PERSPECTIVES on Science and Christian Faith

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In This Issue …

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

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Stephen Contakes

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Things Old and New

In the gospel of Matthew (13:51–52), Jesus refers to his disciples as scribes who in their communication and interpretation of God's teachings bring forth things "old and new." Each of the five essays in this issue seeks to do just that for the ASA and broader academic science and religion communities. The first offers that the early Christian doctrine of Christ as prophet, priest, and king informs how Christians ought to act in response to the contemporary challenge of climate change. The second enriches a conversation, ongoing since the early 1960s, about the use of models in science and religion. It does so by applying insights from chemistry, which employs a panoply of models to make useful sense of matter at the atomic and molecular level.

Another paper, written by C.S. Lewis's principal biographer, examines the many ways science contributed to Lewis's thinking and efforts to address the trendy materialism and dehumanizing technological visions of progress that loomed large during his lifetime—and continue in modified form today.

The remaining articles contribute to additional conversations. A multidisciplinary team of authors representing the disciplines of English, gender studies, philosophy, physics, and psychology argue that science's understanding of gender dysphoria problematizes theologies which consider this condition to be a result of the Fall. Specifically, they contend that such approaches are incongruent with biological and psychological understandings of the condition and, moreover, contribute to spiritual and psychological harm. The final article in this issue returns to the beginning, or rather, the Old Testament Origins account in Genesis 1:1–2:3. Examining its ancient Near Eastern context, it contends that the account is an artfully composed creation, employing a common ancient Near Eastern sevenfold literary pattern.

Rounding out the issue are seven book reviews, representing the care of numerous reviewers. Among these, Lauren Seifert, who served with excellence as Behavioral and Social Sciences editor prior to May 2024, and as book review editor between May and August 2024, concluded her service with *PSCF* to take up the post of co-editor-in-chief at *Current Psychology*.

Also concluding his term of service to the journal with our gratitude is Professor Alan Padgett of Luther Seminary, who has served on our editorial board since 2014. He, along with our editors, other editorial board members, and numerous anonymous reviewers are unsung heroes of the journal. The pages of *PSCF* have been immeasurably enriched by their insights and generous wise counsel. Fortunately, with this issue the board has been bolstered by the addition of three new members with a stellar track record: Professors Andrew Loke of Hong Kong Baptist University, Fred Cannon of The Pennsylvania State University, and Stan Rosenberg of Oxford University, who also serves as the Vice President for research and scholarship of the Council for Christian Colleges & Universities (CCCU) and as the Executive Director of Scholarship & Christianity In Oxford (SCIO).

With this issue, the Manuscript Submissions (inside front cover) clarify that, while *PSCF* is an academic journal that primarily publishes articles and book reviews, it also seeks INSIGHTS that inform our readers of important emerging developments, REVIEWS which insightfully summarize the state of science and religion conversations, and EDITORIALS which offer informed perspectives on topics of particularly pressing interest.

It is my hope that all the contributions we publish reflect our commitment to pursue clarity and scientific, theological, and philosophical integrity. I reaffirm the expectations set forth by my predecessor, James Peterson, as described in the lead editorials to the December 2013 and December 2021 issues. However, this does not mean our articles are intended to be the last word on a topic. They are articulate, well-researched, and defensible perspectives that stimulate thought and are worthy of further engagement, both in the pages of this journal and elsewhere.

Stephen Contakes
Editor-in-Chief

Gijsbert van den Brink

Article

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King, Priest, Prophet, and Climate Science: Ecological Implications of the Threefold Office

Gijsbert van den Brink

What would Jesus do in response to contemporary global climate change? This question, though in itself necessarily speculative, is addressed here by applying the ecumenical doctrine of Christ's threefold office (munus triplex) *to anthropogenic global warming. Our* kingly *commitment to the stewardship of creation should not be dismissed (as some have argued) but complemented by a* priestly *awareness of our profound interconnectedness with nonhuman creation and a* prophetic *dedication to telling the truth, even when it involves costly lifestyle changes. In the process of constantly being formed into the image of Christ, their "chief Prophet, only High Priest and eternal King"* (Heidelberg Catechism)*, Christians may learn to respond in Christ-like ways to the current climate predicament.*

Keywords: Christology, climate science, *Heidelberg Catechism*, motivational gap, *munus triplex*, planetary boundaries, priesthood, prophetic critique, sacramentality of creation, spirituality, stewardship, threefold office

One of the most ominous developments of the last few decades is the emergence of the global climate crisis as predicted by climate scientists. Amidst this threatening calamity, how should Christians act, given their unique orientation to God's purposes for their lives and for the world? "What would Jesus do" or, better, "have his disciples do?" Obviously, given the cultural distance between first-century Palestine and the complex technological and economical dynamics of the highly developed late-modern West, this question is not easy to answer. The hermeneutical gap is simply enormous.

Recent scholarship in Christian ecotheology has explored two important approaches: one via ethics and another via dogmatics. Within the ethical route, important work has involved applying a Christian virtue-ethic to climate change and other ecological crises. Drawing from the biblical story as centered on Christ, Steven Bouma-Prediger, for example, has highlighted the role of virtues such as wonder, humility, and hope in cultivating characters that constructively and effectively engage in the practice of "earthkeeping."[1] In dogmatic methodologies, Christology (the doctrine of Jesus as the Christ) has been revisited from an ecological angle, looking for its—perhaps hidden—ecological potential. Notably, the Danish theologian Niels Henrik Gregersen coined the term "deep incarnation" to emphasize that God did not just become human in Christ's incarnation, but, as the Gospel of John (1:14) has it, *flesh*. That is, God became embodied "in the entire realm of … biological existence,

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earth and soil," and thus even came to share our human "climate-dependence."[2]

In the Christian theological tradition, dogmatics and ethics have always needed and presupposed each other. The most influential theologians—Aquinas, Calvin, and Barth are cases in point—consistently incorporated ethical treatments in their dogmatic surveys. For, to paraphrase Einstein's famous quip about science and religion, dogmatics without ethics is lame whereas ethics without dogmatics is blind. Indeed, only rethinking doctrine in the light of ecology could easily remain abstract and barren, while exclusively focusing on ethics runs the risk that our actions are insufficiently thought through and corrected from the perspective of the gospel.[3]

In this article, I argue that the theological tradition provides us with an important tool to connect Christology and ethics in a way that can be fruitfully employed in addressing ecological challenges such as human-induced climate change. That tool is the *munus triplex*, the so-called doctrine of the threefold office of Christ, according to which Christ operates as our King, Priest, and Prophet, and we are prompted and inspired to take on these same roles in Christ's footsteps. Deeply rooted in the person and work of Jesus, the implications of this doctrine are inherently ethical, involving the Christlike shaping of Christians' characters, attitudes, and actions. In this article, I will apply this "tool" to the problem of contemporary climate change[4] by examining how the current climate crisis urgently calls for a response that is simultaneously prophetic, priestly, and kingly.

Even though this treatment includes multiple Christian denominational traditions and is, in that sense, ecumenical, I am a Northwest-European and a Dutch Reformed theologian. As such, I realize that I belong to that part of the globe that has disproportionally contributed to today's climate crisis. Also, I will draw mainly on the Western theological tradition as that is the one I am familiar with. So the thoughts elaborated in this article will benefit from conversation across global divides.

The structure of this contribution is as follows: I will first make some introductory comments about the current climate debate—both in a general sense and specifically among Christians. Then I outline the doctrine of *munus triplex*, that is, the threefold office of Christ, and relate this doctrine to the problems surrounding climate change. Finally, I summarize my findings and offer some concluding reflections.

Climate Change and Other Environmental Problems

It is virtually impossible to speak about climate change in a way that is not polarized right from the start, or, at least, that is not interpreted politically.[5] Although the number of people who think that the climate is not changing is decreasing rapidly, there are still climate skeptics. But most of them now think along different lines—such as, "yes, the climate is indeed changing, but it has not been proven that this is due to human activities," or "yes, the climate is changing, but the effects of this should certainly not be exaggerated."[6] Among Christians there is also the view that we need not be concerned about climate change because we have been promised a new earth that can come only after the existing one has disappeared. Although this kind of "escapism" is based on a theologically flawed argumentation, I am not engaging in a discussion with (Christian) climate skeptics. This is a topic that requires separate consideration.[7] I presuppose here that the current climate changes are caused by human activities, particularly Western production, consumption, and travel patterns, through the associated production of carbon dioxide and methane, and that climate scientists are correct in showing that these have extremely serious consequences.[8]

At the outset, it should also be mentioned that climate change is not the only environmental problem that humankind faces. In 2009, Swedish researchers identified no fewer than nine planetary boundaries (associated with an equal number of systemic processes), many of which have now been exceeded.[9] In addition to the warming of our planet as a result of climate change, these planetary boundaries include the extinction of species and the associated loss of biodiversity; loss of wildlife habitat; ocean acidification; growing nitrogen emissions; increasing water scarcity, floods, and forest fires; and deforestation. These processes have in common that they can reach (or have already reached) a critical level (or tipping point) above which they "explode"; that is, they produce consequences that can no longer be controlled. These processes are not isolated from each other but mutually influence each other. Thus, they form a dangerous cocktail that makes the development of the biosphere erratic and unpredictable. Concerns about them have therefore been incorporated into undergraduate science curricula.[10] In what follows, we speak about climate change, but this concept stands for this entire set of ominous ecological

processes, all of which are largely driven by human activity, especially in the Northern Hemisphere.

Having thus sketched the main outcomes of contemporary climate science, let us now explore some of the trajectories of the so-called doctrine of the threefold office, in order to then examine how this concept might illuminate the calling Christians have in today's climate crisis.

The Threefold Office

In his *Dialogue with Trypho*, written around the year 150, the Greek Church Father Justin Martyr states that, in the Bible, kings and other anointed persons receive their tasks from God. In the same way, "He [i.e., Christ] Himself received from the Father the titles of King, and Christ, and Priest, and Angel."[11] Early in the fourth century, Eusebius of Caesarea specifies that the truly anointed (Greek: *Christos*) "is the only high priest of the Universe, the only King of All Creation, and only Chief Prophet of the Father among the prophets."[12] This is the first historical instance where we find the three offices of king, priest, and prophet that are traditionally ascribed to Christ mentioned in one breath.

