove them." On the other hand, the nefarious National Institute for Co-ordinated Experiments, with its ironic acronym NICE, performs tests on living animals. They have "an immense programme of vivisection," in fact, something Mark Studdock discovers while seeking a job with the Institute.<sup>15</sup>

By introducing the organization's vivisection program from the perspective of this particular character, Lewis constructs a rather poignant critique of those indifferent to animal pain. Mark is a shallow individual who lacks a moral compass. In this scene, he remains completely unmoved by a medley of animal sounds and whimpers:

As he stood there a loud melancholy howl arose and then, as if it had set the key, all manner of trumpetings, bayings, screams ... which shuddered and protested for a moment and then died away into mutterings and whines. Mark had no scruples about vivisection.<sup>16</sup>

At this very moment, in the presence of this cacophony of suffering, all Mark cares about is securing a job with the Institute. "There were all sorts of things in there," the reader learns, "thousands of pounds' worth of living animality, which the Institute could afford to cut up like paper on the mere chance of some interesting discovery."<sup>17</sup> The disconnect between Mark and the suffering all around him is jarring; all that matters to him on this occasion is that he "must get the job."<sup>18</sup> Lewis also juxtaposes the extent of animal suffering in this scene with the experiments' insignificance—the animals suffer terror and unspeakable pain on the "mere chance of some interesting discovery."<sup>19</sup>

Mark fails to hear those cries of pain, but Lewis does not allow readers to do so; they likely wince as the author piles up several highly emotive terms in a single paragraph: whimpers, melancholy howls, screams, whines, cutting up living animality. This scene, along with the behavior of the Institute as a whole, contrasts sharply with the community of heroes whose relationship with animal life is characterized by thanksgiving to the Creator who made those creatures in the first place, and an all-inclusive hospitality, generosity, and compassion that encompasses all species.

# Article

## C. S. Lewis and Animal Experimentation

### Christian “Dominion” and Kindness toward Animals

Second, we find in Lewis’s writing a generous understanding of the notion of human dominion over creation. There is a telling scene in *The Magician’s Nephew* when Aslan charges the newly appointed King and Queen of the newly created world to “rule and name all these creatures, and do justice among them, and protect them from their enemies when enemies arise.”<sup>20</sup> This unambiguous allusion to the biblical creation story (i.e., the naming of the animals, cf. Gen. 2:19<sup>21</sup>) also offers an interpretation of the subdue-and-have-dominion language of Genesis 1:26–28. Lewis clearly reads that Genesis mandate in the direction of stewardship and protection, not despotism and tyranny. To be sure, there are ambiguities in the Chronicles on this point because Lewis distinguishes the talking animals of Narnia from those without speech, and the instructions to the new King and Queen concern the former category: “Can you rule these creatures kindly and fairly,” Aslan asks them, “remembering that they are not slaves like the dumb beasts of the world you were born in, but Talking Beasts and free subjects?”<sup>22</sup> There are references to eating meat in the Chronicles of Narnia as well.<sup>23</sup>

It is worth noting, however, that Aslan does not say that the treatment of animals in King Frank and Queen Helen’s world (i.e., London of the early twentieth century) is morally acceptable, or that non-speaking animals in Narnia—those Aslan does not touch with his nose<sup>24</sup>—do not deserve kindness as well. Aslan’s instructions refer to the talking animals specifically because they are the creatures that fill the Narnia stories. Still, it is clear that Lewis maintains a generous understanding of “dominion.”

Consider, to illustrate, his correspondence with an American woman in 1956. She confesses feeling “like a murderer” because she had her cat Fanda euthanized. Lewis’s comforting response offers a brief hint of his understanding of human power over powerless animals:

No person, animal, flower, or even pebble, has ever been loved too much—i.e. more than every one of God’s works deserve. But you need not feel “like a murderer.” Rather rejoice that God’s law allows you to extend to Fanda that last mercy which (no doubt, quite rightly) we are forbidden to extend to suffering humans.<sup>25</sup>

This unequal power between human and non-human, this God-granted dominion over sentient life, is an extension of God’s grace and mercy. It is a sobering responsibility as well, as he makes clear in *The Problem of Pain*:

Man was appointed by God to have dominion over the beasts, and everything a man does to an animal is either a lawful exercise, or a sacrilegious abuse, of an authority by Divine right.<sup>26</sup>

His comforting letter to a woman grieving the death of her cat illustrates that care for animal well-being is theologically consequential. “I will never laugh at anyone for grieving over a loved beast,” he writes in the same letter. “I think God wants us to love Him *more*, not to love creatures (even animals) *less*. We love everything *in one way* too much (i.e., at the expense of our love for him) but in another way we love everything too little.” He closes this letter asking God to “bless you —and Fanda!”<sup>27</sup>

### Christian Humility and Kindness toward Animals

Third, Lewis’s theological reflections on animals and their sufferings are cautious and tentative, and he remains wary of overreaching claims. He acknowledges in *The Problem of Pain* (1940) that firm conclusions on some matters are out of reach:

... we must never allow the problem of animal suffering to become the centre of the problem of pain; not because it is unimportant—whatever furnishes plausible grounds for questioning the goodness of God is very important indeed—but because it is outside the range of our knowledge. God has given us data which enable us, in some degree, to understand our own suffering: He has given us no such data about beasts. We know neither why they were made nor what they are, and everything we say about them is speculative.<sup>28</sup>

Echoing those remarks in a 1962 letter, he acknowledges that

The animal creation is a strange mystery. We can make some attempt to understand human suffering: but the sufferings of animals from the beginning of the world till now (inflicted not only by us but by one another)—what is one to think?<sup>29</sup>

There is a paradox, he finds, observing how strange it is that

God brings us into such intimate relations with creatures of whose real purpose and destiny we remain forever ignorant. We know to some degree what angels and men are *for*. But what is a flea for, or a wild dog?<sup>30</sup>

But herein lies an idea important for Lewis's reflections on animals and their treatment. Since we do not know what animals are *for*, it is presumptuous to claim them as our own and use them with reckless disregard for their well-being. Said differently, inflicting pain on God's creatures for any reason—including scientific experimentation—is a serious matter. If we do not fully understand God's purposes in creating animal life, how much more should we proceed with caution.

Lewis takes the title of his 1945 novel *That Hideous Strength* from a sixteenth-century poem by Scottish writer Sir David Lindsay of the Mount (ca. 1490–ca. 1555). In *Ane Dialog betwixt Experience and ane Courteor* or *The Monarchie*, Lindsay refers to the biblical Tower of Babel in an excerpt that Lewis takes for his novel's epigraph: "The Shadow of that hydd-eous strength / Sax myle and more it is of length." This directs us, naturally, to principal concerns of the novel, which include humanity's hubris and an over-reaching contrary to divine instructions. Recall the biblical story:

Now the whole earth had one language and the same words. And as they migrated from the east, they came upon a plain ... and settled there. And they said to one another, "Come, let us make bricks and burn them thoroughly." And they had brick for stone, and bitumen for mortar. Then they said, "Come, let us build ourselves a city, and a tower with its top in the heavens, and let us make a name for ourselves; otherwise we shall be scattered abroad upon the face of the earth." (Gen. 11:1–4)

This expression of concern about scattering across the world is significant because it is a rejection of God's twice-repeated instruction to multiply and fill the earth (Gen. 1:28; 9:1).

The biblical tower builders are afraid to be scattered, so the construction of cities and towers, forms of technological advancement, are exercises in self-preservation. They employ their knowledge—their ability to make bricks and mortar—and cast aside the religious injunctions they believe make them vulnerable. Self-preservation at all costs is also the goal

of those in the National Institute for Co-ordinated Experiments in *That Hideous Strength*. They are unencumbered by financial limitations, red tape, morality, superstition, and tradition. They reject all such restraints, using every technology and research tool (including vivisection) available to them to secure their self-interested objectives.<sup>31</sup> This nefarious organization also rejects what they consider outdated religious beliefs. They prize only science, technology, and the well-being of a select few. They take steps toward systematically eliminating the weak and marginalized, and reject ways of being and ways of knowing that offer no obviously pragmatic benefit. This is the hideous strength. Lewis's target is a humanity so hell bent on self-preservation, and a science so driven by that objective, that it rejects everything that is humane.

There is more to the biblical story of the Tower of Babel, of course. The grandiose scheme of the tower builders ultimately comes to naught. Their hubris and ambition knows no bounds, so God confounds them by confusing their language so they cannot understand one another, and then scatters them (Gen. 11:7–8). The story is etiological on one level, providing a mythical explanation for the world's diverse languages and cultures; however, in the novel, it becomes a key plotline, which Lewis uses to great comic effect. One of the more memorable scenes in the book occurs during a banquet when the magic of the awakened Merlin confuses the speech of the story's villains in what is a kind of re-enactment of Genesis 11. Lewis's theological point is that a reckoning for Babel-like behavior is in the offing.

The story of the Tower of Babel is a widely used symbol of the breakdown and misuse of language. That "the whole earth had one language and the same words" is part of the problem, according to Genesis, and so it is not surprising that the NICE manipulates and abuses words. They hire Mark Studdock to write propaganda, and we see examples of his ability to twist words in the press with destructive consequences. Lewis wrote the novel during World War II, so echoes of Nazi propaganda with its obfuscation, selectivity, and efforts to foster violence against unwanted and vulnerable institutions and people is inevitably in the background. To give but one example, Lord Feverstone explains to Mark that part of the NICE's agenda is humans taking charge of humans, which includes, in his words, "sterilization

# Article

## *C. S. Lewis and Animal Experimentation*

of the unfit, liquidation of backward races ... [and] selective breeding."<sup>32</sup> Allusions to the Nazis are hard to miss. This is the setting for Lewis's reflections on animal experimentation in *That Hideous Strength*. As noted above, the NICE has an aggressive vivisection program and for Lewis, this torture of animals in the name of science and human advancement is a Babel-like overreach, both hubristic and a defiant rejection of the creator God. Some knowledge is an ill-gotten gain.

### C. S. Lewis, Animal Experimentation, and the World Wars

Lewis is an unlikely resource to address the topic of animal experimentation in Christian perspective for at least four reasons. First, though his opposition to animal experimentation is clear, he never produced a comprehensive statement of the issue, so reconstructing his ideas is somewhat piecemeal. Second, much of this reconstruction appeals to his creative writings, which no doubt strike some as an odd vehicle for commentary on ethical questions, perhaps especially so for those working in the sciences.<sup>33</sup> Third, he was not a professional theologian, and with respect to his views on animals no less than other subjects, his remarks are an exercise in "creative theology."<sup>34</sup> And fourth, he was a layperson so not in any sense a representative of the church or its official doctrine.<sup>35</sup> All of that said, Lewis remains a colossus among English, Christian thinkers a half century after his death, and he is one of those rare writers whose work has broad appeal in both the academy and the church, among scholars and laypeople. As the issue of animal experimentation remains a pressing ethical question in the context of contemporary scientific work,<sup>36</sup> Lewis's creative, and at times insightful, reflections on the subject remain relevant, and they warrant at least some consideration by those Christians who insist vivisection is morally defensible.

I close with a return to Lewis's 1947 pamphlet on vivisection in which he laments the victory of ruthless, nonmoral utilitarianism over "the old world of ethical law." Referencing Dachau and Hiroshima in support of his point is striking and laden with emotive force, perhaps especially at the moment he wrote these words, with the unimaginable scale of the Holocaust and atomic bomb horrors creeping slowly into the consciousness of post-war England.

Though it is pure speculation, I find the timing of Lewis's reflections on animal cruelty conspicuous. It is striking that the bulk of this commentary occurs during World War II and its immediate aftermath (i.e., *The Problem of Pain*, 1940; *That Hideous Strength*, 1945; "Vivisection," 1947; "The Pains of Animals: A Problem in Theology," 1950). As a soldier himself in an earlier conflict who witnessed firsthand "the horribly smashed men still moving like half-crushed beetles, the sitting or standing corpses,"<sup>37</sup> and as the brother of a lifelong soldier, he was no stranger to violence. Lewis was not a pacifist either,<sup>38</sup> and though he was not obligated to do so owing to his Irish birth, he still volunteered to fight in the Great War. To simply dismiss his concerns about animal suffering as mere sentimentalism is not convincing.

There was something more theologically profound at play, giving rise to his views. Though he does not use the exact term, Lewis presupposes a theological kinship between humans and nonhumans. (We even find a hint of this in his pre-conversion 1919 poem). By implying that the practice of vivisection is a symptom of the same disease resulting in Dachau and Hiroshima, he signals that we abdicate our God-given roles as image bearers, charged to subdue and have dominion, every time we treat other living creatures—human or nonhuman—cruelly or with indifference.

There are ambiguities in Lewis's writings. For one, given his attention to animal suffering in lab experiments, his silence about killing animals for food is surprising, and perhaps suggests a double standard. Maybe his high view of the Bible explains this since Genesis includes explicit permission to eat meat (Gen. 9:3). If so, perhaps it follows that the use of animals in some situations is justifiable for Lewis, even though the infliction of excessive pain is not. And so it is that when the upright Ransom rides a dolphin-like creature in the waters of Perelandra, it is morally appropriate, but when Weston does the same, it is evil because he urges it forward, despite the creature's exhaustion, by means of "torture." He is willing to push it to the point of death.<sup>39</sup> Lab experiments involving the sustained infliction of pain on innocent beings—keep in mind his particular target is vivisection—are unambiguously evil in Lewis's view. He would no doubt say the same for all forms of animal cruelty given biblical injunctions against it (e.g., Prov. 12:10). Lewis may have felt free to eat

a steak on occasion, but this does not mean he condoned kicking the cow.

Second, Lewis the academic does not oppose the pursuit of knowledge, including scientific inquiry, but only methods used to achieve it that inflict pain. So, does this rule out all research involving animals? What about experiments that do not inflict physical pain or emotional distress? How about the confinement of animals for observation?<sup>40</sup> I do not know for sure. His scattered writings on animals do not address these questions directly, as far as I am aware, but my suspicion is that he would urge all those in positions of power over animals to proceed only with great caution. The “problem of animal suffering” is both “appalling” and confounding, and Christian explanations of human pain do not apply because “as far as we know beasts are incapable either of sin or virtue: therefore they can neither deserve pain nor be improved by it.”<sup>41</sup> Animal suffering thus presents us with a mystery; “it is outside the range of our knowledge.”<sup>42</sup> At the same time, he maintains that there is some intellectual advancement that is ill-gotten gain. In *That Hideous Strength*, Lewis does not distinguish lab experiments involving vivisection from other uses of animals in scientific inquiry. Here the presence of animals in laboratories is insidious, without such qualification. Perhaps this is telling. As with the biblical story of the Tower of Babel, which informs that novel about a despicable research facility, human capabilities and human interests do not justify all actions. ◇

### Notes

<sup>1</sup>For an analysis that finds in these passages a high view of animal life, see Michael J. Gilmour, *Eden’s Other Residents: The Bible and Animals* (Eugene, OR: Cascade, 2014), 28–36, 83–87.

<sup>2</sup>On Aquinas’s views regarding animals, see Andrew Linzey, *Animal Theology* (Urbana, IL: University of Illinois Press, 1994), 12–19. For commentary on Augustine’s writings on the issue, see Gillian Clark, “The Fathers and the Animals: The Rule of Reason?,” in *Animals on the Agenda: Questions about Animals for Theology and Ethics*, ed. Andrew Linzey and Dorothy Yamamoto (London: SCM, 1998), 67–79.

<sup>3</sup>C.S. Lewis, *Surprised by Joy: The Shape of My Early Life* (1955; Boston, MA: Houghton Mifflin Harcourt, 2012), 195.

<sup>4</sup>Clive Hamilton [C.S. Lewis], “The Ass,” in *Spirits in Bondage: A Cycle of Lyrics* (London: William Heinemann, 1919), 76.

<sup>5</sup>*Ibid.*, 75–76.

<sup>6</sup>C.S. Lewis, *Perelandra* (1943; London: HarperCollins, 2005), 132. For the full episode, see 131–34.

<sup>7</sup>Holly Hazard, “Humane Education,” in *The Global Guide to Animal Protection*, ed. Andrew Linzey (Urbana, IL: University of Illinois Press, 2013), 286. One important work on this topic is Andrew Linzey, ed., *The Link between Animal Abuse and Human Violence* (Eastbourne, UK: Sussex Academic Press, 2009). Research continues in this area. Commenting on recent studies, Eleonora Gullone observes “an increasing acceptance of the link between human antisocial behaviour and animal cruelty” (*Animal Cruelty, Antisocial Behaviour, and Aggression: More Than a Link* [London: Palgrave Macmillan, 2012], 137).

<sup>8</sup>C.S. Lewis, “Vivisection,” in *God in the Dock: Essays on Theology and Ethics*, ed. Walter Hooper (1947; Grand Rapids, MI: Eerdmans, 1970), 228.

<sup>9</sup>Though written after the Second World War, the stories in the Chronicles of Narnia involve conflict and violence. Alan Jacobs argues that “more than any other single thing, the story of Narnia concerns an unacknowledged but true King and the efforts of his loyalists to reclaim or protect his throne from would-be usurpers” (“The Chronicles of Narnia,” in *The Cambridge Companion to C. S. Lewis*, ed. Robert MacSwain and Michael Ward [Cambridge: Cambridge University Press, 2010], 274; italics original). In light of this, the Narnia novels are loosely consistent with the general hypothesis put forward here, namely, that Lewis contemplates violence against animals in the context of wartime.

<sup>10</sup>C.S. Lewis, *The Magician’s Nephew* (1955; New York: HarperCollins, 1994), 15–16.

<sup>11</sup>C.S. Lewis, *Out of the Silent Planet* (1938; London: HarperCollins, 2005), 8. The term “vivisection” appears in the near context with reference to the residents of Malacandra (Mars), possibly hinting at the fate of the unfortunate dog (p. 38).

<sup>12</sup>Lewis, *Out of the Silent Planet*, 3, 17.

<sup>13</sup>*Ibid.*, 37–40.

<sup>14</sup>Alister McGrath, *C. S. Lewis: A Life* (Carol Stream, IL: Tynedale, 2013), 237. See, too, pp. 275–76 for various remarks on Lewis and animals. As far as I am aware, there is no book-length study of the topic.

<sup>15</sup>C.S. Lewis, *That Hideous Strength: A Modern Fairy-Tale for Grown Ups* (1945; New York: HarperCollins, 2005), 129–30, 198.

<sup>16</sup>*Ibid.*, 130.

<sup>17</sup>*Ibid.*

<sup>18</sup>*Ibid.*, (italics original).

<sup>19</sup>*Ibid.*

<sup>20</sup>Lewis, *The Magician’s Nephew*, 151. For another reference to a son of Adam naming creatures, see C.S. Lewis, *Prince Caspian: The Return to Narnia* (1951; New York: HarperCollins, 1994), 79.

<sup>21</sup>This verse serves as the epigraph to Lewis’s chapter on animal suffering in *The Problem of Pain*, in *The Complete C. S. Lewis Signature Classics* (1940; New York: HarperOne, 2002).

<sup>22</sup>Lewis, *That Hideous Strength*, 151. Cf. Lewis, *Prince Caspian*, 70–71, where the hunting of Talking Beasts as opposed to “dumb, witless creatures” is a serious ethical matter.

<sup>23</sup>On the nonvegetarianism of Narnia, see Michael C. Morris, “Middle Earth, Narnia, Hogwarts, and Animals: A Review of the Treatment of Nonhuman Animals and Other Sentient Beings in Christian-Based Fantasy Fiction,” *Society & Animals* 17, no. 4 (2009): 349.

<sup>24</sup>Lewis, *The Magician’s Nephew*, 124. Those Aslan does not touch, who do not receive the gift of speech, “wander away,” presumably in fulfilment of the divine mandate to

# Article

## C. S. Lewis and Animal Experimentation

be fruitful and fill the earth (Gen. 1:22). For various reflections on the distinction between talking and nontalking animals in the Narnia books, see Morris, "Middle Earth," esp. 351. Responding to Lewis's view that carnivorousness is evidence of corruption in both animals and humans, Andrew Linzey finds it remarkable that he does not consider "one obvious way in which humans can reverse the effects of their sinfulness [ , namely] by becoming vegetarian or at least by consuming as little sentient life as possible" (Linzey, "C.S. Lewis's Theology of Animals," *Anglican Theological Review* 80, no. 1 [1998]: 76). Instead, as Morris points out on page 349 of "Middle Earth," the one mention of vegetarianism in the Chronicles of Narnia (on the opening page of *Voyage of the Dawn Treader*) involves ridicule. See, too, note 34 below.

<sup>25</sup>From a letter dated August 8, 1956, in *The Collected Letters of C. S. Lewis*, vol. 3, *Narnia, Cambridge, and Joy 1950-1963*, ed. Walter Hooper (New York: HarperSanFrancisco, 2007), 781-82.

<sup>26</sup>Lewis, *The Problem of Pain*, 634.

<sup>27</sup>Lewis, *Collected Letters*, 782.

<sup>28</sup>Lewis, *The Problem of Pain*, 628-29.

<sup>29</sup>From a letter dated October 26, 1962, in Lewis, *Collected Letters*, 1376.

<sup>30</sup>*Ibid.*, 1377 (emphasis original).

<sup>31</sup>For example, Lewis, *That Hideous Strength*, 15.

<sup>32</sup>*Ibid.*, 44.

<sup>33</sup>For a robust statement on the potential of literature to deepen discussions on this subject, see Tzachi Zamir, "Literary Works and Animal Ethics," in *The Oxford Handbook*

*of Animal Ethics*, ed. Tom L. Beauchamp and R. G. Frey (Oxford: Oxford University Press, 2011), 932-55. Zamir argues that

literary interventions can deepen action-oriented moral approaches as well as character-oriented ones. The emphasis on suffering and the capacity to identify it (consequentialism) or the plausibility (or implausibility) of limiting the applicability of virtues such as mercy or justice to humans alone (virtue ethics) exemplify how the literary imagination can extend and sharpen moral sensitivities couched in all of the dominant moral frameworks. (pp. 952-53)

<sup>34</sup>Linzey, "C.S. Lewis's Theology," 65. Linzey has various reservations about Lewis's conclusions but commends him for raising the issue of animals in theological reflection when most do not, particularly since, in Linzey's view, "The paucity of serious theological reflection about animals has become a moral scandal" (p. 78). He also welcomes Lewis's attempt to grapple with theodicy and animal pain (pp. 78-79), and willingness to vocalize opposition to animal cruelty in his support for the antivivisection movement, even though it was an unpopular position to take (pp. 79-80). For a response to both Lewis and Linzey, see Ben Devries, "Andrew Linzey and C.S. Lewis's Theology of Animals," *Journal of Animal Ethics* 3, no. 1 (2013): 25-40.

<sup>35</sup>In this respect, Lewis is typical of the British Christian antivivisection movement of the nineteenth century and later in that it was for the most part a grassroots opposition, operating independently of official denominational backing. As Chien-Hui Li puts it, antivivisectionists, despite the lack of institutional support from churches, took the initiative upon themselves in turning to the Christian tradition in their attempt to make sense of and deal with the moral issues posed by new developments in the field of physiological science. (Li, "Mobilizing Christianity in the Antivivisection Movement in Victorian Britain," *Journal of Animal Ethics* 2, no. 2 [2012]: 157)

Lewis is atypical of the movement in that he brought a scholarly perspective to the issues involved, whereas many of the activists Li considers are not among "the best of theologians or the most gifted thinkers of their time" (p. 157).

<sup>36</sup>For a wide selection of articles touching on animal experimentation in religious perspective, see Paul Waldau and Kimberley Patton, eds., *A Communion of Subjects: Animals in Religion, Science, and Ethics* (New York: Columbia University Press, 2006).

<sup>37</sup>Lewis, *Surprised by Joy*, 196.

<sup>38</sup>Stanley Hauerwas examines Lewis's views on war in his chapter, "On Violence," in *The Cambridge Companion to C. S. Lewis*, ed. Robert MacSwain and Michael Ward (Cambridge: Cambridge University Press, 2010), 189-202.

<sup>39</sup>Lewis, *Perelandra*, 196, 204.

<sup>40</sup>For philosophical and ethical perspectives on the confinement of animals in various contexts, see David DeGrazia, "The Ethics of Confining Animals: From Farms to Zoos to Human Homes," in *The Oxford Handbook of Animal Ethics*, ed. Tom L. Beauchamp and R. G. Frey (Oxford: Oxford University Press, 2011), 738-68.

<sup>41</sup>Lewis, *The Problem of Pain*, 628.

<sup>42</sup>*Ibid.*

### A Cognitive Sciences Challenge

Justin L. Barrett, Thrive Professor of Developmental Science and Program Director for the PhD in psychological science at Fuller Theological Seminary, will be posting soon, on the ASA and CSCA websites, an intriguing description of the latest developments in the cognitive sciences. What insights and challenges do they raise for Christian faith?

The essay will be intended as an invitation. Readers will be encouraged to take up one of the insights or challenges, or maybe a related one that was not mentioned, and draft an article (typically about 5,000-8,000 words) that contributes to the conversation. These can be sent to Barrett at staroffice@fuller.edu. He will send the best essays on to peer review, and then we will select from those for publication in a cognitive science theme issue of *Perspectives on Science and Christian Faith*.

The lead editorial in the December 2013 issue of *PSCF* outlines what the journal looks for in article contributions. For full consideration for inclusion in the theme issue, manuscripts should be received electronically before March 30, 2016.

**ASA Members:** Submit comments and questions on this communication at [www.asa3.org](http://www.asa3.org)→FORUMS→PSCF DISCUSSION.



Celia  
Deane-Drummond

# Deep History, Amnesia, and Animal Ethics: A Case for Inter-Morality

Celia Deane-Drummond

*This article builds the case for an alternative theological anthropology that takes seriously the deep evolutionary history of human beings, including relationships with other species. I draw on a case study that engages the work of anthropologists interested in interspecies relations, focusing particularly on human-hyena associations in Harar, Ethiopia. I argue, in particular, for a perspective that not only acknowledges the entanglement between humans and other animals historically, but that also argues that the emergence of human morality is profoundly “inter-morality,” that is, first, insofar as it is interlaced with the actions of and interactions with other animals, and second, in that some of such actions of other animals could be termed moral according to their own worlds. I suggest that appropriation of such concepts shifts theological anthropology that has, in the past, relied far too heavily on a philosophy of human exceptionalism. The approach suggested here also opens up the possibility of an alternative approach to animal ethics, one that is far less reliant on an extension of human rights to other animals.*

Keri McFarlane’s article “Living Relationally with Creation: Animals and Christian Faith” raises important issues about human distinctiveness that grounds much of the key literature in philosophy and anthropology that takes other animals seriously.<sup>1</sup> It addresses significant questions from a Christian theological perspective, including, for example, How are humans and animals distinct? In what ways are humans also animals? What does divine image bearing mean? Do other animals have a capacity for consciousness? Do animals have rights? How do humans treat other animals? What practical purposes are animals used for? and Are these uses ever ethically justified? Particularly important in my view, because it is so often ignored, is the question, What about the sheer variety of animal life? Taking the latter into account will impinge not only on our perception of animals in relation to humans, but also on our treatment of them.

What I intend to do in this essay is a little different insofar as it takes McFarlane’s article as background to the discussion. I will presuppose some familiarity with the issues that she raises, while offering more details on the ethical implications of a theological anthropology that *does* take the presence of other animals seriously. I therefore offer ingredients for an alternative theological anthropology that argues for what I term “inter-morality” as a significant aspect of that anthropology, along with some brief pointers for our actual treatment of other animals, what is traditionally termed “animal ethics.”

The pressing question for many traditional theologians seeking to build a theological anthropology grounded in

**Celia Deane-Drummond** is a professor in theology at the University of Notre Dame. Her most recent books are *The Wisdom of the Liminal: Evolution and Other Animals in Human Becoming* (Eerdmans, 2014) and *Re-Imaging the Divine Image: Humans and Other Animals* (Pandora Press, 2014).

# Article

## *Deep History, Amnesia, and Animal Ethics: A Case for Inter-Morality*

the idea of humans made in the divine image seems to be a comparative one, that is, how are humans *distinctive* or even *unique*, as compared with animals? In order to argue the case for human exceptionalism, they consider each humanly distinctive characteristic in turn and find that humans have relatively greater capacities for reason and intelligence, consciousness, and language. Consequently, other animals, even highly social and intelligent animals, are found not to measure up. The boundary between humans and other animals may be more porous than we once thought, but when placed on a scale of our own making, human superiority remains intact.

Yet, as I have argued in far more detail in a monograph that develops an alternative theological anthropology and approach to divine image bearing, our ability as human beings to make such comparisons at all is itself the product of a particular approach to ourselves and other animals that is shaped by a specific cultural history, namely that in the post-Enlightenment West.<sup>2</sup> That is not to deny that we can escape from our cultural history, but it is important to recognize it. So, just as Charles Taylor and Alasdair MacIntyre bemoan the intellectual landscape of contemporary culture as somehow having lost touch with the rich intellectual tradition of the past, leaving in its place only fragments of what it had been,<sup>3</sup> so, too, I suggest that we have lost touch with any awareness of alternative ways of perceiving human flourishing, other than the post-Enlightenment tradition that puts a great deal of stress on human rationality.

MacIntyre attempted to fill that void not only by retrieving Aristotelian approaches to tradition-based practices, but also, in subsequent work, by taking into account the dependency of human beings that aligns with the dependency in other animal worlds; thus humans are also considered *dependent* as well as rational animals.<sup>4</sup> However, this does not go nearly far enough. If we are like other animals just because we are also dependent on each other, that still puts those animals in the role of teaching us something important about ourselves and our vulnerabilities, but it does not necessarily change our treatment of them.

Another highly significant philosopher, Jacques Derrida, who has influenced many writers in animal studies in one of the most important books he has

written, *The Animal That Therefore I Am (Following)*, at least recognized that to be human could not be understood in isolation from our interaction with other animals, but he too failed to take specific account of what those animals are really like in any rich sense. Finding that we are ashamed, as Derrida clearly did, when we are stark naked in the presence of a cat might seem odd to us if that cat was, as centuries of philosophical reflection claimed, not a conscious being like us. But how are we to know what that sense of shame actually means? Derrida does not investigate this other than claiming that it raises issues about who we are. In a provocative passage, he states:

If I say “it is a real cat” that sees me naked, this is in order to mark its unsubstitutable singularity. When it responds in its name (whatever “respond” means, and that will be our question), it doesn’t do so as the exemplar of a species called “cat,” even less so of an “animal” genus or kingdom. It is true that I identify it as a male or female cat. But even before that identification, it comes to me as this irreplaceable living being that one day enters my space, into this place where it can encounter me, see me, even see me naked. Nothing can ever rob me of the certainty that what we have here is an existence that refuses to be conceptualized [*rebelle à tout concept*].<sup>5</sup>

Then there is a shame at being ashamed, a double shame felt in the absence of that cat, when the actual experience of encounter is no longer so clear. What possible reason can we have for being ashamed in the cat’s presence? But Derrida relies on his own existential experience to promote his reflections, against a literary and philosophical background, rather than taking into account what it is *actually* like to be a living biological being, a *cat*.

The recent philosophical turn to questioning human identity through encounters with other animals, along with a wider interest in animal studies and recognition of a common evolutionary history, has had an impact on systematic theology. Prominent theologians, such as David Fergusson, are beginning to argue that image bearing as a focal point for anthropology is now redundant, or at least needs to be deflated.<sup>6</sup> I can understand the urge by theologians to trim back on *imago* language, influenced perhaps by other powerful thinkers such as Protestant theologian David Kelsey, whose major work on theological

anthropology deliberately refrained from the use of this language.<sup>7</sup>

Kelsey's reasoning was somewhat different, however, since he is arguing not so much from a self-conscious awareness of the importance of other animals, but from the historical perception of image bearing. For him, *imago Dei* carries with it a historical premodern anthropology that stressed the rational soul and the denigration of the body, in which the rational soul seems more God-like compared with the body.<sup>8</sup> He also presses the case that the only justifiable use of the "image of God" applies to Jesus Christ in his personal identity. So, for him, the image of God, when used for theological anthropology, draws with it an unacceptably univocal narrative about creation, the Fall, and redemption.<sup>9</sup> In a section entitled "Against the Tradition," Kelsey seeks to complexify that narrative by drawing on scripture in a different way, according to three narratives that are interwoven with each other, using the biological analogy of the triple helix. Thus, he deliberately avoids using the concept of *imago* in order for an alternative to emerge, in which the *imago* (he finds it hard to completely avoid that term) is sharpened, deepened, and complexified in a way that resists a drive to systematize human existence, "which is a 'mystery' in part just because it is not 'a system.'"<sup>10</sup>

My own view, however, is that image bearing is far too strong a motif to be dispensed with by theologians in the name of a more mysterious account, and that more traction can be found by deliberately seeking to name and reimage that image. Yes, I agree with Kelsey that there is a need to complexify the term, and yes, there is a need to resist too strident systematization. And yes, too, wisdom is critically important as a source of biblical literature for anthropology. However, the complexifications that Kelsey fails to take seriously enough are those related to human entanglements with other creatures, including those in deep history, so taking evolutionary biology into account.<sup>11</sup>

## Animal Ethnography and Interspecies Relations

So far I have not mentioned the detailed observations of animal ethologists such as Marc Bekoff,<sup>12</sup> or that of primatologist Frans de Waal, both of whom have

made deliberate efforts to make their work more widely known, including, in de Waal's case, books such as *Good Natured* or *The Age of Empathy*.<sup>13</sup> Frans de Waal's research supports literature that makes the human/animal differences more porous, thus challenging strong calls for human uniqueness; so, in this sense, he is still operating under the same sort of paradigm that I mentioned in the first section. In other words, he is prepared for other primates to be considered in their sociality as having specific capacities, such as those for altruistic acts, but he leaves the idea of a graded scale intact. Humans are at the top of a "tower of morality," even if less triumphantly so. This is unfortunate, in my view, since, as I suggested earlier, and in spite of de Waal's protestations to the contrary, it leaves the option of human abuse of animals intact.

There are no reasons, other than purely naturalistic ones, why humans should necessarily imitate other primates or see in their behavior some sort of guide for human practices. For the moment, I want to point out that de Waal's work, for all its benefits in terms of public awareness of the rich emotional lives of other primates, fails, inasmuch as it does not address the root of the problem: How do humans orientate themselves in relation to other animals? Therefore, while de Waal has offered a successful riposte to simplistic accounts of morality that perceive human beings as, in some sense, essentially selfish, which quality is then regulated by the imposition of moral control—a position that he terms "veneer theory"—his own position is not all that much better. All he has done is to replace the essentially selfish human nature, which is grounded in more limited versions in other animals, with an essentially cooperative one. Humans are just that bit more cooperative rather than that bit more selfish; thus, they do not need another layer added onto an otherwise brutish nature.

The above raises all sorts of complex issues about what human nature is actually like and what the term human nature really means. I am not intending to get too distracted by the considerable body of literature in analytical philosophy that is starting to focus on this topic in a modern context.<sup>14</sup> It is sufficient to mention that just as image bearing has remained a controversial topic among theologians, so human nature is similarly disputed among philosophers. In this respect, Jonathan Jong and Aku Visala's topography of the term is helpful inasmuch

# Article

## *Deep History, Amnesia, and Animal Ethics: A Case for Inter-Morality*

as contemporary discussion about human nature takes the form of (a) universal claims, (b) claims for uniqueness, and (c) the quest for innateness. When the term “human being” is used, scientists, however, often assume that what is intended is the species, *Homo sapiens*, and human being becomes a biological category. Changing the term to “persons” does not necessarily help either, since the category of personhood is now tentatively being applied to other animals.<sup>15</sup>

Such theoretical considerations do not yet engage with the way that humans and other animals are richly entangled in many societies in a much more obvious way compared with our own. Of course, even Western cultures are entangled with other animals; it is just that we rarely notice what is going on, and reflecting on other cases can perhaps jolt us out of amnesia. I suggest that it is this that is particularly important when considering how human perceptions of other animals can change. Knowing that there is a naturalistic basis for kindness as well as selfishness, in the manner that de Waal suggests, will not change behavior, especially when we consider that human acts of altruism have the capacity to be deliberate and sustained rather than to be responses of the moment, as seems to be the case in other primate societies.<sup>16</sup> However fascinating these marks of human ultrasensitivity may be to our own sense of identity, humans still end up with a sense that we are, in comparative terms, superior. Now, I am not suggesting that such narratives about interspecies interrelations can substitute for actual experiential contact between humans and other animals as a way of enlarging our understanding, but at least they open up a world that is worth considering, for it starts to shift the discussion away from simply how are we different? to how are we connected *horizontally* rather than vertically? and what might be the significance of those connections?

As many biologists are aware, if we look back to the deepest history of all, to the dawn of multicellular life, it is clear that the organisms from which we are made are hybrid rather than simple. The mitochondria in every living cell once had an existence independent from our bodies, and the bacteria that inhabit our intestines are necessary for healthy existence. The biology of symbiosis is fascinating, and reminding ourselves of this mixed bodily history is an important acknowledgment of entanglement.

The transfer of parasites from one host to another can also have an impact on human/animal relations: as the Ebola virus illustrated, once in humans the pathogenicity can look very different.<sup>17</sup> The point is that the human/animal association works for both health and disease, leading to a complex intertwining of hosts, pathogens, and symbionts in the interspecies world.

How do such symbiotic relationships arise? There are literally dozens of examples of interspecies relationships in which there is mutuality in the way each species has evolved. Where there is particularly close contact, it is called “coevolution.” But there are examples of close entanglements that can be witnessed by anthropologists studying human-animal associations. So striking are these interrelationships that anthropologists are beginning to use the methodology normally reserved for the study of human populations to observe and record that of other animals that are in close association with them. The results are remarkable. Agustin Fuentes, for example, has pressed for a new field of ethnoprimateology. Further, this research is not simply of armchair importance, but has significant ethical implications. Fuentes argues:

Ethnoprimateology, the combining of primatological and anthropological practice and the viewing of humans and other primates as living in integrated and shared ecological and social spaces, is becoming an increasingly popular approach to primate studies in the twenty-first century. This approach plays a core linking role between anthropology and primate studies and may enable us to more effectively assess, and better understand, the complex ecologies and potential for sustainability in human–other primate communities.<sup>18</sup>

But primates are relatively easy to imagine as having some sort of association with human societies. Elephants also have a long history of association with humans, thus leading to an emergent ethnoelephantology as well. So, Piers Locke discusses

continuities between the sentient and affective lifeworlds of humans and elephants, the mutual entanglements of their social, historical, and ecological relations, and the relevance of combining social and natural science methodologies.<sup>19</sup>

The point is that the tools characteristically used by the social sciences and the natural sciences are

directed to a problem, a shared natural-cultural contact zone between two different species that are living in close proximity and so influencing their life worlds and evolutionary histories.

## Deep History of Entanglements: A Case Study of Humans and Hyenas in Harar, Ethiopia

Most striking of all is the even deeper history of human contact with hyenas. I am going to cover this in some detail here as a case study, since the rich texture of this ethnographic work becomes much clearer once attention is given to the details of the way humans and hyenas interact in this particular case. Australian anthropologist Marcus Baynes-Rock has done some fascinating work in what he terms the “multispecies commons” between humans and hyenas in the Muslim town of Harar in Ethiopia. He describes in great detail a dramatic chain of events after a hyena became poisoned near the house owned by a local Muslim resident called Yusuf, who took charge of feeding publicly the hyenas from a particular clan. At first the dying hyena attracted the attention of the local people, who tried matches, smoke from burning rags, lime, milk, and other attempts to revive the hyena. Eventually, however, “the large female picked up the hyena in her mouth and marched off into the darkness with him. She was followed by thirty-one other hyenas, growling and whooping, their manes and tails bristling.”<sup>20</sup> But rather than leave it at that, the hyenas returned to the place where they had found the hyena the day before. Baynes-Rock notes,

On the second night after the above incident, there was some unusual activity at the place outside Yusuf’s house. One hyena was uttering a series of low groans while the other hyenas present were agitated. They were scratching at the ground and gathering around at various places, sniffing together.<sup>21</sup>

A few minutes later about six hyenas arrived at the normal gathering space of hyenas on one of the Harar city wall gates known as the Argobberi gate, and appeared in an aggressive relationship with a group of other hyenas, the human observers leaving the area for this exchange to take place.

Baynes-Rock unravels the puzzles of the behavior he observes by considering the social and biologi-

cal significance of the entangled relations between humans and hyenas, who, in Harar, are dependent on anthropogenic sources of food. The shared history between humans and hyenas was originally as extensive as the global spread of human populations as such, and goes back to the Pleistocene and Pliocene. Eventually the association became constricted to Africa; thus hyenas completely disappeared from Eurasia. The very long association between hyenas and humans in Ethiopia, where this study took place, seems to be related to the fact that the Abyssinians, the ancient indigenous group in Harar, Ethiopia, “did not bring radically new ways of managing the landscape, nor did they bring ideologies of extermination.”<sup>22</sup> Hence, while close relationships between hyenas and humans could be sustained, particularly in Ethiopia, in other parts of Africa, hyenas were exterminated as they were a threat to pastoralists.

In Ethiopia, lions, which used to prey on hyenas, have disappeared, and widespread growing of “khat” is not threatened by their presence; if anything the farmers believe that the hyenas will deter thieves. The hyenas scavenge on leftover carcasses consumed by the population and occasionally break into pens that have unguarded livestock. Donkeys, though, are forbidden as food for different reasons by the mixed Christian and Muslim population, and given that their numbers far exceed that of the hyenas, they provide an additional source of nourishment. But hyenas are also fed directly by humans, who exploit this local practice as a tourist attraction—and the place, Yusuf’s house, where the poisoned hyena was found by the pack, was one such feeding place. Baynes-Rock suggests that this practice makes the hyenas bolder in the company of people, even though the kind of food they are given is much the same as they would find in garbage dumps by their own scavenging.

The Argobberi gate where the hyenas clashed has a human history, but it is also the site of exchange between three hyena clans. The different hyena clans occupy different territories in different parts of the town, and enter it through different gates. Hyenas mark the boundaries between clans by pasting, defecating, scratching, and enacting or witnessing behavior over disputed food. Baynes-Rock notes that all these methods are unavailable to the hyenas in Harar. Pasting, which is a marking

# Article

## *Deep History, Amnesia, and Animal Ethics: A Case for Inter-Morality*

on grass, is impossible due to the limited vegetation present. Defecating is soon cleaned up by the locals living close by. Hyenas are still feared by the local population, even though there is a close relationship with them. Now, once outside the gated area, the boundaries become much more distinct again. It seems that the particular feeding of hyenas by humans at Yusuf's house is confined to the Sofi clan, and, on encountering the dying hyena, Yusuf assumed the hyena was Sofi; but Baynes-Rock's observations on the angry reactions of the local hyenas made this much less likely. The Aboker hyenas seemed angry at one of their clan being taken off and presumably killed.

There was a lot of aggression displayed by both groups but no physical contact. In that way, it was more like a ritualized display in which the two clans were enacting and reasserting the boundary rather than a conflict over a disputable, moveable line of demarcation.<sup>23</sup>

Did the Aboker clan of hyenas know that one of their members was missing? Baynes-Rock refuses to be drawn on this, except to say that they would have been aware of the commotion a few nights earlier, which had involved one of their clan, since the feeding place is so close to the Aboker territory. And it is the gate that is the place where disputes between clans are resolved. Baynes-Rock suggests that the Argobberi gate "is a mutually constructed, historicized, politicized, meaningful place in the minds of both hyenas and humans who participate in the dramas which are enacted there."<sup>24</sup> In the minds of the local people, these spotted hyenas are agents just like humans, for, according to them, "hyenas hold meetings, make supplications for food, and communicate detailed messages to conspecifics and to humans who can understand hyena language."<sup>25</sup> They also believe that hyenas will punish conspecifics who attack livestock, and that humans who poison or kill hyenas will, in turn, receive retribution. So when the hyena was poisoned, he was treated like a person; waving a match under the nose is standard treatment in this region for those with an epileptic seizure, and so is reciting the Qu'ran over a dying individual. Lime juice is also standard treatment in those cases in which a girl has swallowed bleach—this occasionally happens when a girl is forced to marry against her will. The milk was Baynes-Rock's idea, and Yusuf followed his advice after his own attempts failed.

Hyenas are also thought to be spiritually powerful animals that are able to mediate messages from the local town saints and pass these messages on to people who can understand hyena language. The messages are thought to be quite specific, including information about the number of "jinn" in the town, jinn being unseen spirits that can possess their owners or cause mischief. Hyenas are thought to be able to catch and eat jinn; this explains the behavior of reciting the Qu'ran after the hyena was taken away by the hyena pack. It also explains the long-term persistence of hyenas: far from being a threat, they are thought to be able to protect people from negative spiritual forces. Baynes-Rock concludes:

The multispecies commons challenges us to reconceptualize the ways in which human and non-human lives are lived; it speaks of meanings which transcend language (Alger and Alger, 2003:76) and loudly demands that we reconfigure the paradigms which guide our understandings of what are social processes.<sup>26</sup>

It also, I suggest, demands that we reconfigure the paradigm which guides *theological* understanding as well, reminding us of a shared creaturely existence in common with all other living things,<sup>27</sup> and is also the means through which humans express that creatureliness in their particular human way, specifically in entangled yet dynamic relationships with other animals. The connection between religious practices and the hyenas understood as agents in a theological drama is also fascinating to me, for it implies that other animals, in some sense, have been mediating agents with the divine. And it is this mediating influence that colors Christian religious history as well, for lurking in the story of Adam and Eve, we find the ubiquitous appearance of the snake.<sup>28</sup>

## Inter-Morality and Its Significance for Animal Ethics

Given the deep history of the relationship between humans and other animals, including specific ones that have coevolved with human beings, such as hyenas and, more recently, domesticated animals such as dogs, a case can be made for *inter-morality*. What do I mean by this term? I mean two things. The first is simple, that human morality emerged not simply in human communities considered in isolation,<sup>29</sup> but in engagement and entanglement with a whole variety of other creatures, including

close interspecies relationships with large cats, such as puma.<sup>30</sup> Is this convincing in terms of evolutionary theory? I suggest that it is, for there has been a significant paradigm shift in evolutionary theory, from a straightforward belief in Darwinian evolution by natural selection, in which certain traits are selected in given external environmental conditions, to one in which much greater attention is paid to the other beings that are present—a phenomenon known in ecological theory for some time, namely, “niche construction.”

Niche construction is significant in the earliest human evolutionary histories and continues into the present, replacing a sociobiology based on survival of the fittest with one that is far more interactive and reciprocal in relationship with other beings. Based on this view, the narrative of the hyenas in Harar that I discussed above, along with similar cases, is crucially important to understand. The particular form that a culture takes is one that is engaged deeply with the living and dynamic presence of animal kinds rather than detached from it. And so that means that morality also is inter-morality. Even Western societies practice a form of inter-morality by the way we treat livestock, the brutalizing cruelty evident in factory farming, the devastation of climate change; all these are interactions between humans and the living beings that also share the planet. Our morality is necessarily inter-morality, and the term “inter” is just a way of bringing this into our conscious memory, lest we forget.

Inter-morality has a second meaning based on arguments I have made in the past, that at least some highly social animals, other than human beings, can be considered as having a moral world.<sup>31</sup> Now, there are risks associated with making such a claim, such as strident rejection of the possibility that other animals have a theory of mind.<sup>32</sup> But the claim that a theory of mind is necessary for morality to exist will depend on prior definitions of what morality means. If morality means collective rules that groups of individuals live by, such that those who do not adhere to those rules are excluded or shunned by the group, then many other animals possess such characteristics. While some ethnographers contend that emotive states are common to both humans and other animals, the least controversial claim is that morality goes beyond limited rules internal to that species.

Thomas Aquinas, and before him Albertus Magnus, was prepared to admit that some specific other animals possess a kind of practical wisdom in their dealings with the world. Now, if they have a practical wisdom and a reasoning of a sort, then why not call this morality? It is clearly not the same as human morality, inasmuch as moral systems or other elaborate works of literature, such as Shakespeare’s plays, have the potential to become abstract and sophisticated to the sixth or even sometimes to the seventh level of social understanding, that is, who knows what about whom. Evolutionary anthropologist Robin Dunbar claims that fewer than one in five of us have levels of social understanding to the sixth level.<sup>33</sup> Many complex moral theories involve such abilities to abstract in terms of social relationships, so there is certainly a “gap” between the abilities of humans and other advanced social species. But the point is that morality did not simply appear in all this complexity from nowhere at all.