Interestingly, Eusebius adds that Christ, as the truly anointed one, "has filled the entire cosmos with Christians."[13] Thus, according to Eusebius, the followers of Jesus share in the mission (for anointing always takes place for the purpose of a mission) of the one after whom they are named. We find here an awareness of the fact that, even though the anointing received by Jesus was unique in that it was aimed at his fulfilment of God's covenant with the people of Israel, it had a universal scope, since all nations were to be included in this saving covenant (cf. Matt. 28:19). Thus, followers of Jesus were seen as being entrusted with the same kingly, priestly, and prophetic roles, extending Jesus's mission through time and space. As the later Greek Church Father John Chrysostom (345–407) put it in one of his sermons: in Old Testament times, there were three groups that were anointed, namely, prophets, priests, and kings; today, through the Spirit of Christ, believers, both women and men, have received all three of these anointings.[14] So, in a way, they are prophet, priest, and king at the same time.

In the centuries that followed, many other theologians, including Thomas of Aquinas, would use this idea of the so-called "threefold office" as a Christological and soteriological scheme.[15] This is most pronounced and detailed in the Reformed tradition; for example, with John Calvin, and through his influence, in confessions such as the *Heidelberg Catechism* (1563) and the *Westminster Confession* (1647).[16] The natural place to proceed to an explanation of the *munus triplex* was in their discussion of the creed. As soon as the title "Christ" is mentioned in the Apostles' Creed ("I believe in Jesus Christ …"),[17] it is natural to wonder what that designation means. That turns out to be "anointed," which in turn leads to an exploration of the backgrounds of that term in the Old Testament.[18]

Incidentally, the usage of prophet, priest, and king in the Old Testament is less uniform than is often assumed: while priests (Exod. 29:7, 21; Lev. 8:2–12; 21:10–12) and kings (1 Sam. 10:1; 16:1–13; 1 Kings 1:39; 2 Kings 9:1–6) are indeed anointed, this is less clear in the case of prophets. The Old Testament speaks of many prophets, but only in the case of Elisha is an anointing mentioned (1 Kings 19:16).[19] Yet, texts such as Psalm 45:8 and Isaiah 61:1 were taken as supporting evidence on this point. The idea of a continuous line from the Old Testament that finds its climax in Christ, and then fans out again to present-day believers, fits in well with the covenantal structure of Protestant theology. In Roman Catholic theology, too, the doctrine of the threefold office has played a significant role, especially after John Henry Newman re-introduced it by the end of the nineteenth century and, partly under his influence, it found its way into *Lumen Gentium* (1964).[20] Therefore, we can speak of an *ecumenical* theme, the roots of which go back deep into the Early Church.[21]

We have to forgo a biblical-theological elaboration of these topics here.[22] In the meantime, the *applications* of the doctrine of the threefold office have been numerous. Indeed, the doctrine has allowed theologians "to address a wealth of the most varied systematic and dogmatic interests."[23] For example, Karl Barth made extensive use of it, both in his Christology and in his doctrine of sin.[24] Also, one has only to consult the multitude of catechism commentaries and sermons to find a wide range of more practical uses. Even at the present, original proposals in this vein are made, for example, to employ the concept for clarifying the role of theology as it relates to the sciences.[25] But there are also pitfalls here. The use of the triad can become contrived, and it is conceivable that it can cause a blind spot in regard to other Old Testament functions and roles that find their climax in the

actions of Jesus (for example, that of a bridegroom, wisdom teacher, servant, and shepherd).[26]

Things also quickly go awry when the three offices are linked to independent "leadership roles" with diverse characteristics.[27] The characteristic feature of the concept is precisely that it is a single, threefold office (*munus triplex*) and not three offices (*tria munera*). Jesus *unites* the three in himself into a harmonious whole. Michael Welker correctly points out that the three offices (which can, of course, be spoken of in the plural) are perichoretically connected with each other; they permeate, determine, and mutually influence each other.[28] Furthermore, it makes a difference how one prioritizes the three offices in relation to each other and, in connection with this, whether one regards them with the pre-Easter Jesus or the glorified Jesus in mind (in the first case, one would be inclined to start thinking in terms of prophet and priest, and in the second case, from the viewpoint of his kingship).[29]

Nonetheless, Cornelis van der Kooi is correct when he compares the doctrine of the threefold office with electrical wiring that has been installed in a house, but has remained unused, hidden behind a cover plate. He speaks of a metaphor that has the rich potential to bridge the gap between Christ and us.[30] That is exactly what we need when we reflect in this article on the question of how the salvation, which Christians believe to have in Jesus, can be extended into our concrete and complex lives today.[31] It is striking indeed how emphatically this parallelism is present in the doctrine of the *munus triplex*. For example, question and answer 31 of the *Heidelberg Catechism:* "Why is he called 'Christ,' meaning 'anointed'?" is followed immediately by the question "But why are *you* called a Christian?" The answers to both questions are also very much parallel: Jesus has told us the truth ("us" being the community of believers) as a prophet, has sacrificed himself for us as a priest, and still reigns as a king, who "governs us by his Word and Spirit, and who guards us and keeps us in the freedom he has won for us."[32] In the same way, Christians learn, as prophets, to confess the truth (here Christologically focused on the name of Jesus), to offer themselves "as a living sacrifice of thanks" as priests, and to fight against evil as kings.

We realize that the notion of the threefold office should be used with care, since it is not a panacea that offers easy solutions to complex problems. With that proviso in mind, in the next section, we attempt to make these notions fruitful for our attitudes toward one of the most urgent problems of our days: the global climate crisis.

King, Priest, and Prophet as Key Roles in a Time of Climate Change

In his impressive study, *Ecologies of Grace,* Willis Jenkins distinguishes three strategies for relating grace (in a Christian sense) and ecology to each other: the pursuit of "ecojustice" as a way of sanctifying nature, the role of humans as stewards who care for creation, and the development of an ecological spirituality in which creation is directly linked to God.[33] He connects the first strategy with the Roman Catholic tradition and elaborates this view on the basis of the work of Thomas Aquinas; he sees the second as typical of the Reformed tradition as illustrated by Karl Barth; and the third represents Eastern Orthodox thought in terms of deification (*theosis*), as Jenkins shows from the hand of Maximus the Confessor. This results in a complex whole in which Jenkins ultimately refrains from attempting to realize a synthesis. Up to this point, Christian ecotheology had mainly defended itself against the accusation that Christianity was largely to blame for ecological destruction—ever since this accusation was famously raised by the historian Lynn White.[34] Jenkins, however, showed a variety of ways in which theology can much more constructively contribute to the debate on ecologically beneficial strategies and practices. However, the layering in Jenkins's study is also a weakness, in conjunction with its somewhat contrived way of linking the various strategies with specific denominations. For example, if one regards the work of the Reformed theologian Jürgen Moltmann, one discovers a strong emphasis on ecological justice and spirituality, and much less on stewardship.[35] Apparently, it is not so easy to construe a convincing overview of the ways in which the grace of God in Christ feeds into ecologically wholesome strategies and practices.

The advantage of thinking from the perspective of the threefold office is that the various ecological strategies are interrelated from the outset, without each having to be linked to a specific denominational tradition. For the scheme of the threefold office is, in itself, fully ecumenical: it is shared by all the main Christian traditions as an insightful model that shows who Christ is for us and how we can follow in his footsteps. And, as van der Kooi indicates, it is open to ever-new concrete approaches of what

Christian life should entail. Let us now see how this may work out in more detail.

Our Kingly Role

When we regard Christian action pertaining to nature and climate primarily from the perspective of the *kingly* office, the concept of stewardship quickly comes to mind. For that traditional metaphor is about governing the earth and, as applied to Genesis 1:28 and Psalm 8:6, even about having "dominion" over the works of God's hands. Both governing and exercising dominion are pre-eminently kingly tasks. Of course, in these texts, human beings function as "viceroys" under God, and exercising dominion is often interpreted in "softer" terms as providing responsible care to creation on behalf of its Owner.[36] Yet, in that capacity, humans still have the kingly task to rule over nature, to exercise (cultural) power, and to guide things in the right direction. The idea is that we have been given the earth on loan, as it were, and that we are to cultivate and maintain it, as Adam took care of the Garden of Eden (Gen. 2:15). While this mission was and is carried out in very different ways in practice, including ways that unfortunately contributed to the exploitation of the earth, the notion of human beings as stewards has nevertheless inspired numerous believers to at least proceed with prudence and care in their dealings with the earth. Intrinsically linked to the stewardship metaphor is the realization that one day we will have to give an account of the way we have carried out our management task.[37] Applying this insight to climate change means that we must use thoughtfulness and commonsense to prevent it, and to fight its devastating consequences as well as we can.