I have come to consider that calling the kind of morality that exists in other highly social species “latent” morality or “pre” morality is problematic, as it risks setting up yet another comparative measure with humans. The point is that the kind of morality that operates in the world of social animals is perfectly adequate for their needs as a socially functional group, even if it is different from the kind of abstracted morality that is possible in humans in particular cultural settings, including the one that we are most familiar with in the West. And the occasion of dysfunctional systems of morality is actually, it seems to me, rather *more* likely in the human sphere, due to the potential of humans to be deliberately and consistently cruel in the way that other animals are not.<sup>34</sup> Finally, human moral action, insofar as it includes the emotional as well as the reasonable, is inclusive of those strands in emotional response that humans share with other animals.<sup>35</sup>

So, how might consideration of the above influence animal ethics, and human behavior more generally toward other animals? Rather than claiming that other animals have “rights” that are in some ways parallel to those in humans, there is a need to walk the tightrope between giving other animals their due, in terms of recognizing their distinctive way of being creaturely, and acknowledging how our lives and theirs are enmeshed in all kinds of interesting ways.

# Article

## *Deep History, Amnesia, and Animal Ethics: A Case for Inter-Morality*

Human existence has a history with other animals insofar as many of those animals have a greater capacity for agency, for example, compared with simpler forms of life. It is important to be specific and say which animal, where, and for what reason, as the case with hyenas implied. Hyenas have had a poor reputation in Western cultures as far as human attitudes toward them are concerned, but that is not borne out by examining the deep history of human-hyena relationships. Further, once we acknowledge that entanglement, while it might be possible to dispense with history and act cruelly toward other animals, to do so is something of a betrayal—a betrayal of a shared story in which our relationships with those others is part of who we are and is, I would argue, integral to what it means to bear the image of God. This is not, therefore, about a naturalistic ethic that implies that observations of other animals provide guides to how humans should act, in the manner suggested by Frans de Waal,<sup>36</sup> but a way of qualifying and holding in check how we might act toward those other animals, a recognition of shared history rather than a blueprint for moral living. The relationship between our own histories and how other animals might live can also be worked out through the concept of natural law (the topic of another paper<sup>37</sup>).

According to the model that I am suggesting, image bearing is not so much about a specific capacity, but rather is *performative*.<sup>38</sup> And if performative, it means that human beings have been caught up in a drama with other animal lives from time immemorial. That drama is not one that excludes the divine, but from the point of view of a constructive Christian theology, is inclusive of belief in God: God's providence is over human and other creaturely agency. Such a view does not, therefore, end up with a specific advocacy of, for example, universal adoption of vegetarianism, though some might be drawn to that conclusion based on the abuses that are all too obvious. It does point, however, to the need to treat other animals decently and to acknowledge that they inhabit worlds that are shared with human beings in complex interspecies relationships. ◇

### Acknowledgment

I would like to thank Marcus Baynes-Rock for helpful comments on this article.

### Notes

- <sup>1</sup>Keri MacFarlane, "Living Relationally with Creation: Animals and Christian Faith," *Perspectives on Science and Christian Faith* 67, no. 4 (2015): 235–44.
- <sup>2</sup>Celia Deane-Drummond, *The Wisdom of the Liminal: Evolution and Other Animals in Human Becoming* (Grand Rapids, MI: Eerdmans, 2014).
- <sup>3</sup>Charles Taylor, *Sources of the Self: The Making of the Modern Identity* (Cambridge, MA: Harvard University Press, 1992); and Alasdair MacIntyre, *After Virtue: A Study in Moral Theory*, 3rd ed. (Notre Dame, IN: University of Notre Dame Press, 2007).
- <sup>4</sup>Alasdair MacIntyre, *Dependent Rational Animals: Why Human Beings Need the Virtues* (Chicago, IL: Open Court, 1999).
- <sup>5</sup>Jacques Derrida, *The Animal That Therefore I Am*, ed. Marie-Louise Mallet, trans. David Wills (New York: Fordham University Press, 2008), 9.
- <sup>6</sup>David Fergusson, "Humans Created according to the *Imago Dei*: An Alternative Proposal," *Zygon* 48, no. 2 (2013): 439–53; and David Clough, *On Animals: Volume 1, Systematic Theology* (London: T&T Clark, 2012). For a discussion of Clough's book, see short papers published in *Zygon* 49, no. 3 (2014), especially David Fergusson, "On God, Christ and Animals," *Zygon* 49, no. 3 (2014): 741–45.
- <sup>7</sup>David Kelsey, *Eccentric Existence: A Theological Anthropology*, 2 vols. (Louisville, KY: Westminster John Knox Press, 2009).
- <sup>8</sup>Kelsey, *Eccentric Existence*, 1:30, 39.
- <sup>9</sup>*Ibid.*, 2:897.
- <sup>10</sup>*Ibid.*, 2:900.
- <sup>11</sup>See my 2012 Goshen lectures published as Celia Deane-Drummond, *Re-Imaging the Divine Image of God: Humans and Other Animals* (Kitchener, ON: Pandora Press, 2014).
- <sup>12</sup>See, for example, Marc Bekoff, *Animal Passions and Beastly Virtues: Reflections on Redecorating Nature* (Philadelphia, PA: Temple University Press, 2006); Marc Bekoff, *The Emotional Lives of Animals: A Leading Scientist Explores Animal Joy, Sorrow, and Empathy—and Why They Matter* (Novato, CA: New World Library, 2007). His most recent work, *Rewilding Our Hearts: Building Pathways of Compassion and Coexistence* (Novato, CA: New World Library, 2014) applies insights from ethology to wider discussions about climate change and environmental ethics.
- <sup>13</sup>Frans de Waal, *Good Natured: The Origins of Right and Wrong in Humans and Other Animals* (Cambridge, MA: Harvard University Press, 1996); de Waal, *The Age of Empathy: Nature's Lessons for a Kinder Society* (London: Souvenir Press, 2009). In his most recent book, *The Bonobo and the Atheist: In Search of Humanism among the Primates* (New York: W.W. Norton, 2013), de Waal, while not as hostile or aggressive as, for example, Richard Dawkins's attempts to weaken any claims that religion is a precursor for morality.
- <sup>14</sup>See, for example, Jonathan Jong and Aku Visala, "Three Quests for Human Nature: Some Philosophical Reflections," *Philosophy, Theology and the Sciences* 1, no. 2 (2014): 146–71.
- <sup>15</sup>See discussion in, for example, Charles Camosy, "Other Animals as Persons? A Roman Catholic Inquiry," in *Animals as Religious Subjects: Transdisciplinary Perspectives*, ed. Celia Deane-Drummond, Rebecca Artinian Kaiser, and David L. Clough (London: Bloomsbury, 2013), 259–78.
- <sup>16</sup>Penny A. Spikins, Holly E. Rutherford, and Andy P. Needham, "From Homininity to Humanity: Compassion from the Earliest Archaics to Modern Humans," *Time and*

*Mind: The Journal of Archaeology, Consciousness and Culture* 3, no. 3 (2010): 303–25.

<sup>17</sup>The original source of different strains of Ebola virus is almost certainly animals, including monkeys or, in the case of the most recent outbreak in 2014, bats, and there are a number of different subvariants. This disease has attracted media attention recently, but it has been the topic of research for decades. See, for example, C. J. Peters and J. W. Peters, “An Introduction to Ebola: The Virus and the Disease,” *The Journal of Infectious Diseases* 179, Suppl. 1 (1999): ix–xvi.

<sup>18</sup>Agustin Fuentes, “Ethnoprimateology and the Anthropology of the Human-Primate Interface,” *Annual Review of Anthropology* 41 (2012): 101.

<sup>19</sup>Piers Locke, “Explorations in Ethnoelephantology: Social, Historical, and Ecological Intersections between Asian Elephants and Humans,” *Environment and Society: Advances in Research* 4 (2013): 79.

<sup>20</sup>Marcus Baynes-Rock, “Life and Death in the Multispecies Commons,” *Social Science Information* 52 no. 2 (2013): 210–27.

<sup>21</sup>Baynes-Rock, “Life and Death,” 213.

<sup>22</sup>Ibid., 215.

<sup>23</sup>Ibid., 221.

<sup>24</sup>Ibid., 221.

<sup>25</sup>Ibid., 221.

<sup>26</sup>Ibid., 224.

<sup>27</sup>For further discussion of this point see essays in Celia Deane-Drummond and David Clough, *Creaturely Theology: On God, Humans and Other Animals* (London: SCM Press, 2009).

<sup>28</sup>I have commented on the particular significance of this as it relates to Christian teaching about the fall of humanity in Celia Deane-Drummond, “The Birth of Morality and the Fall of Adam through an Evolutionary Interspecies Lens,” *Theology Today* 72, no. 2 (2015): 182–93.

<sup>29</sup>For further discussion of the evolutionary aspects of this see Celia Deane-Drummond and Agustin Fuentes, “Human Being and Becoming: Situating Theological Anthropology in Interspecies Relationships in an Evolutionary Context,” *Philosophy, Theology and the Sciences* 1, no. 2 (2014): 251–75.

<sup>30</sup>Eduardo Kohn, *How Forests Think: Toward an Anthropology beyond the Human* (Berkeley, CA: University of California Press, 2013). Kohn’s fascinating discussion of the Runa people of Amazonia and their relationship with puma includes attributing religious significance to puma in a manner that has some resemblance with the hyena case discussed above. Kohn makes a case from a secular anthropological perspective for holding back on excessive attention to what makes humans exceptional (p. 22).

<sup>31</sup>Celia Deane-Drummond, “Are Animals Moral? Taking Soundings through Vice, Virtue, Conscience and Imago Dei,” in *Creaturely Theology: On God, Humans and Other Animals*, ed. Celia Deane-Drummond and David Clough (London: SCM Press, 2009): 190–210. A shorter version of this chapter is also published in *Zygon*, Celia Deane-Drummond, “Are Animals Moral? A Theological Appraisal of the Evolution of Vice and Virtue,” *Zygon* 44, no. 4 (2009): 932–50.

<sup>32</sup>For discussion of this, see Frans de Waal, *Primates and Philosophers: How Morality Evolved*, ed. Stephen Macedo and Josiah Ober (Princeton, NJ: Princeton University Press, 2009).

<sup>33</sup>Robin I. M. Dunbar, “Mind the Gap; or Why Humans Are Not Just Great Apes,” *Proceedings of the British Academy* 154 (2008): 403–23.

<sup>34</sup>Personal communication, Agustin Fuentes.

<sup>35</sup>See interesting article on this topic by Jean Porter, “Moral Passions: A Thomistic Interpretation of Moral Emotions in Non Human and Human Animals,” *Journal of Moral Theology* 3, no. 2 (2014): 72–92.

<sup>36</sup>See, for example, Frans de Waal, *The Age of Empathy: Nature’s Lessons for a Kinder Society* (London: Souvenir Press, 2009). De Waal translates his “tower of morality” idea into something even more robust in this book, namely, a guide for human moral behavior. De Waal is correct to identify empathetic tendencies in other social species. However, there is a difference between this observation and a case for pure moral naturalism. He is somewhat mistaken both in terms of the evidence that exists for analogous behaviors in our closest primate relatives, and with respect to a case for naturalistic ethics. A full discussion of this debate is outside the scope of this article and takes it down a line of argument that I have tried to resist in this paper, namely, a comparative one between us (humans) and them (everything else).

<sup>37</sup>Celia Deane-Drummond, “Natural Law Revisited: Wild Justice and Human Obligations for Other Animals,” *Journal of the Society for Christian Ethics* (forthcoming).

<sup>38</sup>I discuss the idea of image bearing as performative in more detail in Deane-Drummond, *The Wisdom of the Liminal*.

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Matthew C. Fleenor

## Communication

# The Ways of Jesus and Science at an IVGCF Meeting

Matthew C. Fleenor

### Setting

As part of an InterVarsity Graduate Christian Fellowship (IVGCF) student chapter's "Jesus and ..." series at Virginia Tech, I was asked to talk about Jesus and science, including my own experience as both a follower of science and a follower of Jesus. The small auditorium felt full with over seventy-five academically minded adults, ranging in age from 18 to 70. As both a scientist and a Jesus follower for over twenty years, I told them that my experience subverts the common expectation that increased knowledge terminates inquiry and ends argument. It was my contention that we are called, as heralds of both nature and beyond nature, to dwell in those tensions with the hope of congruence.

### Introduction and Confession

In a world of continuing antagonism, where "versus," "conflict," and even "war" are common descriptors for attempts to simultaneously consider ideas about the transcendent and nature, I am thankful for those who strive to observe and to create resonance between these voices without compromising their distinctives. My goal here is to examine the methodological and pedagogical approach of Jesus as documented in the New Testament, in the light of the usual

manner of methodology and pedagogy within the sciences.<sup>1</sup> I will refer to these methodological and pedagogical patterns of habit as the "way of Jesus" and the "way of science." Since both communities claim that their way leads to a truthful understanding of the world, it seems that Jesus followers possibly have something to learn from scientists, and scientists could also possibly learn from Jesus followers. Both the way of science and the way of Jesus deserve respect for their historical tradition and their appeal to a broad spectrum of the population. As someone who finds a significant degree of satisfaction with both ways, I seek to present each of them with integrity.

### An Unhealthy Response to Tension: Reductionism

Within the context of communicating truth and meaning, the ways of Jesus and science are susceptible to reductionism as a means to alleviate tension. For both the transcendent and material perspectives, generalization is necessary for the purpose of classification. However, the extrapolation found in reductionism moves beyond the search for commonality and attempts to strip the world of its diversity and idiosyncrasy. With reductionism, as commonalities between varied experiences are discovered and highlighted, differences are suppressed. The unique, the atypical, and the exceptional are made to hide as though they do not exist at all. Reductionism is a primary tenet of fundamentalism, for both those who follow the way of science and those who follow the way of Jesus.

**Matthew C. Fleenor**, PhD (University of North Carolina-Chapel Hill), is an associate professor in the physics group at Roanoke College. As an imaging scientist, he has researched laser polarization, microstructural properties of metals, galaxy evolution, and gamma-ray emission from nuclear materials.

## Aspiration

Through examining facets of the way of science and the way of Jesus, my intention is to uncover situations in which reductionism seems to have had the final word in our current context. Can the perspective of Jesus call attention to, and offer correction for, the reductionism present within the realm of science? Furthermore, can the perspective of science call attention to, and offer correction for, the reductionism present among followers of Jesus? As a result of unaddressed reductionism, is it possible that the ways of science and Jesus have become less than what (or who) they were originally intended? By examining statements within one realm, I seek to remind us of the fuller character of the other realm. By presenting tenets familiar to adherents of each particular way, I intend to show how the perspectives might inform the other.

*What can we learn from the way of Jesus about reductionism present in the way of science?*

1. *Truth is aided through a priori commitment to a particular viewpoint.*

We often hear that science provides a perspective that is objective and free of commitment. A corollary to this “view from nowhere” is that we as learners can enter the academic world without any commitments as to how our knowledge might come to us. The idea that a human is an automated truth seeker is often unconsciously presented in our classrooms and in our textbooks, especially by the community of science. Oftentimes in the fact-based presentations of science, the process of science such as how, and in what manner, those facts were obtained, is forgotten or distorted.

One example of the methodological distortion in science history is the pseudo-connection between the Michelson-Morley experiment and Einstein’s special theory of relativity (STR, circa 1905). To many, the traditional “genetic link” between theory and experiment is displayed in Michelson-Morley’s null result for the ether followed by Einstein’s STR.<sup>2</sup> Juxtaposed to this idealized textbook version of the story, Mansoor Niaz sums up his own historical inquiry of the account by stating,

It is not farfetched to suggest that the relationship between the [Michelson-Morley] experiment and

STR was made popular after the theory had gained support among physicists, based on new developments.<sup>3</sup>

With our interest rooted in a desire to present an easy-to-understand flow of knowledge and realization, the science community has perhaps sometimes exaggerated the linear accomplishments of the scientific method as a tool for obtaining truth.

Similarly, while part of the task of science is to winnow, we often forget that these tasks are somewhat guided by intuition, assumption, and a fair bit of hypothesizing. Consider the admonitions of two Nobel Laureates in physics related to the nature of choosing which experiments to conduct and how to conduct them:

The experimenter usually has to base her or his decision partly on what feels right, partly on what technology they like, and partly on what aspects of the speculations [presuppositions] they like. (Martin Perl, 1995)<sup>4</sup>

And also,

It [Experimentation] is intuition guided by facts, conjectures, and thoughts about what really would be important. (Leon Cooper, 1972)<sup>5</sup>

These *a priori* commitments are usually glossed over when the enterprise of science is presented or discussed, particularly in popularized versions of the progressive “tapestry of science” viewpoint.<sup>6</sup>

Juxtaposed to the extrapolated version of the way of science, Jesus teaches us that truth is obtained *ex post facto*, not *a priori*. By stating, “then you will know the truth” (John 8:32b), Jesus confronts the idea that we can gather truth as though we are consumers at the local department store or shell collectors at the beach. Furthermore, Jesus also affirms the idea that a presupposition must be present prior to the commitment to a particular way that could potentially yield truth. “If you hold to my teaching, you are really my disciples. Then you will know the truth, and the truth will set you free” (John 8:32).

Jesus states matter-of-factly the ground rules for seeking truth, namely, that we should not expect a path to reveal itself as true before it has been honestly and openly tried. As I have tried to show, philosophers of science and even scientists themselves also confirm that the way of science utilizes the concept of presupposition, and that many great discoveries

# Communication

## *The Ways of Jesus and Science at an IVGCF Meeting*

are forged in the face of anomalous data and findings.<sup>7</sup> As it relates to the way of science, the search for truth and understanding often requires that we follow a particular path before there is confirmation that the path actually accords with physical process. We must submit ourselves to an unclear path mentally, and sometimes even physically, so that truth may be recognized.

### *2. The uniqueness of context and its interaction with its surrounding environment.*

Science presents itself as a prophet of generality, in that the goal of science is to reveal the simple (but beautiful) patterns (i.e., truths) that outline our common experience as human creatures. One item to remember in this search for truth is that the patterns of the natural world are obtained by examining individual examples. That is, while science principles are built on the commonalities that arise from the experiments and findings of scientists, the individual contexts of each experiment are crucial to the enterprise of science. As scientists, we often forget that to learn about something, we must adopt a particular framework for the problem (often related to scale), which could constrain or limit our perspective. These necessary constraints, which include assumptions and approximations, are not universally prescriptive but rather are process (or subdiscipline) dependent.<sup>8</sup> Science has done many wonderful things that are widely applicable in scope, but we are forced to learn about the principles of science within its particular context.

Counter to a world of generality, Jesus places primary value on the uniqueness of experience. The teachings and actions of Jesus remind us of the situational context of truth, and science would do well to be reminded that generalities can only be distilled from unique contexts. While there are several different examples, Jesus's summative stance as a servant embodies his submission to context and individual personality.

Jesus called them together and said, "You know that those who are regarded as rulers of the Gentiles lord it over them, and their high officials exercise authority over them. Not so with you. Instead, whoever wants to become great among you must be your servant..." (Mark 10:42-43, NIV)

I am not advocating a general principle of moral relativism, nor am I stating that there is an alternative

universe where the laws of physics are completely opposite. Merely, I am reminding scientists that from Jesus we learn that truth has a face. That is, even if objective truth exists, it always comes to us within a particular context and through a particular relational avenue. This is the basic premise of the incarnation—namely, if a creator wants to communicate with creatures, the most effective way to communicate is by becoming a creature.

My exhortation to the scientists who are reading this communication is to embrace the history and philosophy of science. Most of our textbooks are not books about science, but rather discipline-specific fact books. Let us be open about the sources of our knowledge, about our demeanor in presenting that knowledge, and about the means by which we obtain new knowledge. Let us learn from the giants in our field by studying their lives, as well as their published results. Let us remember that logic and reason are only two of the vast array of tools that we utilize to examine and probe the deep rhythms and patterns of the natural world.

### *What can we learn from the way of science about reductionism regarding the way of Jesus?*

#### *1. Seeking truth often involves more questions than answers.*

Christian fundamentalism presents itself as a repository of moral law, black-and-white answers in a black-and-white world, with unchanging absolutes. The fundamentalist interpretation of Jesus has often left him out of the equation, and a sense of finality and uncompromising authority has pervaded. The result is that many nonfollowers (and sometimes followers) of Jesus often wrongly associate qualities with Jesus that are not portrayed by him in the written accounts.

The questioning nature of Jesus that surrounds his teaching certainly confronts the idea of finality and uncompromising dictum. A sense of incompleteness is prevalent within both the situational narratives about Jesus and the didactic teaching of Jesus. Moreover, the interactions of Jesus with other people (disciples, bystanders, Pharisees) almost always have a sense that they will be ongoing. A feeling of discomfort is often present as the questions of Jesus release his listeners into a freedom of responsibility.

Because science places a value on curiosity, discovery, and ever-deepening understanding of the natural world, I think that followers of Jesus can recover a sense of curiosity and discovery from the sciences. I appreciate that science always asks more questions than it answers, and I wonder if the same is not true within the realm of following Jesus. Followers of Jesus should see such places as opportunities to discover and explore—to deepen our sense of true self, to sharpen our vision of community, and potentially to reveal a new understanding of God. Although failure is a worthy opponent, there are no opportunities for growth without it. Science continues to poke and prod at the unknown places, and those who follow Jesus have sometimes been too afraid or too preoccupied to do such hard work of the soul.

*2. Truth and beauty are grounded in a reality that deeds really matter, and obedience that is merely mental is really no obedience at all.*

Christianity is a historical tradition, rooted in metaphysical and transcendent belief. Certain strands of Christian belief place a disproportionate weight on the afterlife, which in turn leads to a false sense that what happens on Earth really does not matter. These versions of Christian belief often reinforce the false idea that since what one believes is more important than one's actions, then how I live out my following of Jesus does not really matter to Jesus or to the culture.

Of course, the falsity of the above principle is immediately recognized by those who make a habit of studying the teachings and interactions of Jesus. The Jewish principle of the fruit of a tree revealing the tree's quality is certainly evident in the teaching of Jesus. Although Jesus is usually the person offering compassion and grace in the narrative passages, he is also the person who gives some of the sternest warnings about failing to align the way one acts with what one believes.

Science has strong claims to demonstrable evidence and verifiability of the principles it puts forward. For example, science struggles to permit the propagation of ideas and concepts that do not have ties to the world of the physically demonstrable. It is exactly for this reason that concepts such as grand unification, superluminal travel, and the multiverse

teeter on the edge of science. Therefore, I think followers of Jesus could be reminded of the importance of an adherence in physically demonstrable ways to their stated beliefs. The commitment of scientists to maintain consonance between stated theories and demonstrable experiments is a laudatory example for followers of Jesus.

My encouragement to the followers of Jesus is to take obedience in action as important, important enough to be aware and brokenhearted when our actions and beliefs do not coincide. When those who have a strong scientific bent see followers of Jesus merely claim forgiveness for disobedience, rather than exhibit repentance, it betrays what followers of Jesus say they believe. Of course, we are all in process, and we will not make good on all of our aspirations to follow the way of Jesus. This reflects Jesus's statements about who needs a doctor—not the healthy, but the sick (Matt. 9:12). But to act as if we do not need to pursue better health, getting a "pass" because Jesus is on our side, makes a mockery of Jesus's teaching and life.

## Summary

My intent has been to bring attention to some basic, but too often neglected, tenets of the ways of science and Jesus. Although present within each, the tenets considered were more lucidly observed from the vantage point of juxtaposition. In so doing, commonalities between these two viewpoints were pronounced, where they are commonly distorted, misconstrued, or suppressed. My hope is that you have found here an opportunity to inform and to exhort those who follow one of these two ways exclusively, to learn from the other. May these thoughts further encourage you as well to recognize congruency between the way of science and the way of Jesus. ◇

## Notes

<sup>1</sup>For a more formal approach to the application of science methodology, consider Nancey Murphy, *Theology in the Age of Scientific Reasoning* (Ithaca, NY: Cornell University Press, 1990).