Although the stewardship metaphor has been widely circulated and has even been adopted in secular circles (in which case our responsibility is not so much to the Creator but to future generations or to the earth itself), it has also been severely criticized recently. Douglas and Jonathan Moo treat it with caution, observing that the term

> has been hijacked by groups whose interpretation of 'stewardship' would seem … to contravene nearly everything scripture says about who we are called to be as God's people in our relationship to the rest of creation.[38]

Dutch eco-theologian Trees van Montfoort even calls the concept "dangerous."[39] This is mainly due to at least three interrelated aspects of it.[40] First, the idea of stewardship places humans above, and to a large extent also outside, the rest of creation. According to some, this speaks of prideful superiority.[41] Others emphasize that it turns nature into a commodity, thus creating distance between humans and the world.[42] The awareness that we ourselves are part of nature and that our fate is thoroughly intertwined with the entire creation is not considered. Second, stewardship would be an eminently economic function, one that revolves around making a profit. The steward would be what we call a manager nowadays, that is, someone who has to make or keep a business profitable. But it is precisely this focus on profits that has greatly increased environmental problems, including climate change. And third, the steward metaphor conceals a purely instrumental attitude toward non-human creation. Creation apparently exists for us to be exploited—the value it has in and of itself remains out of the picture. Thus, the stewardship metaphor, and especially its focus on our relationship with nature and climate, has resolute opponents today. Some even believe that the concept urgently needs to be retired.[43]

At the same time, there are authors who vigorously defend its legitimacy and continued usefulness.[44] They suggest that the criticisms can be overcome (the steward in the New Testament is, for example, not a profit-driven *homo economicus,* but a manager with genuine concern for what has been entrusted to him or her). They think it is especially important that the metaphor forces us to face our responsibility from which we cannot just run away, especially after all the harm we have done.[45] Today, in particular, it is important that as good stewards we do everything that is needed to save nature and climate from total collapse. The human species is the only one that is capable of doing this and should take this task seriously. Thus, Pope Francis's 2015 encyclical, *Laudato Si'*, explicitly mentions the importance of stewardship.[46]

When we look at this issue from the perspective of the threefold office, it seems that a way can be found to rise above this stalemate. Could this problem be resolved if we were to view the stewardship perspective as a *partial* response to climate change, next to other equally important ones? In particular, it can be seen as a fulfilment (a carrying out) of the Christian's kingly office, in which "I strive with a free conscience against sin," and we then relate the word "sin" to my, and our, climate-sins.[47] Given the fact that these sins typically take the form of injustice toward fellow humans and God as Creator, it could then be argued

that this translates into a deep concern for environmental justice. In the Old Testament, the king is the guarantor of justice (e.g., Psalm 72) and this role finds its epitome in Jesus as the just ruler *par excellence*. So, it is from this kingly perspective that the virtue of justice can receive a proper biblical grounding.[48] In line with this, stewards must ensure that there is equitable management of the land entrusted to them so that it can continue to feed all the people who depend on it. In actual practice, this might mean supporting climate policies that promote mitigation efforts such as "contraction and convergence" (contraction meaning the reduction of global greenhouse gas emissions to a sustainable level, and convergence referring to the equal division of the emissions per capita across countries), adaptation efforts to reduce climate change harms, and the funding of responses to loss and damages associated with the ill effects of climate change.[49]

Our Priestly Role

In addtion to this kingly viewpoint, two equally important lenses can be polished through which other important aspects of a wholesome attitude toward climate change can come into view—aspects that the stewardship metaphor leaves largely invisible. In particular, we may additionally need images and metaphors that express much more strongly the unity and interdependence of humans and the rest of the created world, as well as the intrinsic involvement of God in nonhuman nature. We can discover such images when we look at human nature from a *priestly* perspective. Indeed, various voices today argue for human environmental action to be seen as priestly action in God's creation, either instead of or in addition to stewardly action. This idea has been elaborated especially in Eastern Orthodox thought.[50] But just as the Protestant tradition cannot lay an exclusive claim to the steward metaphor, so the priestly metaphor can also be found outside Eastern Orthodoxy—for example, in the ecumenical notion of the priestly anointing of the Christian in line with the priestly role of Jesus in the New Testament.

In the Bible, priests know themselves to be intimately connected with the community of which they are a part. They are one with the people and carry them in their hearts (cf. Exodus 39). At the same time, they live in union with God. In the New Testament, the climax of the priesthood turns out to be Jesus, who is perfectly one with God and, at the same time, fully human. He shared our existence with all its fragilities and limitations, and ultimately sacrificed himself for the salvation of the world—a world that also includes the nonhuman creation (Col. 1:20).[51] Thus, there is a twofold movement: Jesus represents God in the creation by becoming one with it; conversely, as priest, he represents the creation before God by presenting it as reconciled to God. In this way, creation becomes sacramental: it bears the traces of Christ (also in its suffering!) and is thus connected to God. We may even ask ourselves whether we should call creation "sacred" in the sense of "sanctified" due to this special connection with God.[52]

Be that as it may, whoever feels touched (or "anointed") with the Spirit of Jesus will begin to share in this twofold movement. This leads, on the one hand, to a spirituality in which we realize how deeply connected we are with the nonhuman creation—just think of the countless microbes that reside in our bodies from our birth to the grave. We are not above nature but are an organic part of it, and the fate of the world is our fate.[53] So, as small and vulnerable beings, we have feelings of respect, wonder, and awe as we are encompassed by a multifarious creation that sustains our lives in all sorts of ways. At the same time, we have the calling to serve as priests as well as we can; we are the only species capable of consciously doing so. This does not possibly imply that we give our lives for creation, as Jesus did, but our sacrifice will at least mean that we act with restraint and know the meaning of "enough" as we deal with nature. In the New Testament, the priestly service takes on the character of "a living sacrifice," with which believers consecrate their lives to God (Rom. 12:1). Perhaps in this regard Protestants can learn from the Eucharistic (literally thanks-giving) interpretations that other traditions, such as Roman Catholic and Eastern Orthodox, often give to this priestly ministry.[54] In that case, the priestly office also includes that we, on behalf of the nonhuman creation, give the thanks that is due to God as creator.

In any case, the priestly anointing brings Christians to realize the need of having a much more intimate connection with creation than just the managerial relation that is suggested by the stewardship metaphor. From a priestly point of view, nonhuman nature has an irreducible value and significance in itself as the so-called "nature psalms," such as Psalm 104, testify. While, as we have seen, the virtue of justice is central to the kingly office—kings are called to rule justly (Psalm 72), the priestly office is all about love—love for God and people, and also for

the entire creation. As that love grows, our relationship with nature and climate is not dictated by purely rational considerations but arises from a deeper spiritual source. This source also gives our relationship with nature more clout. For we rationally know what we need to do and, especially, what not to do to counteract the effects of climate change, but often the problem is that we simply do not like acting the way we should. In the literature, this is called "the motivational gap."[55] When our vision of nature and climate becomes more integral to our spirituality, it will be easier not only to recognize, but also to do, the right things.[56]

Our Prophetic Role

In addition to these kingly and priestly perspectives on ecology and climate, we now distinguish a third calling, namely the one of *prophet*. This does not stem from a forced attempt to build a nice theological system. To the contrary, this third perspective is very timely and needed next to the other ones. In the Bible, prophecy is not necessarily connected to the future, as is sometimes thought, but to speaking the truth—and then particularly to recognizing and affirming what is true in difficult and costly situations. From a Christological point of view, prophecy is "the function by which Christ instructs his people in the truth of doctrine legal and evangelical …"[57] The prophetic office thus calls attention to an aspect of Jesus's ministry that is often sadly neglected in traditional Christologies (and that, for example, is even "skipped" in the Apostles' Creed), namely his teaching as rabbi. We find this teaching in the Sermon on the Mount, among other places; here Jesus makes the will of God concrete for all kinds of situations in life—even where it is far too radical for our liking, and where it may hurt. Jesus himself did not seek to avoid that pain. In the end, it was his prophetic witness that cost him his life (John 18:37; 1 Tim. 6:13).

Extended to the current climate discussion, this means that in this situation as well Christians are looking for the truth, even if the implications of that truth turn out to be unpleasant. In the midst of a world that is rife with fake news, conspiracy theories, and constructed facts, this comes down to having a sustained love for what corresponds to reality (as the traditional definition of truth goes). This implies that Christians are to be critical of any ideological bias that adjusts the truth for personal (often selfish) interests. Thus, from a prophetic point of view, fact checkers serve an important function. And so do scientists. We will have to take the results of scientific research seriously, not because they necessarily tell the truth, but because they come about through the best possible test procedures that are available (e.g., by exposing them to criticism and evaluation by peer review). The skepticism about scientific findings that is now prevalent among some groups of orthodox Christians is therefore alarming in this context—even if it may also be somewhat understandable.[58] For example, we have to find our way today through a maze of information providers, many of which we cannot evaluate ourselves. This certainly applies to complex scientific theorizing. In such situations, we tend to rely on our intuitions and on people we trust. The fact that prominent scientists sometimes link an atheistic worldview to their scientific theories does not help in this connection.

However, it is precisely to rule out all sorts of biases that the best scientific institutions encourage diversity and inclusivity in their ranks so that people from various backgrounds can judge, challenge, and adjust one another's ideas and theories. In this way, if a high degree of scientific near-consensus emerges about the extremely problematic nature of the current climate changes, it is irresponsible to rely on individual preferences or so-called anecdotal evidence ("I just saw a beautiful bird the other day, so things cannot be so bad") to call such a consensus into question. As a Christian, in that case one forsakes one's prophetic office. After all, that prophetic office urges us to speak the truth in our present complex situation, even if this leads us to forego or adjust our air travel, meat consumption, and fossil-fuel driven forms of production, to mention only the most obvious examples. In fact, even if the climate problem were less urgent, such adaptations would still be highly beneficial.[59]

A Unified Office

As mentioned above, the doctrine of *munus triplex* deals with *one* unified office. The kingly, priestly, and prophetic perspectives on climate change thus complement each other. It would be peculiar if the virtues of justice, love, and truth were mutually exclusive—the three actually belong together.[60] In concrete terms, this means that when it comes to combating the effects of climate change, the situation not only calls for a prophetic emphasis on truth-telling and a priestly one on self-sacrifice (i.e., behavioral change), but also for a "kingly" practice of stewardship—that is, responsible management.

This includes the pursuit of science in the interest of developing new technologies that may help us counter the dire effects of the current climate crisis. Some climate activists oppose this approach because depending on new technology would be a sign of *hubris* and/or might be inspired by the wish to avoid the changes in human behavior that the situation requires. But both of these considerations are not necessarily valid.

From a Christian point of view, developing new technologies is not necessarily hubristic but can be understood as part of the "cultural mandate" to "till and keep" the earth (Gen. 2:15). And the need for technological interventions should not be contrasted with that for behavioral changes. Perhaps the pending climate disaster can be avoided only when we make drastic behavioral changes *and* adopt beneficial technological developments. In any case, rejecting technological innovations to combat climate change as shallow "*techno-fix*," and constant suspicion of technology, are counterproductive.[61] But the reverse is also true: we should not use an appeal to kingly stewardship in order to avoid priestly self-sacrifice and prophetic critique. If we don't curb our consumerist lifestyles, technological innovation will not be able to help us since we will continue to transgress planetary boundaries. In fact, it is this down-to-earth, both-and perspective that seems to be the most beneficial in our polarized situation.

Needless to say, the application of the threefold office scheme to today's climate predicament will not give an answer to all kinds of specific questions. It will not tell us, for example, whether or not we should organize a highway blockade in order to hold a government or company accountable for furthering climate destruction. But we can let it shape us in learning the virtues that are needed to arrive at best possible assessments and policies in regard to climate change.[62] The kingly, priestly, and prophetic aspects of our calling should not be played off against each other but should mutually reinforce and strengthen each other. For reaching this goal, we depend on a sustained exposure to the gospel of Jesus Christ, "our chief prophet and teacher … our only high priest … and our eternal king."[63] It is this constant shaping and molding into the image of Christ that is unique and constitutive for the life of Christians and which should feed into their attitudes vis-à-vis climate change, even when that leads them toward close cooperation with others.[64]

Concluding Reflections

Does the good news of the salvation in Jesus Christ, which is at the heart of the Christian faith, make a significant difference in the midst of the challenges that are associated with climate change? This is the question that Ernst Conradie asks himself in a recent essay about climate change and God's acts of salvation.[65] Historically, the prospects for a positive answer are slim, Conradie admits. For things have gone wrong all too often. Nevertheless, he tries to answer the question constructively, as he considers the potential of each of the three traditional models of reconciliation: reconciliation as victory, reconciliation through satisfaction, and reconciliation as moral inspiration. Conradie's conclusion is a sober one: at the very least, much solid work will need to be done if these models are to have practical value in the fight against climate change.[66]

The same undoubtedly applies to the attempt to meaningfully relate the concept of the threefold ministry of Christ to the climate crisis. Yet, that is where it has to begin—with honest reflection on the question of who Jesus Christ is for us.[67] For Christians, he is not one more inspiring figure from a distant past, but he is still what he has always been: the prophet who reveals the painful truth about our lives, the priest who heals our broken relationships with the love-offering of his life, and the king who protects us and reigns in righteousness. We gradually learn to reflect this attitude in our lives and in our actions in the climate crisis. This, if anything, is what it means to "do what Jesus did." It is far from easy or self-evident. Among other things, it means that we cannot bury our heads in the sand, with the idea that God is going to create a new earth anyhow. On the contrary, the eschatological completion of Jesus's work of salvation will, in fact, motivate us to commit ourselves to participating in Christ's threefold office for the sake of "the beauty of the earth."[68] As Francis Schaeffer put it in 1970 (back then in gendered language):

> On the basis of the fact that there is going to be total redemption in the future, not only of man but of all creation, the Christian who believes in the Bible should be the man who—with God's help and in the power of the Holy Spirit—is treating nature now in the direction of the way nature will be then. It will not be perfect, but it must be substantial, or we have missed our calling … we should exhibit a substantial healing here and now, between man and nature and nature and itself, as far as Christians can bring it to pass.[69]

Thus, what Christians should do is not a speculative derivative of "what Jesus would do," but a function of what Jesus actually did do and still does.[70]

Notes

[1]Steven Bouma-Prediger, *Earthkeeping and Character: Exploring a Christian Ecological Virtue Ethic* (Grand Rapids, MI: Baker Academic, 2019).

[2]Niels Henrik Gregersen, "Christology," in *Systematic Theology and Climate Change: Ecumenical Perspectives,* ed. Michael S. Northcott and Peter M. Scott (London, UK: Routledge, 2014), 45. Cf. Niels Henrik Gregersen, "Deep Incarnation: Why Continuity Matters for Christology," *Toronto Journal of Theology* 26 (2010): 173–88, https://www.utpjournals.press/doi/abs/10.3138/tjt.26.2.173, and a volume with responses to this concept: Niels Henrik Gregersen, ed., *Incarnation: On the Scope and Depth of Christology* (Minneapolis, MN: Fortress Press, 2015).

[3]Cornelis van der Kooi and Gijsbert van den Brink, *Christian Dogmatics: An Introduction* (Grand Rapids, MI: Eerdmans, 2017), 12–13. Bouma-Prediger has been criticized for building on a secular (Rawlsian) view of the virtue of justice as fairness, "rather than a more self-consciously biblical and theological account of justice," thus relying on "philosophical commitments that subvert arguments for Christian virtue ethics elsewhere in the book." E.g., justice-as-fairness is often seen as equality of opportunities, coupled with an economics of non-intervention. Joshua Heavin, "Book Review: Steven Bouma-Prediger, *Earthkeeping and Character: Exploring a Christian Ecological Virtue Ethic*," *Studies in Christian Ethics* 34, no. 3 (2021): 381–84, https://doi.org/10.1177/09539468211010425.

[4]Important aspects of the topic of climate change have already been discussed in this journal, such as Thomas Ackerman, "Global Warming: Scientific Basis and Christian Responses," *Perspectives on Science and Christian Faith* 59, no. 4 (2007): 250–64, https://www.asa3.org/ASA/PSCF/2007/PSCF12-07Ackerman.pdf; Janel Curry, "Christians and Climate Change: A Social Framework of Analysis," *Perspectives on Science and Christian Faith* 60, no. 3 (2008): 156–64, https://www.asa3.org/ASA/PSCF/2008/PSCF9-08Curry.pdf; and Rachel M. Roller and Louise Ko Huang, "Galileo and Global Warming: Parallels between the Geocentrism Debate and Current Evangelical Skepticism about Anthropogenic Climate Change," *Perspectives on Science and Christian Faith* 72, no. 1 (2020): 3–14, https://www.asa3.org/ASA/PSCF/2020/PSCF3-20RollerHuang.pdf. The present contribution to these various perspectives is a theological one.

[5]Esp. in the US, the call for climate concern is still often seen as part of an (anti-Christian) "leftish agenda." See, e.g., Megan Basham, *Shepherds for Sale: How Evangelical Leaders Traded the Truth for a Leftist Agenda* (New York: Broadside Books, 2024), chap. 1. At the other side of the spectrum, there are those who urge that we should not speak about "climate change" as if it were a relatively innocent phenomenon, but about the "climate crisis," or even "climate endgame." See on the latter, Luke Kemp et al., "Climate Endgame: Exploring Catastrophic Climate Change Scenarios," *Proceedings of the National Academy of Sciences* 119, no. 34 (2022): e2108146119, https://doi.org/10.1073/pnas.2108146119. In my view, climate *predicament* might be the best label, but in what follows I won't take a stand on this issue and generally speak about "climate change".

[6]Cf. World Economic Forum, "Is Climate Denialism Dead?," August 15, 2022, https://www.weforum.org/agenda/2022/08/is-climate-denialism-dead/.

[7]For this see, e.g., Katharine Hayhoe, *Saving Us: A Climate Scientist's Case for Hope and Healing in a Divided World* (New York: One Signal Publishers, 2021); Roller and Huang, "Galileo and Global Warming"; and Wylie Carr et al., "The Faithful Skeptics: Evangelical Religious Beliefs and Perceptions of Climate Change," *Journal for the Study of Religion, Nature & Culture* 6, no. 3 (2012): 276–99, https://doi.org/10.1558/jsrnc.v6i3.276.

[8]See, e.g., "AR6 Synthesis Report: Climate Change 2023," Intergovernmental Panel on Climate Change, https://www.ipcc.ch/report/sixth-assessment-report-cycle/.

[9]See Johan Rockström et al., "A Safe Operating Space for Humanity," *Nature* 461 (September 23, 2009): 472–75, https://www.nature.com/articles/461472a; J. Rockström et al., "Planetary Boundaries: Exploring the Safe Operating Space for Humanity," *Ecology and Society* 14, no. 2 (2009): art. 32, https://doi.org/10.5751/ES-03180-140232. It is only in the fight against the depletion of the ozone layer that so much success has been booked in recent decades that it is likely this process will remain within critical limits.

[10]Robert P. MacDonald et al., "An Interactive Planetary Boundaries Systems Thinking Learning Tool to Integrate Sustainability into the Chemistry Curriculum," *Journal of Chemical Education* 99, no. 10 (2022): 3530–39, https://doi.org/10.1021/acs.jchemed.2c00659.

[11]Justin Martyr, *Dialogue with Trypho*, chap. 86, http://www.newadvent.org/fathers/01286.htm (last visited August 9, 2024).

[12]Eusebius of Caesarea, *Historia Ecclesiastica* I 3, 8; the translation is taken from *The History of the Church: A New Translation*, trans. Jeremy M. Scott (Oakland, CA: University of California Press, 2019), 51.

[13]Eusebius, *Historia Ecclesiastica* I 3, 12 (*History of the Church*, 51).

[14]John Chrysostom, "Homilia III in epistolam II ad Corinthos," in *Patrologia series graeca,* vol. 61, ed. J.P. Migne, Paris 1862, 411. I owe these references to Eusebius and Chrysostom to Erik A. de Boer, "Christology and Christianity: The Theological Power of the Threefold Office in Lord's Day 12," *In die Skriflig* 47, no. 2 (2013): art. #682, https://doi.org/10.4102/ids.v47i2.682.

[15]See Thomas Aquinas, *Summa Theologiae* III 31, art. 2 (and also some of his biblical commentaries).

[16]For Calvin, particularly see his *Institutes* II 15.

[17]*Heidelberg Catechism*, Lord's Day 7, answer 23.

[18]*Heidelberg Catechism*, Lord's Day 12, question & answer 31. Cf. *Westminster Confession of Faith*, VIII 1; *Westminster Shorter Catechism*, question & answer 23; *Westminster Larger Catechism*, question & answer 42.

[19]This is probably the reason why Calvin, initially, when he was still a bit more biblicist (and for that reason, e.g., hesitated about classical formulations of the doctrine of the Trinity), wanted to speak of only two offices. In the 1536 edition of the *Institutes* and also in his *Catechism* of 1537/1538, he limited his exposition of the offices of Christ to those of king and priest. See Ivor J. Davidson, "Christ," in *The Oxford Handbook of Reformed Theology,* ed. Michael Allen and Scott R. Swain (Oxford, UK: Oxford University Press, 2020), 463–64.