<sup>2</sup>Gerald Holton, "Einstein and the 'Crucial' Experiment," *American Journal of Physics* 37, no. 10 (1969): 968–82.

<sup>3</sup>Mansoor Niaz, *Critical Appraisal of Physical Science as a Human Enterprise: Dynamics of Scientific Progress* (New York: Springer, 2009), 16–20.

# Communication

## The Ways of Jesus and Science at an IVGCF Meeting

<sup>4</sup>Martin Perl and E. R. Lee, "The Search for Elementary Particles with Fractional Electric Charge and the Philosophy of Speculative Experiments," *American Journal of Physics* 65, no. 8 (1997): 698-706.

<sup>5</sup>Mansoor Niaz, S. Klassen, B. McMillan, D. Metz, "Leon Cooper's Perspective on Teaching Science: An Interview Study," *Science & Education* 19, no. 1 (2010): 39-54.

<sup>6</sup>As an example of the "tapestry" rhetoric, consider Mano Singham, "The New War Between Science and Religion," *The Chronicle of Higher Education*, May 9, 2010: "... the scope of science has always expanded, steadily replacing supernatural explanations with scientific ones. Science will continue this inexorable march..."

<sup>7</sup>Imre Lakatos, "Falsification and the Methodology of Scientific Research Programmes," in *Criticism and the Growth of Knowledge*, ed. Imre Lakatos and Alan Musgrave (Cambridge: Cambridge University Press, 1970), 91-195.

<sup>8</sup>Consider the following example from Max Dresden, in the extremely insightful article, "The Klopsteg Memorial Lecture: Fundamentality and Numerical Scales—Diversity and the Structure of Physics," *American Journal of Physics* 66, no. 6 (1998): 468-82:

When new fields become amenable to experimentation, the first effort is usually focused on finding appropriate ideas, models, concept, to systematize and organize the new material. ... It might also suggest relations to other already existing scales or to the constraints of general laws. There is no general procedure to recognize or identify a new scale—it is usually done by trial and error, case-by-case.

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## ENVIRONMENT

**BETWEEN GOD AND GREEN: How Evangelicals Are Cultivating a Middle Ground on Climate Change** by Katharine K. Wilkinson. New York: Oxford University Press, 2012. 256 pages. Hardcover; \$29.95. ISBN: 9780199895892.

Creation care, neighbor care, and global climate care generate tortured debates among evangelical Christians and scientists. Evangelical Christians both champion and challenge these pressing contemporary “care” problems. The front between competing evangelical factions for control of these issues continues to change for a myriad of reasons. The primary aim of Katharine Wilkinson’s *Between God and Green* is to describe the intersection of evangelicalism and global climate change from the perspective of a secular environmentalist. The author notes that the intersection between evangelicalism and global climate change was unforeseen, stating that “the environmental community may not have noticed action stirring in a more unexpected realm.” This book is a good read that provides a well-organized perspective on the history, current status, and future importance of the engagement of global climate change care by those in the evangelical church.

Having had extensive historical involvement in efforts to convince the public of the need to mitigate global climate change, Wilkinson recognizes the importance of engaging the evangelical community for two primary reasons: First, evangelical Christians comprise a significant fraction of the electorate. For substantive US policy change to occur on this topic, a significant number of evangelical Christians will need to be supportive. Second, “religion ... brings morality and ethics, beliefs and values into the debate” and, thereby, adds power to motivate sustained societal change while also instilling a sense of empowerment and hope. From my perspective as a biology professor at a Reformed Christian college, I resonate deeply with the author’s desire to understand evangelicalism’s past and current stance on these matters, in what direction they are trending, and what it will take for evangelicals to substantively engage in climate change issues.

In *Between God and Green*, Wilkinson carefully details key events in chronological order, and identifies factors at work among evangelical leaders. She begins with the roles played by Lynn White in “The Historical Roots of our Ecologic Crisis” and by Francis Schaeffer in his rebuttal to White’s article. She then covers the efforts by Calvin DeWitt and the Au Sable Institute seeking to describe and

instill a sense of “eco-theology” in evangelicalism. The story culminates by relaying conversations and the “conversions” of Jim Ball, Sir John Houghton, and Richard Cizik, that produced the influential Evangelical Climate Initiative, “Climate Change: An Evangelical Call to Action,” signed by notable evangelical leaders in 2006.

Subsequent chapters of the book relate how various factions within evangelicalism responded to this “Call to Action” and the conflated topics of creation, neighbor, and global climate care. Wilkinson traces the development of the “Call to Action” by individuals and organizations in the expanding evangelical center with a pointed description of actions taken to counter this movement by the opposition on the far right of the evangelical spectrum. Wilkinson describes how the call is perceived by people of faith by outlining points of agreement and dissension as well as how the call may (or may not) have significant impact on efforts to mitigate global climate change in both short- and long-term time frames.

Three themes outlined by Wilkinson lend notable clarity to the issues at hand. First, Wilkinson takes great effort to develop an understanding of plurality among evangelical Christians. There is a focus on describing positions, thought processes, and rationales among those from both the evangelical left and right. Topics of congruence and disagreement are presented. Second, Wilkinson describes the “how and why” behind efforts to politicize discussions of global climate change. The informal, but deeply felt, liaison between the evangelical right and the Republican Party provides clear benefits to both groups, reinforcing a resistance to adopt aspects of the “Call to Action.” Third, two different approaches at implementing the “Call to Action” are contrasted. The Evangelical Climate Initiative seeks to maintain its “grass tops” approach, pushing for short-term gains by advocating policy change by the government. In contrast, the splinter group “Flourish” strives for a “grass roots” approach aiming to “change [the] hearts and minds” of evangelical Christian skeptics. They “see the local church with great potential to engender a movement” over a longer time frame.

Chapter 5 (“Engaging People in the Pews”) provides the results of conducting personal interviews of individuals in conservative evangelical churches. Wilkinson shares individual perspectives on both sides of global climate change belief, illustrating the plurality of opinion within and among churches, demonstrating the depth and rationales of disagreement while illustrating the challenge for the “grass

## Book Reviews

roots” change group. For the “Call to Action” to have its maximum impact (chapter 6, “Sowing Seeds of a Movement”), the author questions the wisdom of having both “grass tops” and “grass roots” approaches while acknowledging that both may have value.

The book reads well, although not always easily. The language can be a bit dense. The main points advanced by the author are presented in the book’s conclusion, but their accessibility is rather difficult without a careful reading of the preceding chapters. The chapter order was sensible, but subsection divisions within chapters were overdone. Subchapter breaks utilized Bible passages heavily, a practice found a bit odd in that this book is written by a secular environmentalist. While appropriate passages were mainly used for these section heads, they were seldom developed within a section’s content. At one point, mid-book, Wilkinson attributes a parishioner’s quote (“let God worry about the climate”) to “Calvinist theology that understands divine sovereignty to be absolute.” A more Calvinist perspective might be to acknowledge a person’s free will to choose or not choose to worry about the climate. A clearer understanding of Calvinism would have provided greater accuracy and helped the author make her point more clearly.

In conclusion, this is a very good book for Christians and secularists alike who want to deepen their understanding of evangelical Christianity, creation, and global climate care. The three related topics are woven together well and give one a helpful perspective as to why evangelicals have responded to environmental issues the way they have, why many evangelicals are increasingly embracing environmental concerns, and how increased future involvement in creation and global climate care by evangelicals could not only be possible but critically important for both climate and religious issues. As the author argues in her final chapter, creation, neighbor, and global climate care movements need evangelical Christians to provide “leadership, theology, ethics, alliances, and engagement” and, at the same time, the evangelical church needs “environmental issues [to] shape religion” as well.

*Reviewed by David Dornbos Jr., Professor of Biology, Calvin College, Grand Rapids, MI 49546.*



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## HISTORY OF SCIENCE

**AFTER THE MONKEY TRIAL: Evangelical Scientists and a New Creationism** by Christopher M. Rios. New York: Fordham University Press, 2014. 260 pages. Hardcover; \$45.00. ISBN: 9780823256679.

What happened to the relationship between science and evangelicalism after the 1925 Scopes Trial? One common answer is, “What relationship?—unless conflict and mutual suspicion can be regarded as a relationship.” According to this take on the drama, most conservative evangelicals remained hostile to reigning scientific orthodoxies, despite the public humiliation of their fallen hero, William Jennings Bryan. As this story goes, evangelical anti-intellectualism, especially as manifested by stiff opposition to biological evolution, historical geology, and biblical criticism, endured well into the second half of the twentieth century when it resurfaced publicly as the young-earth creationism advanced by the Creation Research Society and popularized by the Institute for Creation Research. Ample evidence exists to support this narrative of evangelical opposition to modern science, and historians of recent decades have given it due attention, perhaps even too much attention.

Such fixation upon this version of the engagement between evangelicalism and science suggests that theologically conservative Christians simply cannot take modern science seriously, but rather, that they can only take up arms against it. This new book by Christopher Rios offers a corrective to such a conclusion as it considers episodes in the twentieth-century forging of a “new creationism” by theologically conservative evangelical scientists who “refused to take up arms against modern science—those who sought to show the compatibility of biblical Christianity and mainstream science, including evolution” (p. ix).

This book should be of keen interest to American Scientific Affiliation members. After all, what group is not interested in itself? Rios, now Assistant Dean in the Baylor University Graduate School and part-time lecturer in religion, has produced a very readable historical investigation of two groups of evangelical scientists, The American Scientific Affiliation (ASA) and the Research Scientists’ Christian Fellowship (RSCF). Both organizations originated in the 1940s, the former in the United States, the latter in Great Britain. Accordingly, the book is set up wonderfully to offer a transatlantic comparative study of the twentieth-century’s nonmilitary evangelical engagement with science. Although the two organizations began in distinct contexts, separated by an ocean,

and possessing differing founding aims and aspirations, by the mid-1960s they had found one another and begun to work together in the study of similar issues.

The setting of their first official contact—a moment Rios has chosen as a focal point in his narrative—was a small July 1965 conference in Oxford, England, the majority of attendees of which were members and representatives of either the ASA or the RSCF. Although Rios's account of the conference consumes barely five of the book's pages and he admits that "lasting effects of the conference are difficult to discern" (p. 127), the year 1965 functions nicely as a mid-way point in a book whose temporal focus begins in the early 1940s and concludes, for reasons that are not well explained, in 1985, the year that the ASA and the RSCF gathered for their first official joint meeting. The book's six chapters offer a tidy and, perhaps, too symmetrical arrangement. Following a brief introduction that situates his study with respect to its "creationist context" and that reviews the historiography of the "conflict thesis," Rios turns in his opening chapter to a sweeping and breathlessly hurried survey of evangelicals and evolution from before Darwin to the 1940s. The chapter reads a bit like the compulsory "background" material one would expect to find in a doctoral dissertation; this is understandable in view of the book's being a revision of Rios's Baylor PhD dissertation. This first chapter is quite good, given its ambitions, even if marred by mistakes that betray haste. For example, he identifies "the discovery of radioactivity in 1896" on page thirty-five and then on the next page refers to "the discovery of radioactivity in 1898." While lapses of this sort may be minor, the book contains them in sufficient number to distract.

The real meat of the study comes in the next five chapters: two on the period from the 1940s to 1965 (one each on the ASA and RSCF), and two focusing on 1965 to 1985 (again, one each on the ASA and RSCF). The pre-1965 chapters are separated from the post-1965 chapters by a brief middle chapter surveying the history of young-earth creationism from the 1960s to the 1980s. Although Rios notes the occasional points of contact between the ASA and the RSCF, their respective stories, especially before 1985, are largely independent. This renders not a single tale of evangelicals and science, but instead, dual narrative threads between the covers of one volume.

Still, there is a unifying concern. Rios's investigation clearly refutes the contention that theologically conservative evangelicalism entails antievolutionism. After reading the book, an old quip from H. L.

Mencken came to mind. When asked if he believed in infant baptism, the journalist allegedly replied, "Believe in it? Heck, I've seen it done!" Similarly, this book functions as an answer to the question, "Can Bible-believing conservative evangelicals accommodate the teachings of modern science, especially evolutionary biology, and retain their faith?" Rios effectively says, "Yes! I've seen it done."

The stories of how it was done reveal that the task was not easy and often fraught with controversy. The ASA and the RSCF were both born in the post-War era during which the cultural hegemony of big science was waxing as increasing numbers of young people entered colleges. The perception that these changes posed theological threats was not unwarranted, given the long-standing evangelical concerns about evolutionism and the corollary fear that modern science underwrote non-Christian naturalistic philosophies. As these groups sought to defend traditional evangelicalism's compatibility with the day's best science, each was challenged to navigate between the extremes of fundamentalist Bible-science notions on one hand, and theological liberalism on the other. As an example of the former, a resurgent fundamentalist young-earth flood geology persistently challenged the ASA and its claim to the creationist moniker, while, as an example of the latter, the theological evolutionism of Teilhard de Chardin challenged the RSCF to resist the period's theological liberalism.

Among the mechanisms that these groups embraced to facilitate their respective accommodations of modern science, the concept of "complementarity," as articulated by C. A. Coulson and especially Donald MacKay, figured prominently. Rios does a nice job covering the subject, as he does with his consideration of the ways in which each group endeavored to maintain its high view of scripture amidst contentions that science might compromise belief in biblical inerrancy.

One undeniable truth about the leading characters from both the ASA and RSCF is that they were fascinating, highly educated, faithful, and serious Christians. Rios's book might have deepened readers' appreciation for this by more fully introducing his readers to these people as the colorful and atypical human beings that they were. Instead, the book relies rather heavily on published materials as it engages principally with their ideas. The result is an exercise in drier intellectual history than the story might otherwise have been. There are, of course, exceptions to this generalization that colorfully emerge from Rios's periodic engagement with archived correspondence.

## Book Reviews

As an attempt to fill a gap in the history of science and religion by considering mid-twentieth-century evangelical scientists, the book meets with real success, if not unqualified success. The very brevity of the book—only 175 pages of text following the introduction—demands that important material be omitted. For example, Rios's treatment of the ASA's consideration, in the late 1960s and 1970s, of social issues "beyond evolution" could have at least mentioned, if not considered in depth, the 1970 book prepared under the auspices of the ASA, *Our Society in Turmoil*. And following the success of Carl Sagan's book and television series, *Cosmos*, ASA leaders began in 1984 to plan a five-program response that they hoped would rebut Sagan's naturalism before a nationwide audience. Neither this effort nor the publication of the contemporary ASA booklet, *Teaching Science in a Climate of Controversy*, which was distributed to 60,000 teachers in 1986, was even mentioned in Rios's book. And while exploring the RSCF's association with Inter-Varsity Fellowship, he neglects to treat comparably the ASA's association with such entities as the Moody Institute of Science or with the Evangelical Theological Society, an organization with whom the ASA held numerous joint conferences during the 1950s and 1960s. Examples of such omissions are many.

Nevertheless, *After the Monkey Trial* deserves careful attention, especially by readers of this journal. Even if the book does not provide the last word treating the history of twentieth-century evangelical engagement with science, what it does provide is important and very interesting. Rios shows how these devoted evangelical men, and a few women, engaged with science, accommodated their faith to its claims, and wrestled with their young-earth Christian brethren who strove to deny them any right to identify as creationists while they embraced evolution with their evangelical hearts.

*Reviewed by Mark A. Kalthoff, Salvatori Chair in History, Professor and Chairman, Department of History, Hillsdale College, Hillsdale, MI 49242.*

**THE SLAIN GOD: Anthropologists and the Christian Faith** by Timothy Larsen. New York: Oxford University Press, 2014. 256 pages. Hardcover; \$45.00. ISBN: 9780199657872.

Throughout its history, anthropology has had an uneasy at best, hostile at worst, relationship with Christian faith. Most anthropologists have been atheists, and the discipline has forbade theological speculation in its discourse. Anthropology sees itself as the rational, secular, and natural science of people. The exclusion of religious thought from critical analysis has been far from a benign division of

labor. Anthropologists have a reputation for being openly hostile to Christianity. Their antagonism is especially strong for missionaries, who are deemed agents of the West, destroying traditional cultures. But, more than this, anthropologists find it difficult to relate to and understand religion as a whole, even the religions of the cultures they are investigating. As a result they have developed theories of religion that reduce it to functions of cultural arenas they understand better: cognitive uncertainty, psychological need, social unity, political legitimacy, symbolic meaning, and so forth.

Timothy Larsen is a historian at Wheaton College who studies nineteenth- and twentieth-century British Christian faith and thought. In this book, he examines six well-known British anthropologists, intertwining biography with anthropological theory. The six anthropologists studied are ordered historically, but also form a "ring composition" with regard to their individual relations to Christian faith, from atheists to believers to animist.

First is Edward Tylor, the founding "father" of anthropology in England. Tylor was raised as a Quaker, but gave up his faith and became openly antagonistic especially to Catholicism. He denied the existence of the spiritual world entirely in his attempt to create a positive science of people that would be legitimate in the secular academy. Larsen says that Tylor had locked religion and science into a "zero-sum struggle" (p. 25), and that once he had allowed reason in, "there was no apparent way to stop scepticism from undermining religion as a whole thereafter" (p. 35).

Next is James Frazer, the author of the popular classic in comparative religions, *The Golden Bough*. Frazer too had come from a Christian home, but embraced skepticism, "rationalism," and science as the replacement for religion. Larsen suggests,

While Frazer was ostensibly ... [making] savage practices more familiar and understandable, his covert intention was in all likelihood the reverse: to make familiar religious practices that his readers had always accepted as understandable come to appear strange and savage. (p. 48)

E. E. Evans-Pritchard, whom Larsen identifies as the center of the ring (p. 221), was a believing Christian throughout his adult life. He is a complex figure: the son of an Anglican clergyman who encountered real personal difficulties in adulthood (a drinking habit, a wife who committed suicide, and psychological war wounds), but who converted sincerely to Catholicism. His church attendance was not regular, but his faith included a strong personal devotional

life and an intellectual defense of religious belief and practice. This defense was conducted, first, by a demonstration of the rationality of so-called “primitive” religions; next, by a challenge to anthropology to reject positive science in favor of a humanist approach to social history (p. 110); and then, by a rejection of the notion that religion can be reduced to other arenas of life. “He who accepts the reality of spiritual beings,” stated Evans-Pritchard, “does not feel the same need for such explanations” (p. 99).

Mary Douglas, Larsen’s next anthropologist, was raised and remained a practicing and devout Catholic for her entire life. She especially defended the church and wove her commitment to it into her theorizing about the nature of hierarchy and its necessity for social life. Douglas is followed by Victor and Edith Turner, who began their adult married life as atheists, but converted to Catholicism as a result of their anthropological work on ritual in Africa. Victor Turner openly defended Christianity when describing his conversion:

It seemed more reasonable to hypothecate a purposive somebody behind the structure of the universe than a purposeless something ... if materialism be right, our thoughts are determined by irrational processes and therefore the thoughts which lead to the conclusion that materialism is right have no relation to reason. (p. 185)

Edith, however, wandered into quasi-animist thinking after Victor’s death, and now defends the existence of the “supernatural” in ways that would have helped Tylor make his point that it is all nonsense. The ring is complete.

Larsen’s book is helpful in providing background information for the history of the discipline and for demonstrating the complexity of its relation to Christian faith. The anthropologist La Fontaine had said, “Once you stop religious thought, you start thinking anthropologically” (p. 167). Yet, as Larsen points out, theology has been there all along as a conversation partner (p. 225). All of these anthropologists, whether hostile or friendly to faith, used biblical words, concepts, and analogies in their theorizing. Larsen concludes that “Christian thought continues to invite and repel anthropologists, to intrigue and to haunt them, even in the second half of the twentieth century and into the new millennium” (p. 226). Though a bit inclined to “purple prose,” the book will be valuable to Christian students and scholars of anthropology who would like to find ways to incorporate faith into the discipline.

*Reviewed by Eloise Meneses, Professor of Cultural Anthropology and Director of the MA in Theological and Cultural Anthropology at Eastern University, St. Davids, PA 19087.*

**THE TERRITORIES OF SCIENCE AND RELIGION** by Peter Harrison. Chicago, IL: University of Chicago Press, 2015. 300 pages, including 100 pages of notes, bibliography, and index. Hardcover; \$30.00. ISBN: 9780226184487.

A revised version of Peter Harrison’s 2011 Gifford Lectures was recently published as a monograph under the title *The Territories of Science and Religion*. The book lays out an in-depth study of how the modern concepts of religion and science emerged in European history and grew to take on the prominent roles that they have today. Harrison identifies the medieval virtues of *religio* and *scientia* as important progenitor concepts, and by following the story of their evolution, he expands a historical narrative developed in his previous work. The lecture format makes for a bit of redundancy from chapter to chapter, but the interleaving themes are complex and merit repetition. In any case, the writing is crisp, the documentation is extensive, and the arguments are clear. One of the book’s most original and important contributions is the recovery of a close historical connection between the world of value and moral normativity on the one hand and the world of factual knowledge and belief on the other. In the words of the author, the focus on virtues offers “an entirely new perspective on these issues” and allows us “to more closely relate the history of moral philosophy to the history of science” (p. xi).

As Harrison reminds us straightaway, our modern concepts of religion and science are not permanent categories that map neatly onto distinct territories or natural kinds of human activity. To use his geopolitical example from chapter 1, our concepts of religion and science are historically contingent in the same way that our concepts of Israel and Egypt are. It is meaningless to talk about the relationship between the nations of Israel and Egypt in the year 1600, because those nations did not exist at that time. Similarly, it does not make much sense to discuss the relationship between religion and science in 1600, because people then did not organize their thinking in this way. Of course, there were ideas, beliefs, and practices through which people served God and conceptualized physical reality, just as there were lands and territories in the region where the states of Israel and Egypt lie now. However, prior to the modern era, people’s activities were not aggregated in ways that correspond to our current categories of religion and science. The use of our categories to explain those activities can only obscure our understanding of historical reality. The historian’s job is to reverse the order of explanation, so as to show us where our modern concepts came from, and thereby to explain how we got from there to here.

## Book Reviews

One of Harrison's previously established theses is worth summarizing here. It starts with the Protestant Reformation, which rejected both the allegorical mode of interpreting the Bible and the related emblematic tradition that gave spiritual meanings to natural things and creatures. Prior to this shift, the two books of scripture and nature were understood to be consistent cross-references. The allegorical and emblematic hermeneutical strategies were mutually reinforcing. However, once these forms of reading were prohibited, Christians were left with only literal meanings in the words of scripture and no meanings at all in the things of nature. This crisis of meaning created a void that the newly emerging experimental philosophy was well suited to fill. Harrison's *The Bible, Protestantism, and the Rise of Natural Science* pursues these arguments in detail and establishes that the rejection of traditional hermeneutics played an important enabling role in the development of belief-testing empirical methods during the seventeenth century.

In *Territories*, Harrison rehearses this earlier thesis but focuses more intently on a second Protestant rejection—namely, the abandonment of the teleological framework of Aquinas's moral philosophy. As this framework dissolved, a comprehensive conception of Christian piety was lost, and virtues such as *religio* and *scientia* ceased to be parts of an integrated moral picture. Consequently, just as the denial of allegory left words and things with few ways of pointing toward divine meaning, the denial of teleology left individual people with no sure way of directing their capacities toward divine purposes. Moreover, without meaning or purpose to orient them, the essences of worldly creatures and human capacities became difficult to see. New uncertainties surrounded the notions of *what things are* as well as the notions of *what things are for*.

With meaning and purpose up for grabs, Protestant Europe became a "wild West" of Christian philosophy. Individuals and sects explored various forms of rationality and piety, while governments, churches, and other emerging social institutions tried to establish new regimes of order. Although the political dynamics of this period are not Harrison's main concern, acknowledging them here may help to explain his central argument. In *Territories*, the shift that defines modernity is the relocation of moral and intellectual standards from the "internal" world of individual intentions to the "external" world of society and shared policies. Modern concepts of religion and science are both products of this externalizing shift. As such, they play key roles in defining and maintaining societal order.