[20]See Anthony Ekpo, "The *Sensus Fidelium* and the Threefold Office of Christ: A Reinterpretation of *Lumen Gentium* No. 12," *Theological Studies* 76, no. 2 (2015): 330–37, https://doi.org/10.1177/0040563915574666. Cf. John Henry Newman, "The Three Offices of Christ," in *Sermons Bearing on Subjects of the Day* (London, UK: Longmans, Green, 1898), 52–62.

[21]Michael Welker, *God the Revealed: Christology* (Grand Rapids, MI: Eerdmans, 2015), 213, demonstrates how and where the doctrine also plays a role in Lutheran and Eastern-Orthodox theology.

[22]For some preliminary outlines, see Van der Kooi and Van den Brink, *Christian Dogmatics*, 449–53.

[23]Welker, *God the Revealed*, 215.

[24]In his doctrine of reconciliation, Barth discusses Christ as Priest (*Church Dogmatics* IV 1), King (IV 2) and Prophet (IV 3), interweaving these expositions with his account of sin as pride (IV 1), sloth (IV 2) and falsehood (IV 3).

[25]Taido Chino, "Theology's *Munus Triplex*? Reconsidering Theology's Relationship to the Sciences," *International Journal of Systematic Theology* 20, no. 3 (2018): 335–58, https://doi.org/10.1111/ijst.12310. Taido discusses Karl Barth as an example of someone favoring theology's prophetic office with regard to the sciences (directed at critique and correction vis-à-vis the university's tendency toward reductionism), J. Wentzel van Huyssteen as highlighting theology's priestly role (aimed at mediation and transformation), and John Webster as assigning a royal vocation to theology (aimed at "restoring a theologically informed vision of reality in which all things find a divine coherence," p. 351). Chino suggests that theology has to navigate between these three roles depending on the circumstances.

[26]Adam J. Johnson, "The Servant Lord: A Word of Caution Regarding the *munus triplex* in Karl Barth's Theology and the Church Today," *Scottish Journal of Theology* 65, no. 2 (2012): 159–73, esp. 172, https://doi.org/10.1017/S0036930612000038.

[27]For a critique of this use of the doctrine, see Timothy Paul Jones, "Prophets, Priests, and Kings Today? Theological and Practical Problems with the Use of the *munus triplex* as a Leadership Typology," *Perichoresis* 16, no. 3 (2018): 63–86, https://doi.org/10.2478/perc-2018-0017.

[28]Welker, *God the Revealed,* 215, with reference to Dumitru Stăniloae, *Orthodox Dogmatic Theology*, Vol. 3 (Brookline, MA: Holy Cross Orthodox Press, 2012), 86ff. (part 4.1, note 3).

[29]Welker, *God the Revealed*, 214. The *Westminster Shorter Catechism*, answer 23, explicitly states that the three offices pertain to Christ "both in his estate of humiliation and exaltation" (i.e., both pre- and post-Easter).

[30]Cornelis van der Kooi, *This Incredibly Benevolent Force: The Holy Spirit in Reformed Theology and Spirituality* (Grand Rapids MI: Eerdmans, 2018), 99.

[31]How appealing the metaphor of anointing—symbol of empowerment by God's Spirit—still is, became clear during the coronation of Charles III as King of Great Britain on May 6, 2023; his bodily anointing was the central event of the liturgy during the Coronation Service at Westminster Abbey.

[32]As formulated in *Our Faith: Ecumenical Creeds, Reformed Confessions, and Other Resources* (Grand Rapids, MI: Faith Alive Christian Resources, 2013), 79.

[33]Willis Jenkins, *Ecologies of Grace: Environmental Ethics and Christian Theology* (Oxford: Oxford University Press, 2008), part 1.

[34]Lynn White Jr., "The Historical Roots of Our Ecological Crisis," *Science* 155, no. 3767 (1967): 1203–07, https://doi.org/10.1126/science.155.3767.1203.

[35]See specifically, Jürgen Moltmann, *God in Creation: A New Theology of Creation and the Spirit of God* (Minneapolis, MN: Fortress Press, 1993).

[36]Thus, e.g., Douglas John Hall, *Imaging God: Dominion as Stewardship* (Eugene, OR: Wipf and Stock, 1986); Calvin DeWitt, *Caring for Creation: Responsible Stewardship of God's Handiwork* (Grand Rapids, MI: Baker, 1998); and Richard Middleton, *The Liberating Image: The* Imago Dei *in Genesis 1* (Grand Rapids, MI: Brazos Press, 2005), 204, 221; many more examples could be added.

[37]In biblical imagery, the steward is not a master or owner but a member of the master's household. See Douglas J. Moo and Jonathan A. Moo, *Creation Care: A Biblical Theology of the Natural World* (Grand Rapids, MI: Zondervan, 2018), 95.

[38]Moo and Moo, *Creation Care*, 85.

[39]Trees van Montfoort, *Green Theology: An Ecofeminist and Ecumenical Perspective* (London, UK: Darton, Longman and Todd Ltd, 2022), 172. For discussions of the strengths and weaknesses of the stewardship paradigm, see also the various chapters in *Beyond Stewardship: New Approaches to Creation Care,* ed. David P. Warners and Matthew Kuperus Heun (Grand Rapids, MI: Calvin College Press, 2019).

[40]Richard Bauckham, *The Bible and Ecology. Rediscovering the Communion of Creation* (Waco, TX: Baylor University Press, 2010), 2–12, distinguishes no fewer than five criticisms, including that the metaphor suggests that Godself is not active in creation, and that it only has a limited biblical basis.

[41]Stephen Jay Gould, "The Golden Rule—A Proper Scale for Our Environmental Crisis," chapter 2 in *Eight Little Piggies: Reflections in Natural History* (New York: W.W. Norton and Company, 1993), 48.

[42]Van Montfoort, *Green Theology*, 169.

[43]H. Paul Santmire, *Nature Reborn: The Ecological and Cosmic Promise of Christian Theology* (Minneapolis, MN: Fortress Press, 2000), 120.

[44]A recent example is Mark D. Liederbach, "Stewardship: A Biblical Concept?," in *The Oxford Handbook of the Bible and Ecology,* ed. Hilary Marlow and Mark Harris (Oxford, UK: Oxford University Press, 2022), 310–24.

[45]Liederbach, "Stewardship," 319–21.

[46]See sections 116 and 236 in *Papal Enclyclicals Online*, https://www.papalencyclicals.net/; for extensive support of the stewardship idea in the encyclical, see Calvin B. DeWitt, "Earth Stewardship and *Laudato Si'*," *Quarterly Review of Biology* 91 (2016): 271–84, https://doi.org/10.1086/688096. Celia Deane-Drummond, *A Primer in Ecotheology: Theology for a Fragile Earth* (Eugene, OR: Cascade Books, 2017) also discusses the encyclical (pp. 54–71), and argues with regard to human dominion and stewardship over the earth that if considered "in the light of humanity's role as divine image bearing, then such terms could not mean 'exploitation' but rather, careful service for the earth" (p. 23).

[47]The quote is from answer 32 of the *Heidelberg Catechism*.

[48]See the virtue-ethical approach in Kathryn D. Blanchard and Kevin J. O'Brien, *An Introduction to Christian Environmentalism: Ecology, Virtue, and Ethics* (Waco, TX: Baylor University Press, 2014), particularly chapter 5, "Justice." For eco-justice, also see Jenkins, *Ecologies of Grace*, 61–75.

[49]See, e.g., "Contraction and Convergence," Climate Change Connection, https://climatechangeconnection.org/solutions/international-solutions/contraction-convergence/; "Fund for Responding to Loss and Damage," United Nations: Climate Change, https://unfccc.int/loss-and-damage-fund-joint-interim-secretariat; and "Responding to Climate Change," NASA Global Climate Change, https://climate.nasa.gov/solutions/adaptation_mitigation/.

[50]See, e.g., Elizabeth Theokritoff, *Living in God's Creation: Orthodox Perspectives on Ecology* (New York: St Vladimirs Seminary Press, 2009), and cf. the analysis in Van Montfoort, *Green Theology*, 273–92; and John Chryssavgis, "The Earth as Sacrament: Insights from Orthodox Christian Theology and Spirituality," in *The Oxford Handbook of Religion and Ecology,* ed. Roger S. Gottlieb (Oxford, UK: Oxford University Press, 2010), 92–114.

[51]For a more extensive examination of the biblical notion of priesthood, see Stefan Paas, *Pilgrims and Priests: Christian Mission in a Post-Christian Society* (London, UK: SCM Press, 2019), 173–92.

[52]Of course, there are risks here, such as ignoring the ontological difference between Creator and creature that defines the monotheistic traditions, and the deification of nature. In an upcoming essay, "Is Nature Sacred? A Christian Perspective," I attempt to weigh the pros and cons. See also Richard Bauckham, *Living with Other Creatures: Green Exegesis and Theology* (Waco, TX: Baylor University Press, 2011), 13: "The Bible has de-divinized nature, but it has not de-sacralized nature."

[53]Norman Wirzba in his *This Sacred Earth: Humanity's Place in a Wounded World* (Cambridge, UK: Cambridge University Press, 2021), e.g., 63–89 writes instructively about this "inescapably embodied and symbiotic character" (p. 63) of all life forms. He emphasizes that this not only includes animals but also plants, bacteria, and the like.

[54]On whether or not this means that we should call nature a "sacrament," see Veli-Matti Kärkkäinen, *Creation and Humanity* (Grand Rapids, MI: William B. Eerdmans, 2015), 220.

[55]See, e.g., Wouter Peeters et al., *Climate Change and Individual Responsibility: Agency, Moral Disengagement and the Motivational Gap* (New York: Palgrave Macmillan, 2015).

[56]Again, we are reminded here of the *Heidelberg Catechism*, which stipulates that conversion (or "the rising-to-life of the new self") implies "a *love and delight* to live according to the will of God by doing every kind of good work" (answer 90; italics added).

[57]Heinrich Heppe, *Reformed Dogmatics Set Out and Illustrated from the Sources,* revised edition, ed. Ernst Bizer, trans. G.T. Thomson (Grand Rapids, MI: Baker Book House, 1978), XVIII, 8 (p. 454). Cf. William den Boer and Riemer A. Faber, eds., *Synopsis of a Purer Theology*, Vol. 1 (Landrum, SC: Davenant Press, 2023); originally published in Leiden, 1625), XXVI, 39 (p. 300). With "doctrine legal and evangelical" is meant the teaching of the law and the gospel.

[58]Instructive on both these aspects (i.e., the understandable and the disturbing sides of Christian skepticism about the sciences) is Josh A. Reeves, *Redeeming Expertise: Scientific Trust and the Future of the Church* (Waco, TX: Baylor University Press, 2021).

[59]See Pim Martens, *Planetary Health: The Recipe for a Sustainable Future* (Maastricht: Maastricht University, 2023), 8, https://pimmartenscom.files.wordpress.com/2023/05/inaugural-speech-pim-martens.pdf (last visited February 25, 2024). Here we find a funny cartoon of a climate summit at which measures such as preserving rain forests, creating green jobs, livable cities, and energy independence are recommended. The cartoon shows an angry man standing in the audience and asking, "What if it's a big hoax and we create a better world for nothing?"

[60]Arguably, the opposites of these virtues are sloth, pride, and falsehood respectively, as elaborated in Karl Barth's doctrine of sin (see endnote 24).

[61]There is a vibrant Christian tradition (in part inspired by Martin Heidegger) that might be criticized as overly romantic here. This tradition ranges from Jacques Ellul's famous *The Technological Society*, trans. John Wilkinson (New York: Vintage, 1964) up to, e.g., Craig Gay, *Modern Technology and the Human Future: A Christian Appraisal* (Downers Grove, IL: IVP Academic, 2018).

[62]Here, the virtue-ethical approach referred to above has an indispensable role to play. See, e.g., Bouma-Prediger, *Earthkeeping and Character*; and Blanchard and O'Brien, *Introduction to Christian Environmentalism*.

[63]*Heidelberg Catechism*, answer 31.

[64]One of Basham's criticisms in *Shepherds for Sale*, chap. 1, is that climate-activism is not distinctively Christian. Well, let us be grateful for that!

[65]Ernst M. Conradie, "God's Acts of Salvation for Us," in *T&T Clark Handbook of Christian Theology and Climate Change,* ed. Ernst M. Conradie and Hilda P. Koster (London, UK: T&T Clark, 2020), 406–16 (p. 406).

[66]Conradie, "God's Acts," 415.

[67]Cf. Jürgen Moltmann, *Jesus Christ for Today's World* (Minneapolis, MN: Fortress Press, 1994).

[68]Cf. Steven Bouma-Prediger's "modern classic," *For the Beauty of the Earth: A Christian Vision for Creation Care* (Grand Rapids, MI: Baker Academic, 2001; second ed., 2010).

[69]Francis A. Schaeffer, *Pollution and the Death of Man: The Christian Virtue of Ecology* (Wheaton, IL: Tyndale House, 1970), 68–69. Cf. Alister McGrath, *The Re-Enchantment of Nature: Science, Religion, and the Human Sense of Wonder* (London, UK: Hodder & Stoughton, 2002), 51.

[70]I am highly indebted to Prof. Harry Cook for his translation of a Dutch version of this text as well as for his many perceptive suggestions that have found their way into this article. The Dutch version was published as Gijsbert van den Brink, "Koning, priester en profeet in een tijd van klimaatverandering: het *munus triplex* in verband met de ecologische problematiek," in *Zoeken naar de dingen die Boven zijn,* ed. S. Stoppels et al. (Utrecht, Netherlands: KokBoekencentrum, 2023), 99–114. Also, I thank Jan Martijn Abrahamse, Sake Stoppels, Eva van Urk-Coster, three anonymous reviewers of this journal, and its current editor-in-chief for very helpful comments on previous versions of this text.

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Models in Christianity and Chemistry: Truth or Utility

William W. Wood

This article shows that a good model is useful—that is, for enabling work and communicating concepts—and true, in the sense that it coheres with theory or doctrine. Using a typology of models based on intended purpose, it shows that the relationship between truth and utility in chemical and theological models depends on the intended function of the model. It also shows that in some traditions, theological models may be warranted, primarily by scripture, and held to be necessarily true and useful, but no similar warrant appears in chemistry. The consequence of the scriptural warrant is that, in some traditions, particular models are retained even if their utility is questionable. An alternative view is suggested proposing that scriptural metaphors may be recast into new models.

Keywords: model, metaphor, chemistry, theology, penal substitution, truth, utility, theory, doctrine

Models form an integral part of how we communicate ideas and concepts in science, the arts, and theology, but what makes a good model? What are the criteria that are used to judge the suitability of a particular model? It might be argued that in science this is easily answered—a good model accurately reflects experiment. But is that sufficient? What criteria can be used to validate one model over another in theology, which cannot access results from experiment?

From the middle of the last century, there have been two types of theological literature related to models—discussion *about* models and discussion *using* models. The discussion *about* models has principally focused on the comparison of models in science and theology—differences and similarities. The discussion *using* models in theology has largely been an intramural affair, resting within the theological domain. Consequently, there is an implicit understanding that theological truth—coherence with scripture, tradition, or both—is the criterion that makes for a good model.[1] Absent is any discussion of other criteria.[2]

While the evaluation of theological models remains within the domain of theology, it is difficult to identify other criteria that make a model good. However, if we bring the theological perspective on models into conversation with a different area of endeavor, other criteria may be brought to light, particularly if it can be shown that the comparative area chosen has sufficient similarities with theology in its use of models to make the comparison fertile. I will argue here that chemistry is such a suitable field of endeavor.

When we examine what makes a good model in chemistry, a very different perspective appears. As an example, Michael Dewar noted that organic chemists, for many years, have been guided by a simple qualitative model of the chemical bond based on shared pairs of

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electrons localized between atoms. However, there are phenomena in organic chemistry that cannot be accounted for by this simple model, suggesting that electrons are not localized between atoms but spread out (delocalized) across the entire molecule. Unfortunately, models that give a better theoretical account of the electronic structure of molecules are regarded as too complex for everyday use. Despite its shortcomings, the localized electron pair model continues to provide useful insights, leading Dewar to conclude that "the only criterion of a model is its usefulness, not its 'truth.'"[3] Yet, Dewar's conclusion is too facile; a good model must also communicate, that is, present a concept in a way that gives increased understanding.

By juxtaposing models in chemistry and Christianity, I argue that a good model is both *useful* and *true*. Useful models enable further work and effectively communicate the concept modeled. Truthful models illuminate in coherence with theory or doctrine, even though that coherence will be partial at best. Models that fail to meet these two criteria must be revised or abandoned—in both chemistry and Christianity.

This argument will be developed by first examining the natures of models, metaphors, truth, and reality. This will be followed by a critical comparison of general scientific and theological models. The extension of these comparisons to models in chemistry and theology is then used to suggest a new typology of models based on intended function: that the intended function of the model dictates its relationship to utility and truth. Finally, I will also argue that the use of warranted models in theology differs fundamentally from the way models are used in chemistry and propose a resolution to the conflicts that result from insisting that if a model is true, it must be useful.

Models and Metaphors, Truth, and Reality

Dewar defined models in chemistry as the simplified images and representations that chemists use to solve problems in which direct application of theory results in overwhelming complexity. This definition is inadequate on two counts. Firstly, by focusing on prediction, it devalues the function of the model in providing understanding—its ability to communicate. Secondly, it does not address the mirror-side of the model. A model may "reproduce certain properties," but it does so at a cost. There is both an "is" and an "is not" aspect to the model. Sallie McFague argues that a model is a "sustained and systematic" metaphor.[4] From a scientific perspective, Mary Hesse makes a similar argument in different terms. She describes the aspects of the model that refer to the subject as the *positive* analogy; those which do not, the *negative* analogy; and those for which correspondence is unknown, the *neutral* analogy.[5] The introduction of the "is" and "is not" element to the description of the model is critical.[6] Thus, a model is a metaphor writ large while a metaphor is a model writ small. For the chemist, Theodore Brown concurs with this view: "Models, which are extended metaphors, give rise to metaphorical entailments, which influence the ways in which the model is understood and applied."[7]

Understanding metaphors and models as differing in scale also helps to see that the larger scale model may be *constructed* from multiple smaller-scale metaphors. The chemical ball-and-stick model of the molecule includes metaphors for both the atom and bond as ball and stick respectively. Similarly, the theological atonement model of the courtroom includes metaphors for God as judge and humankind as the accused. The constructed nature of models—that models are constructed from multiple smaller, often metaphorical, subunits—is a second critical aspect of this discussion.

In the context of models, truth is best defined in terms of coherence to the thing modeled—frequently theory or doctrine. It is hoped that theory or doctrine corresponds to the world as it is and thus, indirectly, that the model will also do so.[8] In chemistry, truth is ultimately arbitrated by experiment but as perceived by model and theory. In theology, truth must finally be arbitrated by scripture,[9] but similarly as perceived through model and doctrine. Both coherence and correspondence definitions fall within the inflationist position, whereby truth is understood to be a substantial property of the thing described as true.[10] The consequence of taking this position is a commitment to some form of critical realism for both chemistry[11] and theology.[12]

Models in Science and Religion

The academic study of models in science and religion may be divided into two stages: (1) a period of construction in the last few decades of the twentieth century when most of the foundational texts appeared; and (2) a period in the early twenty-first century when criticism predominated.