The movement from *religio* to "religion" in the seventeenth century is the first case in point. During this period, new levels of social discord were fueled by doctrinal controversy and radical sectarianism. The adjudication of conflicts called for judgments based on acceptable criteria, and these were to be found in Protestant confessional documents and the evidence-generating methods of the emerging experimental philosophy. In this procedural context, the moral virtue *religio*, which previously steered the human heart toward God, was flattened into a mere willingness to accept certain doctrinal tenets. Creedal statements became the legal checks and balances of faith. Eventually it was understood that "one's religion" consisted in the system of beliefs to which one subscribed. Moreover, according to Harrison, there was a growing sense that personal faith could be properly directed toward God only if it were first directed toward (or through) correct doctrine, or "true religion." This development represents a decisive step in the creation of our modern concept of religion.

The historical path of *scientia* is also closely tied to social realities. Traditionally, this virtue corresponded to habits of intellectual rigor in studies of mathematical, geometrical, and logical demonstration. Its purpose in medieval moral philosophy was the cultivation of rational faculties that served the higher purposes of the theological virtues. In the seventeenth century, proponents of the experimental philosophy initiated their methodological revolution by combining the demonstrative elements of *scientia* with principles of observation and induction. The arguments supporting this "mixed methods" innovation took Christian moral philosophy in a new direction. The main goal was no longer the deepening of each person's relationship with God, but rather the advancement of knowledge and the betterment of society. Along with this change came a new calling for natural philosophers to contribute to a storehouse of knowledge that might be accessed by others and used for practical purposes. In these changes we see the seeds of the idea that science is an ever-growing body of knowledge that can exist independently outside of the human mind.

In these early stages, says Harrison, "the natural sciences gained considerable social legitimacy through their sharing of intellectual territory with religion" (p. 115). Indeed, the new territory that they shared was not only intellectual but also moral, for a new vision of human progress had taken root. The prospect of achieving societal peace and prosperity is what precipitated the view that religions are sets of doctrines, and it is also what drove the formation of institutions of science, such as the Royal Society.

Harrison suggests that this new vision of progress represents another modern relocation or externalization of human value. To medieval Christians, progress in matters of faith was related to one's internal, spiritual well-being; now progress meant the advancement of external, societal well-being. *Scientia* and *religio* had served the old kind of progress; science and religion would serve the new.

The Christian West spent the better part of two centuries growing into its new philosophical framework. In the absence of allegorical connections, the books of scripture and nature continued to be linked by way of a focus on their common Author. Natural theology took on the new complexion of physico-theology, which churned up new empirical knowledge and regarded the discoveries as indicators of the Creator's wisdom and power. Early modern sciences thus developed the aim of accumulating a storehouse of evidences that could be used for the purposes of theological reflection. As for explanations within the sciences, the rise of mechanistic causation gave footing to a new theological conception in the "laws of nature." With teleological explanations boycotted, natural objects lost their intrinsic causal powers. However, objects could still be understood in terms of their subjection and responses to divinely mandated universal laws. This conception aligned closely with the idea that humans, under the moral law, were called to decipher the laws of nature and to put them to work in fulfillment of the cultural mandate.

So goes the story of Protestantism's role in motivating the development of modern science and technology. However, Harrison points out that Christians were never unanimous in their support of the new kind of progress. In every age, there were those who suggested that something had been lost. Piety was compromised in the "'brain religion' that placed propositional belief ahead of God and neighbor" (p. 115). The moral shaping of individuals was short-changed by a stunted sense of vocation that aimed at the mere accumulation of knowledge. The reality of human fallenness threw a persistent shadow of doubt on the reliability of empirical knowledge. And to top it all off, the societal benefits of "useful applications" were questionable. An important point emerges from these considerations—namely, that Christians have never been unanimous in thinking that science supports faith or serves society in ways that are thoroughly or unambiguously positive.

While the ambiguities of the modern mindset were disturbing to some all along, it was not until the nineteenth century that the concepts of science and religion were renovated once again to create the

impression of a deeply antagonistic dichotomy. This movement was driven by a triumphalist advocacy of science and a low view of the aims of physico-theology. Harrison's primary example is the X Club, which was led by Thomas Henry Huxley and active from 1864 to 1893. This group sought to professionalize science through the exclusion of clerical ranks from the Royal Society and the elimination of God talk in scientific discourse. Owing mainly to such efforts, science came to be understood as religion's opposite, so that by the end of the century, it was easy enough to draw clear boundaries between the two concepts. Moreover, it became possible to construct a tale about their timeless and intrinsic hostilities toward each other, which were purportedly based on deep differences in their understandings of what knowledge is and what its purposes are. The narrative of conflict and warfare was immortalized in the well-known books written by J. W. Draper (in 1874) and A. D. White (in 1896).

The conflict myth haunts us today in more ways than we usually imagine. Harrison's account is important in this context, because it makes us aware of the myth's faulty assumptions and encourages us to avoid repeating the same mistakes. To those who would enter the fray of "science-and-religion," whether by reading or writing, *Territories* offers a number of cautionary lessons. First, the modern concept of religion emerged only during the seventeenth century while the idea of science was still gestating. As a matter of historiographic logic, neither term should be used uncritically to explain the historical situation prior to or during that period. Second, during the nineteenth century, the concept of science was reconstructed in opposition to religion, giving rise to a pairing that is parasitically dependent on the warfare metaphor. Consequently, anyone wishing to describe "the relationship between science and religion" as one of compatibility or cooperation must either struggle to redefine the concepts or remain content in making a category mistake. Third, throughout their history, the modern categories of science and religion have always served a "socialized" conception of human progress. Harrison draws attention to the fact that this conception, too, has a history that tends to be ignored in contemporary discussions.

All of this suggests that there can be productive and unproductive ways for Christians to engage in these discussions. Countering the conflict myth seems to be a worthy goal, but clichéd claims about the alliance of faith and science are unhelpful in this effort. Such claims may represent an attempt to recover physico-theology as a plausible project, but they are no more respectful of historical change than are other forms

## Book Reviews

of nostalgia. As Harrison says, “Advocates of constructive dialogue are thus unknowingly complicit in the perpetuation of conflict” (p. 198). Furthermore, they tend to disregard the principled objections that Christians through the ages have registered against the purported alliance. We may do better by letting these objections echo in the present day, so that our thinking about science and religion is done in full recognition of the possible downsides of accepting the modern idea of progress. Presumably, the notions of piety, vocation, fallenness, and servanthood remain important in Christianity. All of these are at stake in the way we conceptualize the goal of human progress, and therefore also in the ways we imagine science and religion to be serving that goal.

*Territories* leaves us with a difficult challenge. In principle, there is no single characterization of the science-religion relationship, nor any wholly positive or negative set of characterizations, that will suffice in the present day. We face this situation because the categories themselves are not direct mappings of an unchanging reality, but are, rather, products of the social conventions and politics of a tumultuous past. What they mean for us now is largely a matter of the meanings we have inherited from our immediate forebears. However, to some extent it is also a matter of what we are willing to accept. For instance, if we refuse to accept the terms of the conflict thesis, we should also resist making unreflective use of those terms—that is, the terms “science” and “religion”—when we want to make our case. In other words, if we wish to argue for a different way of carving up the territories that science and religion presently occupy, we have to change the terms of engagement.

This line of discussion creates an opportunity for studies of science and religion to make further contact with cultural history and ethics. Harrison begins to show the way by situating his project alongside those of Alasdair MacIntyre and Charles Taylor. MacIntyre is known for his characterization of modern moral philosophy as a makeshift collage of principles drawn from disparate traditions. Harrison likens his own view of science to this picture. Given that astronomy, biology, chemistry, geology, physics, et cetera, have such different histories, there is little reason to believe that an overarching principle should bind them together. Speaking of the situation of the nineteenth century, he says,

The various strategies to pull together particular “scientific disciplines” were successful at rhetorical, political, and institutional levels, but, as a number of contemporary philosophers of science have observed, this does not necessarily confer any metaphysical unity on modern science. (p. 187)

Connections with Taylor’s work, particularly with his signature monographs *Sources of the Self* and *A Secular Age*, are rich with possibilities. Harrison does not cite Taylor extensively but regards his idea of modernity’s “new conditions for belief” as a key component in the story of the emergence of modern religion (p. 189). The projects of these two scholars have always been closely parallel but largely complementary. Taylor has concentrated on political and moral philosophy but has rarely paid careful attention to natural science. Meanwhile, until now, Harrison’s work on science and religion has not brought politics or ethical theory to the fore. One can hope that *Territories* will succeed in initiating a sustained conversation between these two authors. There are gains to be had on both sides of the conversation if the history of science and religion can be integrated successfully into broader historical narratives that help us find our moral bearings in the modern world.

*Reviewed by Matthew Walhout, Department of Physics and Astronomy, Calvin College, Grand Rapids, MI 49546.*

**DEALING WITH DARWIN: Place, Politics, and Rhetoric in Religious Engagements with Evolution** by David N. Livingstone. Baltimore, MD: Johns Hopkins University Press, 2014. x + 265 pages, notes and index. Hardcover; \$39.95. ISBN: 9781421413266.

*Dealing with Darwin* comprises the prestigious Gifford Lectures delivered in 2014 at the University of Aberdeen by David N. Livingstone, professor of geography and intellectual history at Queen’s University Belfast, Northern Ireland. Livingstone is no stranger to religion’s encounter with Darwin. Earlier books, *Darwin’s Forgotten Defenders: The Encounter between Evangelical Theology and Evolutionary Thought* (Grand Rapids, MI: Eerdmans, 1987); *Adam’s Ancestors: Race, Religion and the Politics of Human Origins* (Baltimore, MD: Johns Hopkins University Press, 2008); and a chapter en-titled “Situating Evangelical Responses to Evolution” in *Evangelicals and Science in Historical Perspective*, ed. David N. Livingstone, D.G. Hart, and Mark A. Noll (New York: Oxford University Press, 1999) gave ample evidence of Livingstone’s intellectual interests.

*Dealing with Darwin* has been many years in the making, but well worth waiting for. It is a delight to read, both from a literary and intellectual standpoint. Elegant prose abounds giving evidence of the author’s love of language, coupled with a penchant for alliteration (two of many choice examples may suffice: reading the historical record “I find complexity and contradiction, contingency and complication that defy simple typecasting” (p. 2), or, “place was

personally potent for Darwin" (p. 197). One can almost hear echoes of the author's mellifluous Irish voice as if these lectures were being delivered for the first time. We have a book that reflects Livingstone's long-time interest in developing a geography of scientific knowledge, which is to say, situating scientific knowledge. Signaled in his book *Putting Science in Its Place: Geographies of Scientific Knowledge* (Chicago, IL: The University of Chicago Press, 2003), we acquire a good sense of the framework shaping Livingstone's historical approach. There he argued that "Science is not to be thought of as some transcendent entity that bears no trace of the parochial or contingent" (p. 13). Rather, science needs to be qualified by temporal and regional adjectives. Site, region, and circulation are all intrinsic features of science and its making. So now the question can be raised: Do religious responses to Darwin similarly differ from site to site? And would this be true even in ecclesiastical communities bound by the same confession?

*Dealing with Darwin* is an answer to that pressing question. The subject of this well-researched book describes how Darwin's *The Origin of Species* was received by differently located religious communities, all within the orbit of Scottish-Presbyterianism. In his narrative, Livingstone wishes to avoid essentialist categories. There is no overt effort to delineate the definitive interaction of science and religion. Any claims to universality, any appeal to -isms, would call into question the inherent geographical nature of disparate communities' responses to science.

Chapter 1, "Dealing with Darwin: Locating Encounters with Evolution," delineates Livingstone's framework of interpretation. It employs two key analytical tools: "geographies of reading" and the "dynamics of speech spaces." Geographies of reading "... mean the different ways scientific proposals are read in different venues and how they are marshaled in particular places for particular projects." Speech spaces "... refer to how specific venues condition what can and cannot be said about new knowledge claims, how things are said in those settings, and, just as important, how they are heard. Location and locution are intimately involved" (p. 2).

Edinburgh, Belfast, Toronto, Columbia (South Carolina), and Princeton are the theological communities of interest in *Dealing with Darwin*. Why is the response so different in each of these five locations? One might not expect this particular result since these communities all hold to the Westminster Confession. However, as Livingstone shows, the local, the immediate, the social, and the intellectual temper of each Presbyterian community influence

the specific response to Darwin in each of these five communities. Livingstone crafts a "double-dealing" with Darwin:

... I am concerned to show how Calvinist communities in different cities *dealt* with the Darwin phenomenon ... [And] ... I am interested in exploring the different *deals* these communities struck with Darwin in order to maintain fidelity to their own traditions ... On both counts, I will insist, place, politics, and rhetoric were decisive in how the encounter was conducted and how evolution was judged in these different venues. (p. 26)

Chapters 2–6 are devoted to a discussion of each community. The title of each chapter gives the reader a hint of the specific background: "Edinburgh, Evolution, and Cannibalistic Nostalgia"; "Belfast, the Parliament of Science, and the Winter of Discontent"; "Toronto, Knox, and Bacon's Bequest"; "Columbia, Woodrow, and the Legacy of the Lost Cause"; and "Princeton, Darwinism, and the Shorthorn Cattle." The narrative recounts a relatively facile accommodation of Darwin in Edinburgh; a hard-nosed, and rhetorically charged, denunciation in Belfast; a measured employment of evolutionary rhetoric (in teleological speak) for "both scientific and theological ends" in Toronto; a repudiation of Darwin's account of human origins (in an effort to maintain the structure of southern society) in Columbia, and a guarded toleration (a "Calvinizing" of evolution) in Princeton. In each setting, local contexts are highlighted in sophisticated detail. What was meant by Darwinian evolution differed from place to place. What was said, and could be said in debates, reflected local politics, new theological trends such as the rise of higher criticism, and affected the academic careers of various adversaries. Although Livingstone had described responses to Darwin in Edinburgh, Belfast, and Princeton in some of his previous scholarship, we now have a more mature account of not only these settings, but Toronto and Columbia as well.

In the last chapter (chapter 7, "Darwinian Engagements"), Livingstone reviews his narrative and extends his analysis to some other localities. He suggests that the "power of place" can be seen, as well, in the responses to Darwin of nineteenth-century Russian naturalists analyzing the Siberian wilderness or New Zealand evolutionists reflecting on their colonial setting. Livingstone also draws on two contemporary examples: Keith Bennett's questioning of the driving force of adaptation in evolutionary change at a meeting of the International Paleontological Congress in 2010, and Jerry Fodor's recent foray into cultural politics in *What Darwin Got Wrong* (New York: Picador, 2010), the book he coau-

# Book Reviews

thored with Massimo Piattelli-Palmarini. Reflecting on these recent brouhahas, Livingstone concludes: “If my suspicions are well founded, I believe it also shows just how pervasive—in one way or another—place, politics, and rhetoric continue to be in dealing with Darwin” (p. 207).

*Dealing with Darwin* is a book to be read by anyone interested in the reception of Darwin’s account of evolution. We come to learn that the reception of new ideas by a community is far more culturally subtle and complex than we often admit. Could it also be true of the religious communities of which we are a part? As one reads this book, undoubtedly, parallel situations will come to mind since we are naturally embedded in our own unique cultural context.

Reviewed by Arie Leegwater, Calvin College, Grand Rapids, MI 49546.



**LAYING DOWN ARMS TO HEAL THE CREATION-EVOLUTION DIVIDE** by Gary N. Fugle. Eugene, OR: Wipf and Stock, 2015. 308 pages, index. Paperback; \$35.00. ISBN: 9781625649782.

This book calls on conservative evangelical Christians to take seriously the well-supported scientific understanding that all living things are the result of an evolutionary process continuing over millions of years, never disrupted by a relatively recent global flood. The scientific community is also called on to be sensitive to people’s spirituality when science is being taught. The author has excellent qualifications for this task: he is emeritus professor of biology at Butte College, Oroville, CA, with over thirty years of award-winning experience teaching biology, earned his PhD in ornithology at the University of California at Santa Barbara, and is active in his congregation of the Presbyterian Church in America.

After the foreword by Darrel R. Falk, former President of the BioLogos Foundation, which expresses the book’s intent, Fugle opens with his testimony. Having lost interest in church as a youth, he came to faith in adulthood and is now convinced that both creation and evolution are true. Fugle affirms *evolutionary creation* and rejects *spontaneous creation* happening in either a young or old earth, as well as intelligent design, arguing that these concepts can turn people away from faith or prevent believers from understanding science.

Part II argues that an earth created recently but appearing old is deceptive. Fugle also argues that pain and physical death were not absent from the

original very good creation. Spiritual death, not physical death, resulted from the fall of humankind. He uses a variety of writings from Augustine through the Reformers to nineteenth- and twentieth-century evangelicals to support his position. Part III focuses on scientists and science education, arguing that methodological naturalism does not exclude God from life, as philosophical naturalism does. Furthermore, science and faith cannot be non-overlapping magisteria, because the natural world is a subset of all reality over which God is sovereign. Fugle explains why young earth creationism (YEC) and intelligent design (ID) must not be taught as science. However, he asks for religious sensitivity from science educators. Unfortunately, educators outside the church are unlikely to pick up this book and get that message.

Having prepared readers to understand why evolution is important, Fugle describes how homology, fossils, biogeography, molecular genetics, and evolutionary mechanisms are explained by evolutionary theory in Part IV. He argues that YEC lacks this explanatory power. To help those with little background in science, Fugle uses well-known animals—especially whales—as examples. Part V addresses how the scriptural accounts of creation, the fall, and Noah’s flood can be understood so that Christians can avoid being misled by advocates of YEC or ID. He offers as a precedent the way teachings on the heavenly bodies were reinterpreted after science showed that the solar system is centered on the sun. While the early chapters of Genesis can be seen as entirely figurative or symbolic, Fugle believes it is better to consider that historical people and events underlie them, and he favors the option “that Adam was singly taken aside by God from physically evolved humans and the image of God was divinely imparted to him.” Later, humans abused the creation, and its “bondage to decay” (Romans 8:21) relates to their sinful, corrupt actions, rather than to the normal mechanisms of nature, which should not be regarded as dysfunctional. He suggests that the account of Noah’s flood may have its basis in an inundation of the floodplain around the Tigris and Euphrates Rivers and that Sunday school lessons picturing pairs of animals coming from all over the world to the ark are inaccurate and can lead either to mistrust of science or to questioning the foundations of Christian faith. Finally, Fugle closes with a brief Part VI as a summary. He uses three hundred references (nine from ASA sources), and over one hundred scriptural passages are cited. The book includes a six-page index.

*Laying Down Arms to Heal the Creation-Evolution Divide* is good medicine to apply to a sore area in

the church. Among books advocating evolutionary creation, it has particular strengths: a strong concern for evangelism and pastoral care, practical advice for education both Christian and secular, and a lovingly respectful but firm attitude to readers who may be skeptical. Sensible solutions to difficulties with certain passages in the New Testament are offered. The book focuses on central issues, so that some topics, such as longevity of the patriarchs, are not discussed. Sharing his excitement and joy in knowing God better by understanding the wonders of evolution, Fugle succeeds in showing why evolutionary creation is a “wholly accurate, encompassing and positive view.” ASA members should get this book into their church libraries, and encourage their pastors to read it.

*Reviewed by Charles E. Chaffey, Professor Emeritus, Department of Chemical Engineering and Applied Chemistry, University of Toronto, Toronto, ON M5S 3E5.*

**THE WORLD IS NOT SIX THOUSAND YEARS OLD—SO WHAT?** by Antoine Bret. Eugene, OR: Cascade Books, 2014. 128 pages. Paperback; \$16.00. ISBN: 1620327058.

There are many complicated background issues that contribute to the ongoing science-religion debates—enough to render simple resolution of disparate viewpoints difficult at best. I have often noted that even when talking with friends whose viewpoints are very similar to my own that we have radically different points of emphasis, foundational assumptions, and ways of communicating our best present understandings. Within the community of believers we have a responsibility to continue the conversation while we follow the advice of St. Peter as we discuss and argue with “gentleness and respect.”

With such a pugnacious title, one might expect Antoine Bret’s book to be a harsh polemic against the young-earth creationist (YEC) perspective. While Bret’s concerns with YEC views are sincere and urgent, the reader will not doubt his genuine desire to “strengthen the faith of many.” Bret, who has held university positions in Spain and France as well as serving as a minister in Madrid, is an excellent writer with a keen intellect and a great knowledge of the content and habits of thought in the field of physics.

This book provides a physicist’s perspective on the narrow question that it considers. Bret makes peripheral reference to scientific issues outside his specialty area but throughout this brief book—whether addressing his conception of science, the particulars of scientific dating techniques, or even his discussion of biblical interpretation—he speaks with the voice of a physicist.

Bret begins by providing a clear confession of his faith, establishing his *bona fides* as a traditional Nicene Creed Christian. He then considers two issues of biblical interpretation before turning his attention to questions of physical law. In the first, he considers passages in scripture that attribute active roles for God in nature to which natural explanations can also be applied, as in the example of Matthew 5:45, “God causes his sun to rise.” In this and many other examples in the Bible, God is said to be responsible for something that can also be explained scientifically. Considering scriptural examples across a range of scientific disciplines, Bret makes a providential case against the “God of the gaps” perspective, saying “the premise that any natural explanation means that God was not involved is *biblically* flawed,” and that “God’s role does not stop when the textbook starts. He is in the textbook as well.”

Chapter two addresses the question of whether Genesis 1 should be read literally. First appealing to writings of early church fathers, including Origen and Victorinus, and then citing examples from both Testaments that are clearly symbolic or poetic, Bret argues that the Bible contains verses that must be nonliteral, and that others “are likely to be so and still others *may* be so.” Sorting out which is which may be difficult, but “the reliability of the Bible is never at stake—only the reliability of its interpreter.”

The third chapter discusses the nature of science in the context of some commonly held misconceptions. Bret’s choice of topics in this section is thought-provoking and illustrative of the deeply personalized approaches to scientific philosophy that one finds among different individuals. He does not directly take on the question of “what is science?” that tends to divide theistic scientists in the YEC community from methodological naturalists, but works his way through an interesting discourse on the laws of nature that emphasizes their progressive development, discussing the principle that “new laws have to *contain* the old ones,” the idea of a “validity domain,” and the importance of the “supervisors” of new scientific developments: logic and observation. By citing examples of misconceptions, Bret defends the objectivity of the scientific community (specifically physicists)—a community that he asserts does *not* have any axe to grind against the Bible, that strives continually to *disprove* its own theories, and that utilizes a literature system that preserves the integrity of the enterprise. All of these discussions are illustrated with well-chosen physics examples along with diagrams and equations that strengthen the presentation.

## Book Reviews

The final two chapters make Bret's scientific case for an old earth. Rather than comprehensively considering the many arguments and pieces of data in their totality, Bret has prudently restricted himself to a more in-depth scientific treatment of just two issues, explaining that

I won't review every single one of these evidences, for two reasons: first, I want to keep this book short, and second, I don't want to leave my area of expertise and so risk being inaccurate.

The two dating methods that he considers are starlight transit and radiometric dating. For a reader seeking knowledge about the science involved in determining the age of the earth, these final chapters provide a wealth of information—lessons taught by a master physics teacher whose instructional approach is entertaining and enlightening. Data is wielded, diagrams are marshaled, and the physics is illuminated. Being familiar with the YEC arguments in these areas, Bret addresses the question of whether the assumptions necessary for the veracity of the two methods, i.e., the constancy of light speed and radioactive decay rates over time, are valid or not. Along with reviewing the procedures used to determine astronomical distances, he argues that as we look back into the past that comes to us from distant starlight, we can observe the constancy of these values—because the values are intimately associated with the laws of electromagnetism and nuclear physics which can be seen to be proceeding then as now.

There is much detail to consider in Bret's scientific discourse—some of which is reserved for two appendices. Any scientific popularization must necessarily choose a level of presentation and some will find this book a daunting read in spite of the author's best efforts at clarity. It is for this reason that many who contemplate this debate within our Christian community end up trusting the authority of one author or another, probably identifying and agreeing with those with whom they feel a kinship. Bret has made a good effort to frame an objective presentation of these physical results, and it would be difficult to find many trained physicists who would question the technical merits of the presentation.

A brief but dense conclusion to the book makes it clear that Bret fervently wishes to change minds, hoping that believers are "able to look freely at the teachings of science on any topic without feeling that our faith is being threatened." While young-earth creationists have sincere concerns that naturalistic origins theories pose a threat to Christian faith, the motives of the old-earth group are likewise authentic, as Bret explains:

In a similar way, thousands of people this year will commit spiritual suicide for nothing. They will read a book, watch a documentary, or go to college, and be confronted by the evidence for an old universe. Then they will remember the young universe theology they were taught and relegate the Bible to the level of an interesting fairy tale, at best. Thousands this year will lose their faith because no one has told them that both "God causes his sun to rise" and "the sun rises because the earth rotates" are *true*.