Perhaps the earliest comparative study of the use of models in science and theology is found in the Whidden Lectures given by Ian Ramsey in 1963.[13] Subsequently, Frederick Ferré (1968) included such a comparison as part of a wider study in the use of metaphors and models in religion.[14] Thomas Fawcett's *The Symbolic Language of Religion* appeared in 1971,[15] but was, unfortunately, not widely referenced. Robert Scharlemann made a significant, but seldom noted, contribution in 1973, describing the *construction* of models in theology.[16] The landmark study was undoubtedly Ian Barbour's *Myths, Models, and Paradigms* which appeared in 1974[17] and marked the beginning of the heyday of comparative work which lasted until 1997, when Barbour published a revised version of the text as *Religion and Science*.[18] Significant monographs from the period were Sallie McFague's *Metaphorical Theology* (1982)[19] and *Models of God* (1987),[20] Janet Martin Soskice's *Metaphor and Religious Language* (1985),[21] and Arthur Peacocke's *Intimations of Reality* (1984).[22]

After the turn of the century, it appeared that the constructive work was done, so that Alister McGrath's 2020 summary of models in the third edition of *Science and Religion* is based on Barbour's 1974 and 1997 publications.[23] Yet, some constructive work continued, including a 2003 exchange on the testing of models in science and religion,[24] and Soskice's brief return to the subject of patriarchal models in 2007.[25]

However, most of the published work on models in science and religion after the turn of the century was critical of the previous findings. One of the two main lines of criticism argued that the indescribable, unknowable nature of God made comparisons between theological models and the testable models of invisible entities in science unworkable. Michael Fuller takes this reasoning down an apophatic pathway, concluding: "Ultimately, the approach to God has to do not with knowing—science—but with not-knowing—nescience. And no model can assist in that approach."[26]

Robert Bolger reached a different conclusion from a similar starting point. He sees religious models as relating to how we live and what we believe, while scientific models relate to understanding and knowing and the comparison between the two types of models as a form of category error. "Religious models are regulative and not representative. They are existential and not epistemological."[27]

A second criticism was that comparisons between religious and theological models exhibited a form of scientism.[28] Taede Smedes specifically criticizes Barbour as aiming to "unify and harmonize science and religion via process philosophy,"[29] in part, through his comparison of scientific and religious models. Barbour responded to this criticism noting that his study examined equally both similarities and differences between scientific and religious models.[30] A response from Smedes did not address the question of models.[31] Bolger also criticized the comparative efforts as attempts to make "religion look more scientifically acceptable"[32] and claimed that "the theological use of scientific modeling has led to a distortion of the concept of God."[33]

The accusation of scientism against Barbour and the other foundational authors writing on scientific and religious models is misplaced. As noted above, Barbour has answered the criticism for himself. Two of the other significant contributors, McFague and Soskice, also reject the claim that they are attempting to validate or make theological models scientifically acceptable.[34] Neither author compares scientific and religious models to validate one or the other. Scientific models are not the standard to which religious models are compared, but a source of referential analysis. The goal of the comparison is to seek understanding of the way models work. By observing scientific and theological models together, we may learn about both.

The same principle applies to this study—the objective is not to present chemical modeling as a best practice against which theological modeling must be compared, but to seek the similarities and differences between the two fields and thus develop insights into the role and fitness of models. Although examples from chemistry are included in the existing literature on science and religious models, there has been no study dedicated to comparing models in theology and in chemistry. This is somewhat surprising, given the vital dependence of chemistry on models, particularly in the field of organic and inorganic chemistry where much of the everyday work of the chemist is model based.

Are Chemical Models Comparable to Theological Models?

At first glance, it may seem that there is little commonality between the use that chemistry and

theology make of models. There is, however, a profound connection that makes the comparison productive, despite the criticisms of Smedes and Bolger. Chemistry is, at bottom, the science of understanding macroscopic observables in terms of unobservable atoms and molecules. Hirofumi Ochiai states that "inferring invisible microscopic events from macroscopic observations … has been habitual with chemists since chemical atomism arose in the nineteenth century."[35]

That same habitual inference is practiced by theologians who see the visible manifestations of the world as the creation and reflection of an invisible God. Chemistry and theology are united by interpretation of the visible in terms of the invisible. Further, both endeavors depend on models to enable this habitual inference. There are, however, real differences that need to be held in mind.

Fawcett, writing in 1971, noted that scientific models are *observer* models while theological models are *participator* models.[36] Barbour refers to this idea as theological models demanding a greater personal involvement, while others have referred to them as existential or evoking a moral and spiritual response. Perhaps another way of expressing this is to say that theology, and its models, are to do with faith and salvation, whereas chemistry is not. According to McFague, "Science asks the question, what is this phenomenon and how does it work?" while theology asks the question "What is the meaning of life in the world?"[37] Thus, according to McFague, "theological models have a valuational component lacking in scientific models … theological models affect feelings and actions in the world."[38]

Polkinghorne would seem to agree.

> An honest science addresses only one set of questions (roughly How?—concerned with the processes of the physical world), while theology addresses another set (roughly Why?—concerned with the meaning, value and purpose present in what is happening).[39]

It is certainly true that "chemistry is not the place to go for insights about the incarnation, atonement, and resurrection, but it is a legitimate domain for discovering the creative design of God 'in all the things that have been made' (Rom. 1:20)."[40] Theology may, similarly, have little to say to the organic chemist purifying a product, but there are other aspects in which theology and chemistry are found to be in deep conversation.

Alister McGrath, quoting Emil Brunner, claims that if

> God "leaves the imprint of his nature … upon what he does," it follows that it is a fundamentally Christian belief that "the creation of the world is at the same time a revelation, a self-communication of God."[41]

Believing chemists have the opportunity to observe that self-communication at the molecular level as they observe the ordering and innate beauty of the chemical world. The exquisite selectivity of biological-effect molecules in medicinal and agricultural chemistry speaks to the subtlety of the creating God. The unexpected radiofrequency resonance of protons in a magnetic field highlights the ingenuity of the creator as molecules sing in harmony to the glory of God. It is too strong a claim to say that the models of these interactions have no valuational content.

McFague claims that the link between model and actuality does not "affect feelings and actions,"[42] but for the believing practitioner of organic chemistry, this is also too bold a claim. Organic synthesis—the manipulation of one molecule into another—reflects the chemical rules laid down within creation itself and can, at times, be a profoundly spiritual experience. Indeed, "Sometimes a light surprises …"[43] even as the chemist in laboratory and lab coat examines the wonders of the chemical world and sees evidence of the creator God. The believing chemist is engaged not only in furthering science, but also in following the ancient understanding of *scientia* as a discipline of the mind.[44] Such spiritual responses indicate that scientific models have valuational content.

A second difference between theological and chemical models is that, in some, but not all, traditions, theological models are revealed or "given" rather than constructed. McGrath hints at this difference: "For a religion such as Christianity, it has been traditionally understood that the analogies or models are 'given,' not chosen."[45]

McGrath also notes that his view is not supported by all theologians but that this "traditional view remains influential."[46] For theologians such as Alister McGrath, the source of the givenness of Christian models is, presumably, scripture. This choice of the word *given* suggests that such models are revealed, fully formed. A better formulation recognizes that theological models are also constructed. Scharlemann notes that "models are constructed, not naturally given."[47] "Constructed" gives precedence to the human role of interpreting scripture

in order to construct theological models and allows for the possibility of error, while "given" implies a once-for-all act with no option for modification of the model. So, while the metaphors which form the basis of religious models are *found* in scripture, they must be collected and collated to form the model. This is a human activity, hopefully guided by the Spirit, rather than a God-given finished task.

Models: Didactic, Pragmatic, and Theoretic

Several authors have promulgated a typology of models, often based on Max Black's original generic approach.[48] Peter Achinstein divides models into three classes: representational, theoretical, and imaginary.[49] Rom Harré, writing in the context of theory generation in science, divided models into two classes depending on whether the subject and source are identical or different.[50] Jacopo Tomasi separates models into material and abstract types, with the former as physical images of either concrete or imaginative form and the latter as mathematical formulations.[51] Jaap van Brakel describes thirteen types of chemical model without developing a typological scheme.[52]

Theological models tend to be organized by subject matter, rather than type. Numerous descriptions of models exist in areas of theology such as scripture and scriptural interpretation, contextual theology, the church, and the eucharist, making the construction of a typology of these models challenging.

In summary, all of these typologies rest on a descriptive approach, either in terms of the relationship between source and object or on form and subject matter. When examining models in terms of utility and truth, a more fecund typology would be functional, or purpose based. As Marx Wartofsky states, "Models are embodiments of purpose and, at the same time, instruments for carrying out such purposes."[53] A possible functional typology divides models in both chemistry and theology into three types: didactic models (used for teaching purposes), pragmatic models (used in the quotidian work of both chemist and theologian), and theoretic models (used to explain or illuminate complex concepts).

Didactic Models

The primary role of didactic models is teaching. These models often focus on a single aspect of the subject matter at the expense of other aspects. They are, therefore, often more metaphorical than other types because the "is" of the metaphor relates directly to the objective of the model and the "is not" to the less pertinent matters. These models are frequently based on relatively simple historical descriptions that were subsequently replaced by more complex constructs. For instance, the Bohr orbital model of the atom, representing negatively charged electrons revolving around a positively charged nucleus, rather like planets around the sun, is a simple model that represents some of the features of atomic orbitals and electron energy quantization, with transition of an electron from a higher to a lower energy shell explaining the quantized wavelength of limit emitted from the atom (fig. 1). The model is simple enough for teaching purposes, but assumes a simple, circular orbital pattern at odds with more complex models; it communicates a particular aspect of theory at the expense of a more truthful representation.