Perhaps some will read this quote as a contradiction of my earlier point about whether this book is a "harsh polemic," or may question the degree of "gentleness and respect" on display. But the YEC community must allow that Bret and other old-earthers are no Richard Dawkins, bent on stamping out Christian belief and other "harmful superstitions," but fellow children of God who want the best for their people—even as do they. The dialogue is difficult, but I would recommend this book to interested readers, regardless of whether they already agree with Bret or would be seeking out the other side of the argument.

*Reviewed by Brent Royuk, Dean of Arts & Sciences, Concordia University, Seward, NE 68434.*

## PHILOSOPHY & THEOLOGY

**FROM TEILHARD TO OMEGA: Co-creating an Unfinished Universe** by Ilia Delio, ed. Maryknoll, NY: Orbis Books, 2014. 256 pages. Paperback; \$30.00. ISBN: 9781626980693.

When Pierre Teilhard de Chardin died in New York City on Easter Sunday, 1955, the 73-year-old priest-paleontologist-philosopher was out of sorts with his church. The Vatican had repeatedly forbidden the publication of his philosophical works, and would continue to do so for decades to come; they further forbade the inclusion of his already-published books in Catholic libraries and bookstores. It is therefore doubtful that he or any of his close associates would have anticipated the degree of respect his name now generates, or the amount of scholarly work conducted, both inside and outside the church, to explore his ideas. Teilhard seems to be even timelier in the twenty-first century than he was in the twentieth, and is attracting a new generation of readers and fans.

*From Teilhard to Omega: Co-creating an Unfinished Universe* picks up a number of threads of Teilhard's ideas and attempts to advance them more fully. Issued by a respected Catholic publishing house,

written by a slate of respected Catholic scholars, and edited by the accomplished Ilia Delio, this embrace of Teilhard comes from within his own church. Delio is Director of Catholic Studies at Georgetown University and previous Professor and Chair of Spirituality Studies at Washington Theological Union. Much like Teilhard himself, Delio crosses the professional divisions between science and religion (holding dual doctorates in pharmacology and historical theology) but may be best known for her writings on spirituality. A lay Franciscan, she is a colleague and occasional copresenter with Father Richard Rohr, a New Mexico-based Franciscan spiritual teacher with a broadly ecumenical reach.

This volume is organized around the central Teilhard dictum that “the universe is still coming into being.” It is Teilhard’s evolving cosmos that is the focus here, along with the end to which it is evolving and the God who guides this process. For those unfamiliar or only casually familiar with Teilhard’s arguments, the first chapter (“Teilhard de Chardin: Theology for an Unfinished Universe” by John F. Haught) lays a scholarly but accessible groundwork for Teilhard’s evolutionary consciousness. Bemoaning a faith still moored in a premodern or early modern perspective, Teilhard sought to create a “metaphysics for the future” that encouraged a departure from static or even pessimistic visions of the future and instead offered the promise of an “omega point,” where all things converge into each other and into Christ. Teilhard the scientist, Teilhard the historian, and Teilhard the theologian all looked forward “with hope and love” because the cosmos had a purpose toward which it was being continually created.

Part One of this collection of thirteen essays explores this union of “theology and evolution” and includes not only the chapter by Haught, but also explorations of “Sophia: Catalyst for Creative Union and Divine Love,” “Evolution and the Rise of the Secular God” (by the book’s editor), “Teilhard’s Vision as Agenda for Rahner’s Christology” (which explores the influence that Teilhard had on the influential mid-twentieth-century Catholic theologian), and “Humanity Reveals the World.” As noted, the first chapter is both foundational and accessible.

Part Two addresses Teilhard’s philosophical vision. The first chapter explores the relationship between the thinking of Teilhard and that of Bernard Lonergan, a Jesuit philosopher-theologian. The second chapter in this section explores the relationship between metaphysics and morality (particularly in the political realm) in Teilhard’s thought, and the third defends him from the critiques raised by Sir

Peter Medawar, the mid-century British-Brazilian Nobel Prize-winning biologist and atheist.

Part Three turns to “Spirituality and Ethics for a New Millennium.” It includes chapters on “An Evolving Christian Morality,” “Teilhard de Chardin and the New Spirituality,” and Teilhard as “The Empirical Mystic,” which might now be my favorite description of this unique polymath. But it may be the title of another chapter in this section that best captures the personality and, indeed, the life goal of Teilhard: “The Zest for Life: A Contemporary Exploration of a Generative Theme in Teilhard’s Work” (by Ursula King).

Part Four consists of a single chapter: “Teilhard de Chardin: New Tools for an Evolutive Theory of the Biosphere” (by Luduvico Galleni), which attempts to deliver on the promise that the book be not merely a review of Teilhard’s thought but also an extrapolation of it into new arenas and questions pertinent to our own generation.

It is doubtless true that fewer volumes of essays by multiple authors are being published these days, as they are often of uneven quality and lack thematic coherence. This volume does not suffer from those flaws. While I have called attention to certain chapters (and believe some are more germane to a discussion of Teilhard than others), the contributions here are surprisingly uniform in terms of the quality of their research and insights. There is an occasional hagiographical tone but one expects this from a volume dedicated to the thinking of a particularly influential individual. If one is looking for a biography of Teilhard, a review of his writings, or a general summary of his ideas, other previously published volumes will do that better. This one does what it purports to do: it examines Teilhard’s themes to explore and extrapolate how we might continue to cocreate the unfinished universe in our own time.

*Reviewed by Anthony L. Blair, President and Professor of Leadership and Historical Studies, Evangelical Seminary, Myerstown, PA 17067.*

**ADAM, THE FALL, AND ORIGINAL SIN: Theological, Biblical, and Scientific Perspectives** by Hans Madueme and Michael Reeves, eds. Grand Rapids, MI: Baker Academic, 2014. 352 pages. Paperback; \$26.99. ISBN: 9780801039928.

The debate over the historicity of Adam is well underway within evangelical circles, as witnessed by the *Christianity Today* cover article entitled “The Search for the Historical Adam” (June 2011 issue), Peter Enns’s 2012 Baker book *The Evolution of Adam*, and Zondervan’s publication of *Four Views on the*

## Book Reviews

*Historical Adam* in 2013. Questioning whether or not Adam existed certainly raises serious issues regarding the traditional doctrines of the Fall and original sin. A response by traditionalists and concordists was expected, and this book is just such an attempt.

Editors Madueme and Reeves clearly outline the intent of their book. "Our basic thesis is that the traditional doctrine of original sin is not only orthodox but is also the most theologically cogent synthesis of the biblical witness" (p. xii). The book unfolds in four parts: *Adam in the Bible and Science*, *Original Sin in History*, *Original Sin in Theology*, and *Adam and the Fall in Dispute*.

Of the fifteen contributors, there is only one scientist, a paleoanthropologist, whose contribution comes under the pseudonym "William Stone." He offers a good overview of the prehuman and human fossil record. However, a concordist hermeneutic ultimately directs his interpretation of the scientific evidence. "Stone" admits, "I expect the paleoanthropological record: a. to show that humans belong to a distinct 'kind' from other primates; and b. to be consistent with a single human lineage" (p. 55). Because of these presuppositions, he concludes that Adam and Eve were a "special creation" with "no ancestral lineage" to earlier creatures (pp. 55, 80) and places them "at the root of the *Homo erectus/ergaster* to *Homo sapiens* lineage about 1.8 million years ago" (pp. 78, 80). The obvious problem with this proposal is that *Homo sapiens* do not appear in the fossil record until 200,000 years ago.

The historical contributions are the most valuable part of the book and together they reveal that the Christian tradition fully embraced the doctrine of original sin and a historical Adam and fall. Peter Sanlon's examination of patristic theology underlines that original sin was not invented by Augustine, but was part of Christian tradition prior to him (p. 95). Of course, it was under Augustine's towering influence that the doctrine was explicitly defined and later incorporated into the Council of Carthage in 418 (p. 88). Robert Kolb presents an outline of Lutheran approaches to original sin. He notes that Luther assumed that "without [the doctrine of original sin] it was impossible to understand the Scriptures correctly" (p. 116). Luther contended that "the inherited sin" of Adam completely bound and corrupted the will of every human (p. 109). In this way, he reshaped and darkened the doctrine and rejected any "spark of positive potential in the inborn will" (p. 116). In reviewing the Reformed tradition, Donald Macleod sketches the emergence of realist and federalist views of the relationship between Adam and his

descendants (pp. 137–38). The former is a biological concept that suggests every human was once in the loins of Adam. The latter, which became Reformed consensus, proposes that Adam was the representative head of humanity.

The third part of this book focusses on biblical theology and systematic theology. The central argument is that the coherence of these two theological disciplines is utterly dependent on a historical Adam and Fall and belief in original sin. In dealing with biblical theology, James M. Hamilton exposes the concordist hermeneutic that undergirds his views. He contends that in the early chapters of Genesis, Moses offers "a universal explanation of all things" such as "migratory ranchers" (Gen. 4:20), "musical artistry" (v. 21), and "bronze and ironwork" (v. 22, p. 193). Not only does Hamilton disregard the evidence of Pentateuch source criticism, he seems to be completely unaware of the archeological record, because these three cultural advances do not arise in one generation as stated in Genesis 4. Herding appears 10,000 years ago; musical instruments, 40,000; bronze, 5,000; and iron, 3,000. Regrettably, Hamilton's chapter is stained by polemical slurs against Peter Enns. For example, he contends that "Enns is tone deaf" (p. 197), his work is a "shallow attempt" (p. 203), and for Enns "the Bible bows the knee to the authority of evolution" (p. 196). These comments strike me as those of someone who has not read the work of Enns with any care or objectivity.

In presenting the implications of original sin for systematic theology, editors Madueme and Reeves press all the rhetorical alarmist bells. They contend that "rejecting a historical Adam and original sin would leave us without a recognizable Christian gospel" (p. 210). In addition, they claim that the doctrine of original sin is "an irremovable part of any truly Christian, truly good news" (p. 209). And the alarms ring out even louder when Madueme and Reeves proclaim that if "original sin is denied, the more Christ becomes an example or a teacher instead of a savior ... No incarnation, death, and resurrection would actually be needed" (p. 223). And to conclude, they claim that dismissing the historicity of Adam and the effects of original sin "trivializes sin" and that "salvation need not entail a supernatural regeneration of my heart and very being, for I have no such need or incapacity" (p. 221). A pastoral chapter by Daniel Doriani continues the alarmist rhetoric. He asserts that the doctrine of original sin "must remain at the center of the church's preaching, especially its evangelism. If not for original sin, we would need no incarnation, no atonement, no gospel" (p. 258). As one who rejects both Adam and original sin, I found

these chapters inordinately disturbing in that they seem to view traditional systematic theology as inerrant.

The fourth part of the book includes, in my estimation, the best chapter—Thomas R. Schreiner's exposition of Romans 5:12–19. He begins by stating, "Clearly Paul believes Adam is a historical figure" (p. 271), and argues convincingly that "five times in verses 15–19 judgment and death are attributed to Adam's one sin" (p. 276). Schreiner contends that the "universal consequences of Adam's sin" were not limited to him only because "it introduced sin and death into the world," and he qualifies that "both physical and spiritual death are intended" (p. 272). In attempting to restrict the extent of death, Schreiner claims that reference to "the world" in Romans 5:12 "refers specifically to humans beings" (p. 272). With this being the case, it is not surprising that he completely dodges Paul's reference to the cosmic Fall in Romans 8:20–22. Of course, belief in the cosmic Fall has been falsified by the fossil record. Physical death has been in the world for billions of years prior to the entrance of human sin.

This book is an excellent demonstration of the entrenchment of concordist hermeneutics within modern evangelicalism. All the contributors assume that scripture reveals historical and scientific facts regarding human origins. None deal with the possibility that the biblical creation accounts and Pauline references to Adam are undergirded by an ancient Near Eastern conceptualization of origins, specifically the *de novo* creation of humans. This book also reveals the dictatorial power of Christian tradition and systematic theology, which, at times, seem to function like inerrant texts. It is worth noting that over half of the contributors have connections to Presbyterian theology, including training or teaching at Westminster Seminary or Concordia Seminary. The book might have been subtitled "Presbyterian Perspectives."

Interestingly, the introduction by editors Madueme and Reeves cites Article 31.3 of the Westminster Confession. "All synods or councils, since the apostles' times, whether general or particular, may err; and many have erred. Therefore they are not to be made the rule of faith, or practice; but to be used as a help in both" (xi; their italics). In the light of modern biblical scholarship and the evolutionary sciences, I conclude that *Adam, the Fall, and Original Sin* continues within the Christian tradition that "many have erred." Had this book been written in the sixteenth and seventeenth centuries when the most important evangelical confessions of faith undergirding systematic theology were composed by young earth

creationists (e.g., Luther and Calvin), it would have been excusable. Despite my conclusion, I certainly recommend that evangelicals read this book, in the same way that I encourage my students to read Richard Dawkins and Ken Ham.

*Reviewed by Denis O. Lamoureux, Associate Professor of Science and Religion, St. Joseph's College, University of Alberta, Edmonton, AB T6G 2J5.*

**CAN ANIMALS BE MORAL?** by Mark Rowlands. New York: Oxford University Press, 2012. 274 pages. Paperback; \$24.95. ISBN: 9780190240301.

In this well-written and carefully argued book, Mark Rowlands defends the claim that some nonhuman animals can, indeed, be moral. At the intersection of animal science, moral philosophy, and many faith-based perspectives on morality and human nature, this book is as much about what makes human animals moral as it is about what makes some non-human animals moral.

Rowlands is a much published analytic philosopher and the focus of *Can Animals Be Moral?* is primarily conceptual and philosophical rather than empirical and scientific. He does assume that the scientific evidence makes a *prima facie* case for the claim that some animals, especially social mammals, can be motivated to act by various emotions that have an identifiable moral content. These emotions are all species of concern for the fortunes of others, which he takes to be the hallmark of a moral attitude, such as compassion, sympathy, grief, courage, malice, spite, and cruelty. As a matter of fact, he himself believes that a wide array of animal studies provides us with a growing body of evidence that some animals do, in fact, experience such emotions and are motivated to act by them. But the concern of the book is not to present and evaluate the scientific evidence for such a factual claim, but rather, to clarify and explain the meaning of the central concepts involved in making such a claim; secondly, to develop an extended argument for the claim that some animals *can* be moral subjects but not moral agents; and finally, to defend that claim from philosophical objections that have been thought to be decisive by the vast majority of thinkers in the Western philosophical tradition. In the course of that defense he examines and rejects a deeply entrenched conception of reason and human cognitive functioning that has provided the basis for a widely held paradigm of what it means to be moral, a paradigm incompatible with animals being moral subjects.

The foundation for his larger argument comes in the second chapter, by far the most difficult chapter

## Book Reviews

in the book, in which he explains what it means to ascribe emotions to animals. Emotions are understood as intentional states involving propositional content which is both factual and evaluative. If I am afraid of the large dog that is charging toward me, there is a factual component: I believe that there is a large dog charging toward me who looks vicious. But there is also an evaluative component: this dog is the sort of thing that should be feared. Moral emotions have the same structure except that the evaluative component involves not a prudential “should” but a moral “should.” When I act on compassion for the suffering of someone, I believe that someone is suffering and that the morally right thing to do, what I morally should do, is to help that person. How is it possible to ascribe such intentional states with propositional content to animals when, as far as we can tell, they seem not to be able to entertain or reflect on the relevant propositions in the way that we do, when we experience emotions? The difficulty here arises, according to Rowlands, because we do not understand how animals represent objects in the world to themselves. To deal with this problem, he distinguishes between the *tracking* of a true proposition and the *entertaining* of a true proposition. Emotions, to be legitimate, will track true propositions, but they do not require that the subject of an emotion entertain, or even be capable of entertaining, such true propositions. If this distinction is acceptable, the way is open to ascribe morally laden emotions such as compassion to animals and to argue that they are sometimes motivated to act on them, and to argue further that, when they do, they are acting for moral reasons.

The next step in the argument is to develop and defend a distinction between moral subjects, which animals can be, and moral agents, which animals cannot be. A moral subject is someone who is motivated to act by moral reasons. A moral agent is someone who is morally responsible for, and so can be morally evaluated (praised and blamed) for, his or her motives and actions. For Rowlands, all moral agents are moral subjects but not all moral subjects are moral agents. The concepts of moral subjecthood and moral agency are as distinct, he argues, as the concepts of motivation and evaluation. Thus some animals can be moral subjects without being moral agents. In the last chapter, Rowlands suggests that as moral subjects, animals are worthy of moral respect and that thinking of them in such a way will make a difference for how we feel about them and act toward them.

But there is a widely held view among philosophers of what it means to be motivated to act by moral

reasons that is not compatible with this way of distinguishing moral subjecthood and moral agency. On this view, one’s motivations and actions are not moral, and they have no normative grip on one, unless one has control over them. And secondly, such control is conferred by a certain metacognitiveness that enables one to critically scrutinize one’s motivations and actions and deliberately choose them just because they are morally right. On this view, the distinction between moral subjecthood and moral agency collapses, and animals cannot be moral subjects because they cannot have moral motivations. In a series of carefully argued chapters, using a series of effective thought experiments, Rowlands does a good job of challenging the connections between critical scrutiny and control and between normativity and control on which this objection rests. He calls the view that the ability to critically scrutinize our motivations and actions confers control over them a case of the fallacy of the *miracle-of-the-meta*. Any issue of control at the level of motivation and action, he argues, will also arise at the level of metacognition. And he develops a Wittgensteinian-style account of normativity that grounds it not in internal, psychological features of individuals but in participation in the practices of a community.

The final step in Rowlands’s argument is an explanation of the concept of moral agency. Unlike moral subjects, moral agents are morally responsible for, and so can be morally evaluated for (praised or blamed), their motives and actions. According to his reconstruction of the concept of moral responsibility, the extent to which one is morally responsible, and hence, a moral agent, “is the extent to which one understands what one is doing, the likely consequences of what one is doing, and how to evaluate those consequences” (p. 240). On his view, responsibility and agency come in degrees because the understanding in question comes in degrees, “... and in the case of animals the degrees involved are small enough that, if we were thinking in all-or-nothing terms, we would be inclined to say they were not agents” (p. 241).

These comments on responsibility are very brief and will need further development if they are going to provide a minimally adequate account of responsibility that explains the distinctiveness of human moral agency. In the first place, people can be responsible for actions they do not understand and for the consequences of actions they did not foresee or intend. Furthermore, even if understanding our actions enables us to take *responsibility* for our motives and actions, it is not at all clear how and why simply understanding them *makes* us responsible for them

in the first place. It is also difficult to see how some account of the role of control can be avoided (perhaps an alternative to the critical scrutiny account rejected by Rowlands), if only to make room for the possibility of moral progress.

One of the broader theological issues here for Christian thinkers concerns how to distinguish humans as moral agents from other animals. Christian thinkers will likely appeal to the theological claim that humans are uniquely made in the image of God, if this is understood as involving a call to a certain responsibility before God. Is that view compatible with the view of reason, morality, human moral agency and animal moral subjecthood developed by Rowlands in this book? One virtue of this book for Christian thinkers is that it will encourage them to reflect on the extent to which their interpretation of biblical material has been influenced by traditional conceptions of the human found in Western philosophy and to reflect critically on those conceptions themselves. Furthermore, even though Rowlands's own views of the deep kinship between humans and other animals seem to be grounded in a form of evolutionary naturalism, there may be good reason for Christian thinkers to affirm a similar kinship on the basis of the biblical account of creation.

I highly recommend *Can Animals Be Moral?*, especially to Christian animal scientists and Christian philosophers. The author writes clearly and develops his arguments carefully with an understated sense of humor. Whether or not, in the end, you agree with Rowlands, reading this book will deepen your understanding of the issues it addresses and is sure to provoke you to an ongoing engagement with questions regarding your own relationship with animals.

*Reviewed by Henry Schuurman, Associate Professor of Philosophy, The King's University, Edmonton, AB T6B 2H3.*

**THE PHYSICS OF THEISM: God, Physics, and the Philosophy of Science** by Jeffrey Koperski. Chichester, UK: John Wiley & Sons, 2015. 279 pages. Hardcover; \$89.95. ISBN: 9781118932810.

Theologians and philosophers of religion are increasingly interested in science, especially physics. Subtopics of physics such as the fine-tuning of universal constants, quantum mechanics, relativity, and cosmology are surprisingly common subjects where religion is involved. Bridging the gap between these fields, however, has proven to be quite difficult. Those in religion and the humanities typically interact with the mathematical sciences only at a popular level, and physicists are often dismissive of meta-

physics and religion. Fortunately, the philosophy of science provides a middle ground between these disciplines. In this book, Koperski provides a critical analysis of the ways in which physics is brought into play in matters of religion.

Jeffrey Koperski is a professor of philosophy at Saginaw Valley State University. In addition to PhD and MA degrees in philosophy, his education includes an undergraduate degree in electrical engineering. This training gives him the STEM (Science, Technology, Engineering, Mathematics) background to grasp some of the more complex issues in physics, but what stands out is the practical perspective of an engineer.

Koperski has written previously on the intelligent design movement, specifically the 2008 *Zygon* paper, "Two Bad Ways to Attack Intelligent Design and Two Good Ones." This book has the same even, scholarly presentation as the previous work. In this book, Koperski indicates largely what physicists and philosophers of science think and why they think the way they do, without passing judgment. Koperski comes across as someone who feels no need whatsoever to attack personally those with whom he disagrees. In fact, he writes, "Placing the black hat on one's opponent is no substitute for an argument" (p. 205).

Late in the book, he makes an observation which seems motivational for the enterprise.

If methodological naturalism is supposed to be a no trespassing sign, scientists don't take it as such ... it does appear that the boundary only works one way. Scientists can cross at will; those on the religion side must stay where they are. (p. 210)

By way of example, he quotes Mano Singham, who wrote in "The New War between Science and Religion" (*The Chronicle of Higher Education* [May 9, 2010]), that

the scope of science has always expanded, steadily replacing supernatural explanations with scientific ones. Science will continue this inexorable march ... After all, there is no evidence that consciousness and mind arise from anything other than the workings of the physical brain, and so those phenomena are well within the scope of scientific investigation. What's more, because the powerful appeal of religion comes precisely from its claims that the deity intervenes in the physical world, in response to prayers and such, religious claims, too, fall well within the domain of science.

In other words, naturalists may comment upon religious assertions, but the reverse is inappropriate.

## Book Reviews

Koperski is not entirely neutral and does write some things meant to correct errors in the current discussion. He gives under the heading, "Conventional Wisdom," the following examples of common errors:

1. Science and religion have been at war with one another since Galileo was tortured by the Inquisition.
2. The Catholic Church taught that the earth was flat until Christopher Columbus proved otherwise.
3. The scientific revolution finally freed Europe from the grip of religion.

Against these, Koperski responds, "As every historian of science knows, these three nuggets of conventional wisdom are false."

Koperski has listed a fine set of durably popular, but incorrect, beliefs. As another example, it can be exasperating for nonphysicists to hear the claim that time is an illusion based upon some characteristic of the universe observed within the laboratory. Koperski does not indicate that such a view is false, but he observes, "Ellis argues that even if spacetime theories do not contain an objective flow of time, much of the rest of science cannot do without one" (p. 137). For example, it would be impossible to compare the clock rates of various microprocessors if time were declared to be illusory.

The book leads with a gracious dedication to his family and is composed of seven chapters: (1) "Science and Religion: Some Preliminaries," (2) "Fine-Tuning and Cosmology," (3) "Relativity, Time, and Free Will," (4) "Divine Action and the Laws of Nature," (5) "Naturalisms and Design," (6) "Reduction and Emergence," and (7) "The Philosophy of Science Tool Chest." Within these chapters, Koperski addresses such topics as abductive reasoning, the strong and weak anthropic principles, atheism as an assumed fundamental precept of science, Boltzmann brains, determinism and free will, arguments and evidence regarding divine intervention, emergence and reductionism, evil, evolution, creationism and intelligent design, fine-tuning of the universe, and multiverse theories.

This is an excellent text for those interested in the philosophy of science within those areas in which science and religion bump up against each other. Koperski indicates that there are several models of the interaction of science, philosophy, and religion. He lists the four categories of interaction proposed by Ian Barbour, emeritus professor of Carleton College: *Conflict/Warfare*, as typified by the Scopes Monkey Trial and the point of view of Thomas Huxley; *Independent Realms*, as advocated by Stephen

J. Gould and his concept of "nonoverlapping magisteria"; *Dialogue*, the "two books" perspective as advocated by Galileo; and *Integration*, the integration of all knowledge into one coherent whole, a recent consistent theme within process theology.

Koperski rules out the viability of the Conflict/Warfare model of the self-proclaimed New Atheists. He observes,

Naturalism and theism are obviously incompatible, since naturalism entails atheism. But science is not synonymous with naturalism nor is religion only theism. While science influences our metaphysics, metaphysics cannot be reduced to science, or at least it would require some argument in order to believe that it does.

Koperski advocates calling science, philosophy, and religion "disciplines" and further recognizing that the quest for knowledge is an interdisciplinary one. He asserts, "I've called the interdisciplinary view 'my proposal,' but in many ways, it is just what's going on in the philosophy of religion and the philosophy of science these days."

Koperski retells the familiar in new ways. He discusses the fine tuning of the universe, but does not use the old chestnut that if a person survived a firing squad with fifty sharpshooters, he would be justifiably surprised that all of the riflemen (apparently) simultaneously missed. Koperski's analogy is,

It's a bit like telling a skydiver that he should not be surprised that he survived after his parachute failed. True, if he had not survived, he would not be around to wonder about it. But so what? It's ludicrous to think he shouldn't be surprised as having lived through the experience.

Koperski does not provide the reader with an endless collection of quotes from previous works, though he cites classic sources such as Galileo, Maxwell, and Einstein, as well as popularizers such as Davies, Dawkins, and Craig. He cites as necessary to the more obscure technical literature that nonphilosophers are unlikely to read. He does not overwhelm the reader with mathematics either. Each chapter's end notes and references appear directly at the end of the chapter, which make the notes very convenient to access.

This book is not a tract; it does not push the reader in the direction of any particular religion or world view. Koperski writes as a learned observer and sometimes as a participant but not as a partisan. He clearly, but politely, disagrees with the views of the naturalists, holding like Thomas Nagel that many popular naturalistic claims, set forth as axioms, are untenable.

Koperski correctly defines the “no miracles” argument as not meaning that God has not dabbled in his own creation but rather that “it would be a miracle if science could be as successful as it has been and not more or less true.”

Like an excellent teacher, Koperski gives examples which are accessible to the average reader. Here’s one on free will:

If the behavior of all things, including the atoms in our own bodies, is wholly determined by the laws of physics, then there doesn’t appear to be any room left for free will. In such a world, a kicker doesn’t choose to kick a field goal any more than the football chooses to go through the goal posts. It’s all just a matter of the laws of physics working themselves out.

One last quote shows the practical orientation of the author:

The Boltzmann brain story is a *reductio ad absurdum*. If one’s physical theory indicates that the best explanation for my own subjective experience, including memories, is that I am a disembodied brain temporarily hallucinating in the void (rather than a real person currently sitting at my desk), that’s a problem for one’s theory. A set of beliefs known to be grounded on an illusion contains its own defeater. Any theory that leads to radical skepticism about one’s experience would invalidate whatever evidence one had for the theory itself. In other words, once you believe it, you probably shouldn’t. (p. 92)

The book is worthy of recommendation as an accessible text for undergraduates studying the philosophy of science. Many, perhaps most, of the perennially controversial topics are covered within the text. A worthy effort indeed.

*Reviewed by Stephen A. Batzer, Batzer Engineering, Fife Lake, MI 49633.*



## RELIGION & SCIENCE

**THE SOUL OF THE WORLD** by Roger Scruton. Princeton, NJ: Princeton University Press, 2014. 216 pages. Hardcover; \$27.95. ISBN: 9780691161570.

“We live in an age of debunking explanations ...” So begins Roger Scruton in his fine book which aims to rebut reductionist (ultra-Darwinist, neurobiological) accounts of religion, the person, and the arts, and to clear a space for a search for the sacred. Scruton demonstrates the corrosive effects of scientism and offers a powerful challenge to this sort of thinking. Seeking to preserve the integrity of these three areas of meaning, he argues that they occupy a different

cognitive sphere, distinct, if not separate from, the impersonal, cause-effect realm occupied by the sciences. Borrowing a term from Husserl, he calls this sphere peculiar to humans, the *Lebenswelt*, “life-world,” a term which marks the space of first-person expressions of symbolic meaning. Here, the third-person perspective of the sciences is out of place, while reductionist claims are positively violent in what they ignore.

Central to his project of rehabilitating the *Lebenswelt* is his insistence that human beings are not only objects in the world (the province of science) but also subjects. As subjects, they enjoy the unique, first-person perspective of self-conscious agency. Through this first-person perspective, persons enjoy the privilege of making statements about themselves that are immune to challenge by others (p. 63). This privileged standpoint, says Scruton, is necessary for the possibility of dialogue with each other, since if we did not enjoy this privilege, “we would be always describing ourselves as though we were someone else” (p. 63). The first-person perspective simply does not exist in science since its project is to place all things under the rubric of impersonal, universal laws. Against scientism’s explanatory imperialism, Scruton seeks to retrieve the reality, integrity, and causal legitimacy of the *Lebenswelt*. This is especially present in his concern to appreciate the significance of the “I-You encounter” in which two subjects meet and the possibility of interpersonal dialogue opens up (p. 49). Such a meeting, says Scruton, implies the notion of accountability as each person struggles to know and be known, to give an account of what they lived for and why. While neuroscience is a powerful framework for exploring brain function, it is ill equipped to understand the nature or meaning of this first-person, qualitative exchange.

The ultra-Darwinist assumption that natural selection is the all-sufficient explanation applied, without distinction, to all living creatures is flawed, since, with *Homo sapiens*, there is “something new under the sun.” Here, a way of being has emerged from nature that eludes a purely biological category of explanation. To signal the nature of this new emergent, Scruton proposes what he calls “cognitive dualism.” He is not hearkening back to a Cartesian split between body and soul, fact and value. There is only one reality, says Scruton, but it is capable of being understood under two aspects: the impersonal, cause-effect mode of science; and the intentional, interpersonal mode of human beings. These are two orders of explanation. The two worlds are ontologically *continuous*, in the sense that the *Lebenswelt* emerges from the material world which the sciences

## Book Reviews

investigate, and so has ontological priority (p. 67). However, the two orders are explanatorily *discontinuous* since “we cannot derive from one of them a description of the world as seen from the other. Nor can we understand how one and the same object can be apprehended from both perspectives” (p. 36).

Ultra-Darwinists explain biological phenomena as strategies for survival and reproductive success. For them, human life is no exception to this totalizing explanation. For example, evolutionary psychologists view altruism as the most reliable strategy for the spread of one’s genetic material into the next generation. This counter-intuitive claim is explained in terms of kin selection, in which an individual (usually one who has many genetically related individuals in the populace) will sacrifice or put himself at risk for the sake of the group. Thus, what appears to be concern for others is really a kind of concern for his genetic “investment.” At any rate, an organism is said to act altruistically, “if it benefits another organism at a cost to itself” (p. 55). Scruton’s problem with this definition is that it makes no distinction between nonhuman and human acts. Nonhuman organisms, responding to biological imperatives, may unconsciously or semi-consciously, act in accord with their “selfish genes,” but is this true of human beings? Scruton thinks not. About the evolutionary psychologist’s definition of altruism, he writes,

The concept applies equally to the soldier ant that marches into the flames that threaten the anthill, and to the officer who throws himself onto the live grenade that threatens his platoon. The concept of altruism, so understood, cannot explain, or even recognize, the distinction between those two cases. Yet surely there is all the difference in the world between the ant that marches instinctively toward the flames, unable either to understand what it is doing or to fear the results of it, and the officer who consciously lays down his life for his troops. (p. 55)

As free beings existing in the “‘space of reasons,’ not in the ‘space of law’” (p. 36), humans can be motivated by any number of reasons other than biological imperatives. They can choose to die for the sake of honor, love, or freedom. Evolutionary psychologists may counter that we only *think* we are acting for the sake of these noble abstractions, but in truth, are tethered to our genes and dance to their tune. But this is mere assertion based upon a faith that the third-person perspective of science alone does explanatory work. Such a position arbitrarily denies by *fiat* the first-person claim that we are personal agents freely intending certain desirable goals.

Along with fellow philosopher Mary Midgley, Scruton is opposed to what she famously called “nothing buttery” (p.39). “Nothing buttery” is the reductionist habit of mind which insists that parts are more real and more important than the whole, and the whole is really “nothing but” its constituent parts, usually, physics and chemistry. For Scruton, reality is a multilayered affair, a nested hierarchy where higher order functions and powers emerge from their material matrix. An emergent reality is not “nothing but” the collection of things of which it is composed but a new and unexpected whole, inexplicable in terms of its constituent parts.

There is a widespread habit of declaring emergent realities to be “nothing but” the things in which we perceive them. The human person is “nothing but” the human animal; law is “nothing but” relations of social power; sexual love is “nothing but” the urge to procreation; altruism is “nothing but” the dominant genetic strategy described by Maynard Smith; the *Mona Lisa* is “nothing but” a spread of pigments on a canvas, the Ninth Symphony is “nothing but” a sequence of pitched sounds of varying timbre. And so on. Getting rid of this habit is, to my mind, the true goal of philosophy ... [it] is the first step in the search for God. (pp. 39–40)

Of course, if persons and human culture are reducible to the interplay of physics and chemistry, then there is really nothing to discuss beyond what the sciences have to say. Human persons are just gene machines. Culturally speaking, there would be nothing to *interpret* artistically since no deeper meaning could be accorded to things than what is uncovered by the sciences. For Scruton, artistic creations are the work of persons and, as such, embody acts of meaning, and are capable of exploring the nature of the human condition or the search for God. Thus, if the *Lebenswelt* is real, music is more than a “series of pitched sounds, one after the other, each identified by frequency” (p. 37). The third-person perspective, while necessary—there can be no music without pitch and frequency—is not a sufficient explanation of what music *is*. Concerning the theme of the opening of Beethoven’s Third Piano Concerto, Scruton says,

... you cannot describe what is going on in this theme without speaking of movement in musical space, of gravitational forces, of answering phrases and symmetries, of tension and release, and so on. (p. 37)

A little later, he ties his discussion of music into his larger themes:

In describing a sequence of sounds as a melody, I am situating the sequence in the human world: the world of responses, intentions, and self-knowledge. I am lifting the sounds out of the physical realm, and repositioning them in the *Lebenswelt*, which is a world of freedom, reason, and interpersonal being ... I am describing what I hear in the sounds, when I respond to them as music. (p. 66)

Like the *Lebenswelt*, the presence of God will suffer eclipse in a culture increasingly given to scientism. Interestingly, Scruton speaks of the “real presence” of God in the midst of the early Israelites as a kind of concealment. Such divine hiddenness may be necessary, according to Scruton, since God “lies outside the space-time continuum” (p. 9) and yet this raises a pressing question concerning how God’s presence may be manifested in the empirical realm (p. 11). Chastened by this hiddenness, we must be aware that while human concepts and beliefs about God may disclose, they also conceal (p. 10). Nevertheless, scientism’s denial of the *Lebenswelt* hopes to secure a permanent silence about the sacred which this powerful book seeks to repel.

*Reviewed by Lloyd W. J. Aultman-Moore, Professor of Philosophy, Waynesburg University, Waynesburg, PA 15370.*

**THE GAP: The Science of What Separates Us from Other Animals** by Thomas Suddendorf. New York: Basic Books, 2013. 358 pages. Hardcover; \$29.99. ISBN: 0465030149.

This is a book about the human mind, and how the human mind differs from that of other animals, including primates. We can envision the future (alternate realities), and we possess a mental framework to express these visions (language and culture). The author, Thomas Suddendorf, calls these “nested scenario building” and an “urge to connect.” Suddendorf makes a case for these two facets of humanity as constituting the gap between the capacities of the human mind and those of other animals.

Suddendorf frames this book in the evolutionary context of what happened along the way from primitive ape to modern human being. As there are no Neanderthals around anymore, and we know little about them and our other forebears, he redirects his focus to our nearest extant relatives: apes. He then proceeds to discuss how we study the minds of apes and humans and highlights the limits of such inquiry. Suddendorf is very good in this respect. Throughout the course of the book, he continues to highlight the limits of scientific inquiry. He also does not shy away from contrasting the two opposing paradigms in which the observations are interpreted: a roman-

tic paradigm that is poised to imagine human-mind likeness where there is none; and a killjoy paradigm ready to strip away humanness in favor of behaviorist explanations. Suddendorf tries hard to walk the middle of the road between the two paradigms while keeping the reader’s options open.

Suddendorf focuses on six spheres of the human condition: language, mental time travel, mindreading (the ability to read body language and infer the subject’s thinking), theorizing (the ability to conceive of abstract ideas and examine them), culture (the ability to learn and retain learning across generations), and morality. These he contrasts with the animal faculties of communication, memory, social reasoning, physical reasoning, tradition (yes! animals learn and that learning does seem to spread and be preserved in populations over time), and empathy. I will preserve for you the joy of reading the book by not elaborating much further on these points. Suffice it to say, the gap between these six qualities are, in Suddendorf’s opinion, bridged by nested scenario building and an urge to connect.

The nested scenario building is, as Suddendorf explains it, the ability not only to retain memories and learning but to reimagine those memories and learning into new ideas. In doing so, we can project ourselves into the future (we can, for example, anticipate consequences from actions and so derive a sense of ethical accountability from empathy) as well as imagine new things and invent. These abilities, Suddendorf argues, are not visible in other animals. While apes may be able to “ape” humanness, their impression is, in his opinion, only skin deep.

Apes, and many other organisms, are social but humanity takes it further. We seek society; we want to make contact with others and share our experiences. I give, as an example, my hobbies of tropical fish keeping and orchid growing. Visit a society meeting and the average age is well over 60 years of age. This is not a particularly tech-savvy demographic, but if you visit the internet, there is no shortage of webpages, forums, and groups discussing these topics. We (whether we are 19 or 90) seek each other out to share our experience. What is more, we spontaneously organize to share information with like-minded people. With communication, we create culture where there previously was none. In part, the reason why young people cannot be separated from their phones is because there is a deep, inexorable desire to connect with others. Suddendorf discusses what makes us human and reveals our carnal nature that, left untempered by morality, can backfire into social self-destructive culture.

## Book Reviews

Who should be reading this book? I think if you are interested in moral philosophy, theology, and cognitive neurobiology, then this book will offer many insights into these fields. If Suddendorf is correct, experimenting on rats and mice and chimpanzees will not unlock the mystery of “humanness” as the mystery simply is not to be found in these animals. Also, if we aim to build a moral society, then we must know something of our nature that urges us to seek each other out. I just read an article by Rabbi Warren Goldstein (“Alternative Reality: Why We Misunderstand Faith” on Jewishworldreview.com) on the human desire to recreate our reality and communicate. Sadly, what Rabbi Goldstein describes as evidence for a divine human soul now seems less supernatural, but still, there is a large gap between animal and human nature that should lead us to understand that we are very special—and to whom much is given, from him much will be required—but I digress. Goldstein’s point is that faith is our reimagining of reality into what God wishes us to become. Paul’s emphasis on our carnal nature is also relevant as we bring with us, through our evolution, many potentially negative traits (*yetzer hara*, to borrow the Jewish idea) that can be put to good use (toward *tikkun olam*) but that can, without a sound worldview (a *faith*) in which to interpret reality, just as well be used to break and destroy our world (to cause *ra* and *rasha*). If we are to accept the Divine invitation to “let us [God and you, me, and others] make humankind” we must know and understand what our starting materials are.

Who would enjoy reading this book? I would think any biologist would find this book interesting. Psychologists and neurobiologists would also find it interesting and informative as to the human condition. Nonprofessionals with an interest in behavior or social pathology would find this a rewarding read, full of interesting material on human development and social experiments. I, as a new parent, found it fascinating to find the ideas of human development espoused by Suddendorf recapitulated in my growing son. The book does a great job of taking what little we know about the behavior of human ancestors and presenting it in the context of what it is to be human.

Suddendorf encourages us to know ourselves. I would like to echo this encouragement: read the book and get to know yourself a bit better.

*Reviewed by Tyrone Genade, Department of Biology, Northwestern College, Orange City, IA 51041.*

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As space permits, *PSCF* plans to list recently published books and peer-reviewed articles related to science and Christian faith that are written by our members and brought to our attention. To let us know of such works, please write to [patrick.franklin@prov.ca](mailto:patrick.franklin@prov.ca).



## SCIENCE & BIBLICAL STUDIES

**NAVIGATING GENESIS: A Scientist’s Journey through Genesis 1–11** by Hugh Ross. Covina, CA: Reasons to Believe Press, 2014. 298 pages, endnotes, indexes, appendixes. Paperback; \$19.95. ISBN: 9781886653863.

In *Navigating Genesis*, Hugh Ross presents readers with his attempt to engage in a reading of Genesis 1–11 in a way that promises to “ultimately satisfy intellectual curiosity” (p. 13). While Ross’s engagement with the conclusions of much modern scientific inquiry is often interesting and seems (from this outsider’s perspective) to be well researched, his commitment to a particular way of reading the Bible, coupled with what appears to be a near-total disregard for academic biblical scholarship, makes this book profoundly frustrating to read. A complete list of the various problems in the book is far beyond the scope of this review, but I will present here several key issues indicative of the kinds of problems one finds throughout, and which, taken together, create a work that is fatally flawed.

From the beginning, Ross displays a tendency to brush aside or disregard significant problems in his argument regarding Genesis 1. For instance, he goes to great pains to indicate that, contrary to the entire interpretive history of Genesis 1, God did not *create* light and darkness on the first day of creation, but that light *appeared* (pp. 38–39). This is a necessary argument for Ross’s conclusions, since he believes that Genesis 1 offers us a scientifically accurate (if not exhaustive) account of the beginnings of the world. If one is to suggest that the creation of light precedes anything that might produce light, as the text seems to suggest, one has a rather significant problem. Ross solves the problem in two ways, both of which are difficult to accept.

First, Ross proposes a (to my knowledge) unique reading of Genesis 1:1–2 that involves a shift in observer perspective (pp. 28–31). He suggests that the “observer’s vantage point [in verse 2] is clearly identified as ‘the surface of the deep’ ... over the waters” (p. 31). In point of fact, the text does not identify any “observer” at all, nor is there any clear indication of a shift in “vantage point” (or of the existence of an initial “vantage point”). The entity that broods over the waters is the *rûach ‘elôhîm*, the spirit of God, and there is no indication whatsoever that this entity is narrating the account. In terms of perspective, all of Genesis 1 appears to occur from the divine perspective, or from what we would usually call a third person omniscient perspective. This

is the normal way for Hebrew storytelling to proceed. The narrating voice appears to know and see all, and reports on what occurs. There is no more an “observer” with a “vantage point” here than there is, say, in the narrative voice of the book of Ruth. The narrator is nowhere and everywhere. Ross’s suggestion of a shift in location for the “observer” is thus implausible, in no way necessary to the flow of the account, has never been proposed by another interpreter, is not clearly indicated by the grammar of the text, and is not referred to in the text specifically. Unfortunately for Ross, his entire reading of Genesis 1 hangs on this thinnest of threads.

The second way in which Ross solves the sequencing problem in Genesis 1 is by attempting to create a clear differentiation between the semantic ranges of the various verbs used in the passage. He notes correctly that several different words are used to refer to God’s activity in this passage, including *bārā’*, *hāyâ*, *’āsâ*, *nātan*, *rā’â*, and *yāšâ*. He then attempts to argue that there is a significant difference of semantic range between *bārā’* and (especially) *hāyâ* and *’āsâ*. The former, he suggests, refers to divine creation out of nothing, and the latter to the act of making something come about, and fashioning or manufacturing something (respectively). Here the source cited is the *Theological Wordbook of the Old Testament* (TWOT). This is the only lexical resource that Ross cites in the book, though he notes in the appendix that in the past he has drawn on various resources for his definitions and here he has used TWOT in order to simplify his presentation (p. 231).

There are several problems here. In the first place, while TWOT is a resource edited and produced by biblical scholars, it is of uneven quality, and it is badly out of date (it was published in 1980). Entries in TWOT did not represent the cutting edge of linguistic research into Hebrew at the time of their publication, and they most certainly do not represent current research today. With reference to the verbs in question, Ross overlooks or fails to note that many biblical scholars see these terms as being used more or less synonymously in this passage, and that over the past few years, a great deal of ink has been spilled over the semantics of *bārā’* especially (cf. Becking and Korpel, “To Create, to Separate or to Construct: An Alternative for a Recent Proposal as to the Interpretation of *bārā’* in Genesis 1:1–2:4a,” *Journal of Hebrew Scriptures* 10 [2010]; van Wolde and Rezetko, “Semantics and the Semantics of *bārā’*: A Rejoinder to the Arguments Advanced by B. Becking and M. Korpel,” *Journal of Hebrew Scriptures* 11 [2011]—and related bibliography). Even current work by scholars who accept a distinct definition/function for *bārā’* in

Genesis 1 (e.g., Walton) is absent in Ross’s discussion. Though a precise definition for the word remains, to a certain degree, a matter of debate, it is generally acknowledged that it does not refer to creation by divine decree, as TWOT would have us believe. However, for Ross, it is utterly vital to his reading that this traditional meaning of *bārā’* be maintained, and that it be placed in sharp distinction to the other verbs noted above. Ross is either ignorant of, or has chosen to ignore, the extensive scholarship available on this issue.

One of the most profoundly frustrating experiences I had while reading this book was examining the endnotes for this portion of his argument. Apart from TWOT, peer-reviewed biblical scholarship is entirely absent. I was even more profoundly frustrated when I did find references to works by relevant scholars such as Walton and van Wolde much later in the book, in reference to entirely different issues, which clearly indicated that Ross had read work that was material to this conversation, but did not engage with it.

On the subject of words, Ross also casually brushes aside the question of the meaning of the word *rāqîya`*, defining it as “expanse” (i.e., atmosphere) and not “vaulted dome” as is generally accepted among scholars (see the relevant entry in the *Hebrew and Aramaic Lexicon of the Old Testament*). Ross suggests that critics of this view cite Job 37:18 for support, and then pivots to dismantling an argument based upon Job. Not only does Ross fail to identify those with whom he disagrees here, but he also fails to actually engage with the question of the meaning of the specific word at hand. The word *rāqîya`* has been understood as a reference to a solid dome that covered the world since antiquity (both the Septuagint and Vulgate translate the word in this way), and this reading is consistent with all other instances of *rāqîya`* in the Old Testament as well as with cognate words in other ancient Semitic languages. Again, this reading completely derails Ross’s attempt to bring Genesis into line with modern scientific cosmology.

These are not the only linguistic infelicities Ross commits. In the same chapter, Ross engages in a foray into the problem of the verbal system of biblical Hebrew. Here he suggests that “Hebrew verbs by themselves do not specify the duration of actions. Nor do they determine the time ordering of actions. Instead, the ordering of past actions is established most straightforwardly by word order” (p. 32). The only support that Ross cites for this view is Rodney Whitefield’s *Reading Genesis One*, a self-published book written by a physicist. The verbal system of biblical Hebrew

## Book Reviews

is a topic of immense debate within the field of biblical studies, and anybody wishing to research the topic seriously should have no difficulty at all in finding ample resources written by researchers with specific training and expertise in modern linguistics and ancient Semitic languages (e.g., Cook, *Time and the Biblical Hebrew Verb*; Niccacci, *The Syntax of the Verb*; Buth, "The Hebrew Verb"; Buth, "Functional Grammar, Hebrew, and Aramaic"; Endo, *The Verbal System of Classical Hebrew*; Arnold and Choi, *A Guide to Biblical Hebrew Syntax*; Joosten, "Do the Finite Verbal Forms ...?" – and this is to say nothing of the many beginner and technical grammars available). The fact that Ross in no way engages any of this literature while depending heavily on the conclusions of an untrained, amateur Hebraist regarding verbal syntax and semantics simply beggars belief.

In fact, apart from his use of *TWOT* and passing references to a few scholars, Ross seldom engages biblical scholarship of any kind. He does not engage current thinking about the structure, theology, and message of Genesis 1–2, or of the primeval history (chaps. 1–11) as a whole, to say nothing of the overall literary structure of the book of Genesis. Walton and van Wolde each receive the briefest of mention and are brushed aside without meaningful engagement, and well-known evangelical scholars working actively in the book of Genesis, such as John Sailhamer, receive no mention at all. This absence is felt most keenly in chapter 20, in which Ross purportedly engages "Higher Criticism." Ross's engagement with what he calls "higher criticism" (a term that belongs more to the nineteenth century than the twenty-first) is badly out of date, and is only accurate in the broadest sense of the word. Here we find statements such as the following:

Astruc, Eichhorn, and the emerging "higher critics" presumed that the order in which various creation events appear on the page represents the intended chronology in the text. For the most part, they ignored verb choice, verb forms, contextual cues, indicators of parenthetical comment, and virtually all other syntactic features. (p. 198)

No citations are provided to support this claim. First, most biblical scholars (and not merely the terrible "higher critics") do indeed read the Genesis 1 and 2 accounts as though they are presented in chronological order. For chapter 1 at least, the creation account is presented as an event proceeding in six successive days, each culminating in evening and morning. The suggestion that this somehow ignores the structure and context of the text is peculiar. Second, the suggestion that biblical scholars (whether in the seventeenth/eighteenth century such as Astruc, the

eighteenth/nineteenth century such as Eichhorn, or the nineteenth/twentieth century such as most of those who called themselves "higher critics") ignore issues such as verb choice, syntax, and context is simply false. The briefest perusal of books, commentaries, and articles on the book of Genesis disproves this absurd claim immediately. No honest engagement with critical biblical scholarship is even attempted in this chapter. What we find here is little more than a dismissive parade of straw men.

Suffice to say that I find Ross's foray into biblical scholarship in *Navigating Genesis* wanting. Ross is dismissive toward the long history of scholarship on this ancient text, constantly submits the text to his modernist eisegetical presuppositions, and does not deal honestly and openly with those with whom he disagrees. The frank truth is that I cannot recommend this book to anybody, except as a case study in concordist hermeneutics.

*Reviewed by Colin M. Toffelmire, Ambrose University, Calgary, AB T3H 0L5.*



## TECHNOLOGY

**INFORMATION DOESN'T WANT TO BE FREE: Laws for the Internet Age** by Cory Doctorow. San Francisco, CA: McSweeney's, 2014. 192 pages. Hardcover; \$22.00. ISBN: 9781940450285.

"Information doesn't want to be free, people do," says Internet expert and prolific author Cory Doctorow in this provocative and timely book. If this phrase leaves you still a little murky as to what his thesis is, the subtitle says it better. In short, the Internet changes everything, so let's start changing copyright laws so that they work better for people in creative fields (and use existing laws to serve creators rather than their distributors).

Doctorow proposes three main "laws" for the information revolution when it comes to creative content (writing, music, visual art, etc.). By "law," he means a universally true observation; in particular, these are his observations about the current copyright situation whose implications he believes most Americans do not fully grasp.

First, locked formats such as DVDs that you cannot play on Linux, or Kindle books that you cannot read somewhere else, are not there for the benefit of consumers or artists. Second, having fewer distribution channels and more copyright liability for intermediaries such as YouTube or Internet providers is bad for artists and consumers. Third, and most critically, a copyright system that encourages providers to have

full access to our computers and other devices at all times (to catch any possible copyright violation) is worse than Orwellian because it is no longer just the government that is spying on you.

His “laws” are stated more pithily; the last “law” is quoted using his words at the beginning of this review. Some of the examples of this that he cites are quite disturbing. For example, in 2009, Amazon used a secret hook to delete legitimately obtained copies of *1984* from customers’ hard drives; aside from this irony (which CEO Jeff Bezos apologized for), there is no reason that a malicious actor could not use the same facility to do far worse.

Now, I am not a lawyer, economist, Internet expert, or copyright aficionado so I cannot speak directly about the impact of most of these issues. However, I find much of it compelling. For instance, perhaps a mathematician and writer is a bit of a creative artist—and sure enough, while discussing the relative utility of fame, he describes my situation: “You can’t pay for a copy of this book with fame. (Unless you’re famous as a reviewer, in which case you can.)” So I will focus instead on the highlights most relevant to readers of *PSCF* with a technical bent.

First, anyone who knows anything about computers should be alarmed by software used for digital rights management, software that is legalized in the United States by the Digital Millennium Copyright Act. For many such “digital locks,” it is illegal even to try to figure out how they work, though they often restrict legal activity on a customer-owned device. As an excellent example of how this plays out, one Sony product immediately cloaked any files beginning with “\$sys\$.” Naturally, virus writers immediately started writing their “rootkits” to begin with this same string; one amusing result (among other things) was that World of Warcraft cheaters could elude detection.

Second, there is a *lot* of creativity out there in terms of how to make money from the vast array of small markets now available online. The book is full of examples, while making it clear that most artists will not be financially successful (this is nothing new). For open-source advocates like myself, it is encouraging to think of how such projects could make enough money to be sustainable without corporate sponsorship; however, I think that this is true for anyone engaged in creative ventures, from coding to writing praise songs.

Unfortunately, the author provides anecdotal evidence only. Persuasive as this may be, this is by no

means a scholarly text, and it is very frustrating that one cannot actually quantify things such as a “chilling effect” of spurious cease-and-desist-type orders. Although I agree with Doctorow that finding hard data on this might be difficult, an example where it might be possible is quantifying how many free uploading sites are taken down due to such orders, or exactly how they have changed policies. (A similar annoyance is the essential lack of footnotes or any bibliographic references.)

Hearteningly, he also says that disagreeing with some rules does not mean disagreeing with rules altogether. So even if we might disagree on whether Napster was a good thing, there seems to be room for a common ground that respects humans as moral actors capable of making their own determinations of good and ill while also acknowledging that people are lazy and sinful and will often take shortcuts.

Finally, as one might expect of a successful sci-fi author, he is entertaining. I imagine Doctorow channeling the snarky Eloise (of the Plaza Hotel) when he says

“Here are some other things that do not make money:

- Complaining about piracy.
- Calling your customers thieves.
- Treating your customers like thieves.”

Doctorow is *really* passionate and knowledgeable, and practices what he preaches. For instance, the book is published by McSweeney’s, which is an indie press having (at this writing) a Kickstarter campaign to turn nonprofit. I do think that he is missing a key component to the argument—that all this is only possible in artistic domains which require relatively small infrastructure; I would have liked this to be addressed more concretely. I find it hard to imagine that a full staging of Wagner’s *Ring Cycle* could rely solely on selling swag to pay the bills. Then again, I know that I would end up spending *more* money on organ music if I could do more via pay-what-you-want.

In summary, even if you are not completely convinced that the “copyfight” is a titanic battle to save us from a surveillance state (and after all, we have already given Facebook and Google all our information, why not the movie studios?), and even if you find that it is a bit of a stretch to compare this fight to the one over access for common folk to the text of the Bible (which he does more than once), this book is a worthwhile read, especially if you care about copy-right and creativity for the future.

*Reviewed by Karl-Dieter Crisman, Associate Professor of Mathematics, Gordon College, Wenham, MA 01984.*

# Book Reviews

**ENHANCING THE ART & SCIENCE OF TEACHING WITH TECHNOLOGY** by Sonny Magaña and Robert J. Marzano. Bloomington, IN: Marzano Research Laboratory, 2014. 195 pages. Paperback; \$29.95. ISBN: 098589024X.

When is technology most effective at improving student achievement? What do educators need to know to enhance their instructional strategies with technology? How can teachers keep up with the blazing speed of technological change in their schools and classrooms? Teachers seek relevant answers to these questions as digital technologies continue to shape the future of teaching and learning. In response to the demand for timely, evidence-based instructional practices for incorporating technology in the classroom, Sonny Magaña and Robert J. Marzano wrote *Enhancing the Art & Science of Teaching with Technology*. The book is an addition to the series of books entitled *The Classroom Strategies Series* that aims to provide practical, research-based instructional strategies for teachers and administrators in elementary and secondary education. The authors organized the book with educators in mind, appealing to the need for practical information informed by research.

The book begins with the undeniably appealing and too often unarticulated message that teachers and teaching strategies, not technology, should lead the conversation. Technology's greatest potential can only be achieved when teachers leverage technology to supplement highly effective pedagogy.

The first chapter extends Magaña and Marzano's central theme by introducing supporting research. The chapter provides a very brief but helpful overview of some of the major theories, definitions, and research findings about educational technology that are the foundation for the strategies introduced throughout the book. Collectively, the introduction and first chapter provide the promise that by focusing first on effective, evidence-based research practices, teachers will develop a solid foundation upon which to integrate technology to best support teaching and learning.

Following the first chapter, the authors launch into the heart of the text. Chapters 2–10 each introduce specific research-based instructional strategies, provide practical examples of how to enhance teaching using a variety of digital technologies, and conclude with a detailed vignette of how a single teacher integrates technology tools into his or her unit or lesson. Each chapter also includes a series of questions to review content and foster comprehension. Answers to the questions are provided in an appendix. The

consistency of format within each chapter and the supportive text features ensure that teachers and administrators make the most of the book.

The strategies introduced in chapters 2–10 are grouped into broad categories and include communicating learning goals, tracking student progress, celebrating success, establishing classroom rules and procedures, interacting with new knowledge, practicing and deepening knowledge, generating and testing hypotheses, engaging students, recognizing levels of adherence to rules and procedures, maintaining effective relationships with students, and communicating high expectations. Each chapter then introduces multiple strategies within each category. For example, the single chapter devoted to practice and deepening knowledge provides seven distinct strategies ranging from reviewing content to examining errors.

It is here in the heart of the text that Magaña and Marzano become too ambitious about what a single book can offer. The engaging promise of *Enhancing the Art & Science of Teaching with Technology* is that effective technology use is based on evidence-based teaching and learning strategies. Unfortunately, the authors then provide only a limited introduction to the strategies before diving into practical ways that technologies support the specific teaching and learning strategy. The chapters overflow with varied examples of how technologies such as videos, online graphic organizers, presentation software, polling software, screencasts, and more might support specific strategies. The focus on multiple technology examples for each of the forty-one teaching and learning strategies is simply overwhelming. Lacking more detailed attention to the underlying strategies as ways to inform technology use, the book begins to feel like another list of technology examples, tips, and tricks despite the authors' intentions.

Furthermore, some of the most important questions about technology are lacking in the book. For example, aside from two paragraphs in an epilogue, the book fails to provide insight to educators concerning when to use digital technologies and when not to, how many and which strategies should be introduced in the classroom, how many technologies should be introduced at any one time, and how to scaffold or support learning when new strategies or technologies are introduced. Such knowledge, which is the core of highly effective pedagogy, would ensure that even as technologies change with ever-increasing speed, administrators and teachers would be able to make informed decisions about technology in their schools and classrooms.

The deeper questions about pedagogy and technology are necessary for Christian educators to ask in the face of rapid technological change. Too few voices are asking questions or providing insight about technology in elementary and secondary schools. We should not only ask deeper questions in consideration of student learning, but also questions about how technology is shaping beliefs, values, and practices in Christian education.

*Enhancing the Art & Science of Teaching with Technology* offers great promise, but falls short. While written with administrators and teachers in mind, only a limited audience should read this book as a stand-alone text. Educators with well-developed knowledge about effective teaching and learning strategies may find the book useful as they seek examples of technology use in the classroom, but even they should ask relevant questions about what is missing. Educators with limited experience or lacking deep, conceptual knowledge about effective teaching and learning strategies should only consider *Enhancing the Art & Science of Teaching with Technology* if paired with Magaña and Marzano's more comprehensive books in The Classroom Strategy Series.

*Reviewed by Kara C. Sevensma, Assistant Professor of Education, Calvin College, Grand Rapids, MI 49546.*

**GEEK HERESY: Rescuing Social Change from the Cult of Technology** by Kentaro Toyama. New York: PublicAffairs, 2015. 334 pages, including notes, references and index. Hardcover; \$27.99. ISBN: 9781610395281.

Why does applying technological solutions to social ills rarely work? Why do small-scale pilot projects succeed, but subsequent large-scale deployments fail? Can access to computers, the Internet, micro-credit, and smartphones help raise large groups of the population from poverty to wealth?

Kentaro Toyoma asks these questions and more in his book *Geek Heresy: Rescuing Social Change from the Cult of Technology*. As a Microsoft researcher sent to India to open a research office there, Toyoma had a lot of experience building and deploying technology to solve social ills. His experiences caused him to ask himself why some technological solutions to problems seem to work, and others fail.

The “geek heresy” is, of course, that applying new technology to a social ill will not automatically and efficiently solve the problem. To make such a statement is to question the work of many well-funded high-tech companies, philanthropists, and technological utopianists. Making such a statement is probably

not a smart career move for someone in the high-tech industry. Yet, the author makes the argument well, pulling many examples not only from the computer and smartphone world, but also from the realms of health, education, finance, agriculture, and so on.

To explain why some applications of technology to social problems work and others do not, the author defines the *Law of Amplification*: “Technology’s primary effect is to amplify human forces. Like a lever, technology amplifies people’s capacities in the direction of their intentions” (p. 29).

This Law of Amplification explains why giving computers to schools with excellent teachers and motivated students amplified their abilities to learn, while giving computers to schools with subpar teachers, students, and infrastructure only served to distract the teachers and students and actually led to less learning. It also explains why giving a child a computer outside of school only proved to amplify the child’s stronger natural desire—to be entertained rather than to learn.

This definition of the Law of Amplification is useful, but it does not help the reader determine how to help fix the problems of the world. Part 2 of the book begins to answer that question. The key to fixing the world’s problems is not to throw prepackaged interventions at a problem, but instead to “amplify people.” The author found through his research that successful interventions always incorporated strong partners “on the ground.” That is, the success of the project was determined by the qualities of the partner using a new technology, not by a technology itself.

A good partner exhibits three important qualities: good intention (heart), discernment (mind), and self-control (will) (p. 111). According to the author, heart, mind, and will “are necessary complements to packaged interventions. Even vaccines and medications—which are as close to a complete solution as packaged interventions ever get—require the heart, mind, and will of willing patients, caring nurses, and expert doctors” (pp. 112–13).

Where good partners do not exist, technological solutions to problems fail. The author gives an extended example using the inequality that exists in the US educational system. Many politicians believe that the inequalities can be fixed by equipping schools with more computers and better network access. However, the author’s research shows that this is wishful thinking. Instead, “technology amplifies preexisting differences in wealth and achievement. Children with greater vocabularies get more out

## Letter

of Wikipedia. Students with behavioral challenges are more distracted by video games” (p. 117). The proper way to use computers to reduce inequality is to invest primarily in the people in the schools—teachers, administrators, and support staff—by training them to use the computers well. That is, you need not upgrade the technology, but you must “upgrade” the people.

The latter part of the book discusses the research about how best to invest in people. Chapter 8 discusses Maslow’s hierarchy of aspirations in detail. Chapter 9 investigates mass intrinsic growth, or how entire societies have changed to solve societal problems. Chapter 10 discusses the importance of mentoring.

I don’t know if Kentaro Toyama is a Christian or not, but the attitudes and recommendations of his book certainly should resonate strongly with a Christian audience. His recommendation to invest primarily in people, not technology, aligns with biblical themes that stress the importance of relationships. Toyama uses Christian terms, such as “idolatry,” “discernment,” and “wisdom” periodically in the book. For example, when criticizing technological utopianists for their indiscriminate application of technology rather than careful investment in people, he states, “To do so [...] is to make an idol of the easy part and neglect the rest—the finding or nurturing of the right heart, mind, and will” (p. 112).

And, of course, the entire premise of the book should resonate with Christians who see themselves called by God to be agents of change in the world. Christians are just as likely as non-Christians to look for quick, prepackaged solutions to the social ills we are called to address. Instead, Christians should concentrate on investing in people (i.e., loving), perhaps using technology where appropriate to assist along the way.

This book has caused this reviewer, a Christian and a computer science educator, to re-examine his work in computer science education. *Geek Heresy* has shown me that my work to build and widely deploy a better mechanism for computer science outreach programs in middle schools and high schools will necessarily fail if I do not invest heavily in the training of the people (i.e., the middle and high school teachers) who would be the partners, working with the students to learn computer science.

The book’s title may be a little deceiving. Its topic is applicable and important not only for those in the tech industry, but also for any person seeking to work to restore shalom in the world. I recommend

that international development organizers, relief workers, educators, and preachers should all understand the lessons from this book.

*Reviewed by Victor T. Norman, Assistant Professor of Computer Science, Calvin College, Grand Rapids, MI 49546.* ◇

## Letter

### Important Development Concerning the Impact of Fracking

*PSCF* published Bruce Beaver’s piece, “Should we Frack?,” in its latest issue (*PSCF* 67, no. 3 [2015]: 175–87). A number of articles have indeed blamed fracking for polluting ground water or creating mini-earthquakes, including those by the *The Economist* (see, for example, the issue July 4–10, 2015). Most people do not know that there is a more recent, alternate fracking technique that has proven to be more effective, is of much lower cost, and does much less damage to the environment. The technique uses a solid propellant, sent down the hole, which undergoes controlled deflagration shortly after shape charges perforate the horizontal section of the casing. The two major advantages of the process are that (1) it avoids the use of millions of gallons of pressurized water, and (2) it requires only 2–3 operators working for half a day, as opposed to hydro-fracking in which 25 operators are needed for 2–3 days, to produce the same amount of shale gas.

The propellant used is ARCADENE 489 (used in Stinger missiles). It is ignited circumferentially and produces gas at a specific rate to cause multiple fractures without entering the explosive regime. The deflagration is stable and environmentally safe, leaving no combustion products which may be harmful to the formation.

The process has been used successfully by Halliburton in over one thousand wells, producing more shale gas over a longer period than a comparable hydro-fracking technique. It causes no well bore or casing damage. A software using finite element analysis is employed to select the proper size of the propellant to meet the specific requirements of the formation to be fracked.

Kenell J. Touryan  
ASA Fellow  
Indian Hills, CO 80454  
Email: kenell@comcast.net

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## American Scientific Affiliation

The American Scientific Affiliation (ASA) is a fellowship of Christians in science and related disciplines, who share a common fidelity to the Word of God and a commitment to integrity in the practice of science. Founded in 1941, the purpose of the ASA is to explore any and every area relating Christian faith and science. *Perspectives on Science and Christian Faith* is one of the means by which the results of such exploration are made known for the benefit and criticism of the Christian community and of the scientific community. The ASA Statement of Faith is at [www.asa3.org](http://www.asa3.org) → HOME/ABOUT → ASA BELIEFS.

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The University of Georgia, Athens, GA 30602  
HANNAH E. RYAN, 4265 Hidden Rock Road, Black Forest, CO 80908  
–Students and Early Career Scientists Representative

### Editor, *God and Nature*:

Emily Ruppel, 218 Boston Street, Suite 208, Topsfield, MA 01983

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## American Scientific Affiliation Forums

We encourage members to submit comments and questions on the articles published in this journal on the ASA **PSCF Discussion Forum** at [www.asa3.org](http://www.asa3.org) → FORUMS → PSCF DISCUSSION.

The ASA home page/forums also contains links to four other members-only discussion groups. The **General Discussion** is for thoughtful discussion of various issues in science and faith. **Books** hosts a series of discussions on seminal books on science and faith. There are also forums for discussion about the **Annual Meeting** and **Education**.

An **Open Forum** is open to the public for dialogue on topics of science and faith at [www.asa3.org](http://www.asa3.org) → FORUMS → OPEN FORUM.

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## Canadian Scientific & Christian Affiliation

A closely affiliated organization, the Canadian Scientific and Christian Affiliation, was formed in 1973 with a distinctively Canadian orientation. The CSCA and the ASA share publications (*Perspectives on Science and Christian Faith* and the *God and Nature* magazine). The CSCA subscribes to the same statement of faith as the ASA, and has the same general structure; however, it has its own governing body with a separate annual meeting in Canada.

Canadian Scientific and Christian Affiliation, PO Box 63082, University Plaza, Dundas, ON L9H 4H0. Website: [www.csc.ca](http://www.csc.ca).

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Full-time students may join as **Student Members** (science majors) with voting privileges or as **Student Associates** (nonscience majors) with no voting privileges.

**Spouses** and **retirees** may qualify for a reduced rate. **Full-time overseas missionaries** are entitled to a complimentary membership.

An individual wishing to participate in the ASA without joining as a member or giving assent to our statement of faith may become a **Friend** of the ASA. Friends receive all member benefits and publications and take part in all the affairs of the ASA except voting and holding office.

**Subscriptions** to *Perspectives on Science & Christian Faith (PSCF)*, are available at \$50/year (individuals), \$85/year (institutions) and \$20/year (student premiers).

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## How Do I Find Published PSCF Articles?

Articles appearing in *Perspectives on Science and Christian Faith* are abstracted and indexed in the *Christian Periodical Index; Religion Index One: Periodicals; Religious & Theological Abstracts*, and *Guide to Social Science and Religion in Periodical Literature*. Book Reviews are indexed in *Index to Book Reviews in Religion*. Present and past issues of *PSCF* are available in microfilm form at a nominal cost. For information, write to NA Publishing, Inc. PO Box 998, Ann Arbor, MI 48106-0998 or go to [www.napubco.com](http://www.napubco.com).

Contents of past issues of *PSCF* are available at [www.asa3.org](http://www.asa3.org) → PUBLICATIONS → PSCF.



**American Scientific Affiliation**  
218 Boston Street, Suite 208  
Topsfield, MA 01983

Phone: (978) 887-8833  
FAX: (978) 887-8755  
E-mail: [asa@asa3.org](mailto:asa@asa3.org)  
Website: [www.asa3.org](http://www.asa3.org)



**Editorial**

Reviewing Book Reviews 233 James C. Peterson

**Articles**

Living Relationally with Creation:  
Animals and Christian Faith 235 Keri McFarlane

God’s Creation Wild and Violent, and  
Our Care for Other Animals 245 Christopher Southgate

C. S. Lewis and Animal Experimentation 254 Michael J. Gilmour

Deep History, Amnesia, and Animal Ethics:  
A Case for Inter-Morality 263 Celia Deane-Drummond

**Communication**

The Ways of Jesus and Science at an IVGCF Meeting 272 Matthew C. Fleenor

**Book Reviews**

*Between God and Green: How Evangelicals Are  
Cultivating a Middle Ground on Climate Change* 277 Katharine K. Wilkinson

*After the Monkey Trial: Evangelical Scientists and a New Creationism* 278 Christopher M. Rios

*The Slain God: Anthropologists and the Christian Faith* 280 Timothy Larsen

*The Territories of Science and Religion* 281 Peter Harrison

*Dealing with Darwin: Place, Politics, and Rhetoric  
in Religious Engagements with Evolution* 284 David N. Livingstone

*Laying Down Arms to Heal the Creation-Evolution Divide* 286 Gary N. Fugle

*The World Is Not Six Thousand Years Old—So What?* 287 Antoine Bret

*From Teilhard to Omega: Co-creating an Unfinished Universe* 288 Ilia Delio, ed.

*Adam, the Fall, and Original Sin: Theological,  
Biblical, and Scientific Perspectives* 289 Hans Madueme and  
Michael Reeves, eds.

*Can Animals Be Moral?* 291 Mark Rowlands

*The Physics of Theism: God, Physics, and the Philosophy of Science* 293 Jeffrey Koperski

*The Soul of the World* 295 Roger Scruton

*The Gap: The Science of What Separates Us from Other Animals* 297 Thomas Suddendorf

*Navigating Genesis: A Scientist’s Journey through Genesis 1–11* 298 Hugh Ross

*Information Doesn’t Want to Be Free: Laws for the Internet Age* 300 Cory Doctorow

*Enhancing the Art & Science of Teaching with Technology* 302 Sonny Magaña and  
Robert J. Marzano

*Geek Heresy: Rescuing Social Change from the Cult of Technology* 303 Kentaro Toyama

**Letter**

Important Development Concerning the Impact of Fracking 304 Kenell J. Touryan