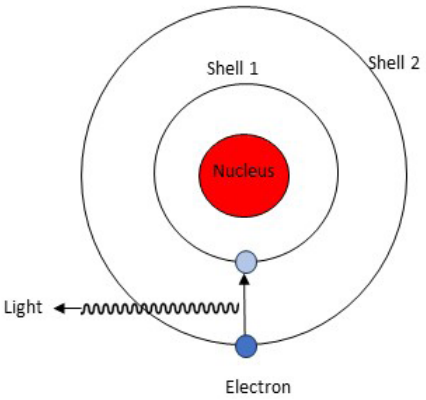

Figure 1. The Bohr Model of the Atom

Similarly, the teaching model of the cross as the "bridge" spanning the gulf between sinful humankind and a holy God (fig. 2) was much beloved of confirmation classes in the sixties and seventies

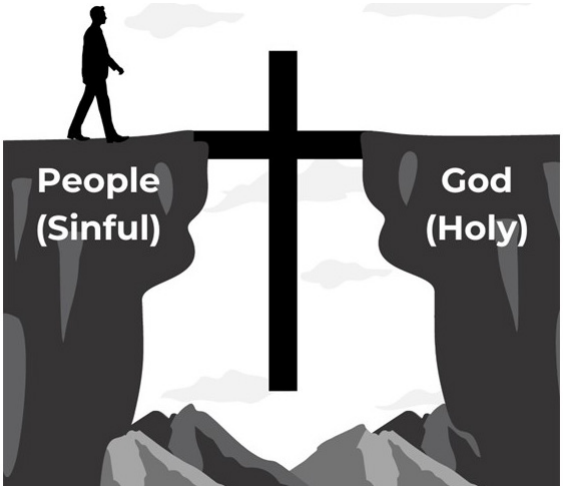

Figure 2. The Bridge Model of Salvation

and is still used today.[54] The model teaches a simple lesson but ignores more complex models of the atonement. In both chemistry and theology, communication is the key usefulness criterion for a good didactic model. As a teaching tool, the model must communicate a complex idea in simple terms. It must, of course, still have a relationship with truth, but that relationship—which might be termed the veridical distance—may be greater than in the other types of models.

Pragmatic Models

By far the largest group of models in both chemistry and theology are *pragmatic*, that is, useful for day-to-day tasks. For chemists, the prime examples are those that chemists use to represent chemical structures—the three-dimensional shape of a molecule. Roald Hoffmann and Pierre Laszlo described the hierarchy of structural representations, using models of the molecule camphor (similar to those shown in fig. 3) and noted that chemists "are hooked on these little diagrams."[55]

Each type of representation provides different information and serves a different purpose. The molecular formula (A) would be sufficient to calculate the relative molecular mass of camphor for use in reaction planning.[56] The stick diagram (B) is the typical shorthand used to represent a three-dimensional structure in two-dimensional space. A more detailed three-dimensional ball-and-stick model (C) can be generated by a relatively simple computer modeling package, allowing the molecule to be rotated and examined on the computer screen. The space-filling model (D) gives the overall shape of the molecule and might be used to examine docking with biological receptors. Hoffmann and Laszlo ask, "Which is the molecule?" and answer, "Well, all are, and none is. Or, to be serious—all of them are models, representations suitable for some purposes, not for others."[58]

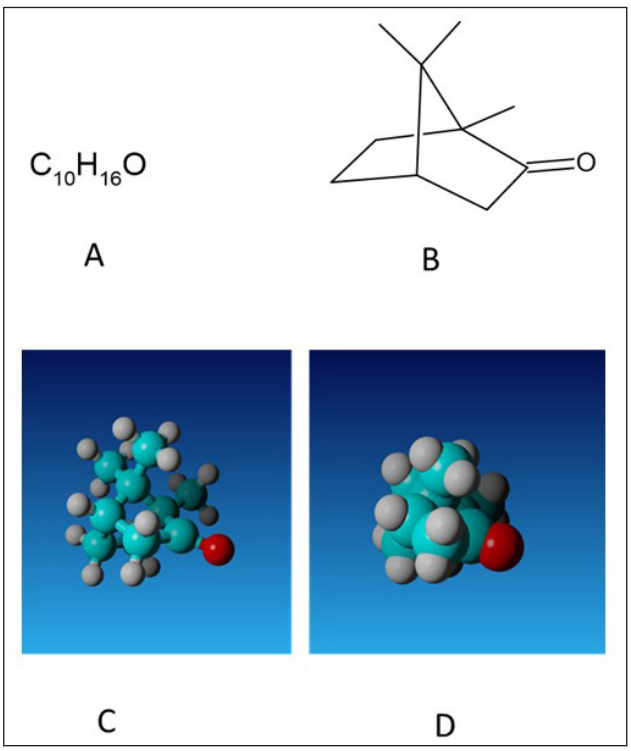

Figure 3. Models of Camphor[57]

Theologians also use a variety of pragmatic models, but whereas chemistry tends to employ hierarchical models so that higher-level models incorporate lower-level models, in theology, the models tend to be less hierarchical (*contra* McFague),[59] with the theologian selecting the model appropriate for the circumstance or underlying theological predilection. The theologian may still switch between models as circumstance requires, but not only does the new model not necessarily incorporate the old model, it may also be incompatible with it.

Perhaps the most foundational pragmatic models in theology are those concerning the inspiration and interpretation of scripture. When preparing sermons or writing commentaries, theologians employ appropriate working models of scripture. For example, John Goldingay divides models for scripture into four types: the *witnessing tradition* of narrative, the *authoritative canon* of the law, the *inspired word* of prophecy and the *experienced revelation* of poetry, epistle, and apocalypse.[60] Goldingay applies each model to a different genre of scriptural writing and not to the Bible as a whole. Thus, the practitioner seeking to preach or comment on the Gospel narratives might work through a witnessing tradition model, whereas interpretation of a psalm might use an inspired word model. Other pragmatic models critical to the work of the theologian include models of the church proposed by Avery Dulles and the models of contextual theology described by Stephen Bevans.[61]

Good pragmatic models enable the practitioner to do his or her work; they must be useful for the task at hand. Models enable the organic chemist to work in the laboratory and the theologian to work with scripture. Even though enabling is primary, a relationship with truth is still required. For the chemist using a structural model for experimental purposes, the model is useless if it directs to the wrong result. Of

course, it is possible to produce the observed result based on an incorrect model—Dewar demonstrated that. However, it is more likely that a model which gives an observed result will also be closer to theory than one that does not. As G. García Zerecero notes: "… since the beginnings of structural theory, chemists and stereo chemists have recognized, though not always explicitly, that their symbolic representations must point to some aspects of reality."[62]

Similarly, for the theologian working with scripture, the model chosen must, to some extent, cohere with the truth of the preferred doctrinal position on revelation. In both fields, the veridical distance is shorter than for the didactic type.

Theoretic Models

In *theoretic* models the veridical distance becomes shortest. Their purpose is to represent an aspect of reality as closely as possible. Yet, some sort of picture is essential to turn that dense theory into an understandable concept (*contra* McFague).[63] For chemists, quantum theory and quantum mechanics produce complex mathematical models of the atom and molecule that can be reduced to visible form using computer modeling packages. When a particular force-field (equations representing forces between atoms) is applied, the output is often a structural picture of the molecule subject (a model of a model). The relationship of that model to reality can be compared with the output from other force-fields and experimental results. If all results concur, there is some evidence for the validity of the model. The chemist knows (or at least should remember) that the force-fields are not absolute truth, just approximations of a potential reality.

If theology is the study of God, it is, almost by definition, an impossible task. God in the traditional Christian view is omniscient, omnipotent, and omnipresent, and the study of God is a study of the infinite. Consequently, it is no surprise to find theoretic models used to express the inexpressible. The nature of God is one obvious example of this type of model, but this is not the limit of theoretic theological models.

On any given Sunday, millions of Christians break bread and pour wine in the mystery of the eucharist. Theoretic models provide a means of expressing that mystery. Kevin Irwin cites ten models of the eucharist with the goal of offering "… a number of mutually enriching and interconnected 'models' which, when taken together and seen in relation to each other, can be understood to be a liturgical theology of the Eucharist."[64] As Irwin notes, each of his models is insufficient on its own to express the mystery—each represents a facet of the whole.

A good theoretic model is one that communicates the theory or doctrine in such a way that the recipient's understanding is enhanced. There is, of necessity, a shorter veridical distance for the theoretic model, since the goal of the model is to communicate truth. Theoretic models also tend to evoke the greatest level of emotional commitment. Chemists can become attached to their favorite models such as those of interactions with biological systems or reaction mechanisms, though hopefully still seeing them as models and being willing to discard them when they fail. More significantly, theologians and Christians in the pew become much more intensely committed to their models, to the extent that they become the actuality of faith, as will be shown below. Discarding such models when they fail becomes much harder.

The "Warranted" Model[65]

In a recent address to the General Synod of the Church of England, Stephen Cottrell, the archbishop of York, suggested that the opening words of the Lord's Prayer were "problematic" because of their patriarchal association,[66] essentially challenging the usefulness of the model of God as male. The model of the first person of the trinity as "Father" has been called into question for many years. Writing in 1983, McFague noted:

> The issues of idolatry and irrelevance come together in the image of God as father, for more than any other dominant model in Christianity, this one has been both absolutized by some and, in recent times, found meaningless by others. The feminist critique of God as father centers on the *dominance* of this one model to the exclusion of others, and on the *failure* of this model to deal with the anomaly presented by those whose experience is not included by this model.[67]

Writing a few years later, McFague called for alternative models for God, including mother, lover, and friend, repudiating the androcentric, hierarchical character of the Western religious tradition.[68]

In many churches, theological praxis has reflected this criticism, particularly in *ex tempore* prayer. Applying alternative models for the first person of the trinity, including those proposed by McFague,

inclusive versions of the Lord's Prayer are used in some churches. Much theological writing, including this text, attempts to avoid the use of pronouns for God, thus evading the need to assign gender and avoiding the patriarchal model. Yet, some object vigorously to any critique of the Lord's Prayer in its traditional form. It also remains firmly on the lips of millions of Christians every Sunday.

In the same *Guardian* article that reported Cottrell's musing, Chris Sugden, the chair of Anglican Mainstream, a conservative Anglican group, asks, "Is the Archbishop of York saying Jesus was wrong, or that Jesus was not pastorally aware?" In making this attack, Sugden is, in essence, claiming that the model of God as male is warranted by scripture, and it must be accepted without regard to its utility (or lack thereof) or its truth in the sense that it is a true description of God (though those who hold the position would most likely argue that it is a true description of God because it is warranted by scripture—no other warrant is required). The model appears as a descriptor of God throughout the Gospels and frequently on the lips of Jesus, most notably in the institution of the Lord's Prayer itself. Consequently, for those who take this position, the masculinity of God is no longer a model, useful or otherwise, but an article of faith—a doctrinally required description of God.

In chemistry, models are rarely, if ever, warranted. Even the fundamental laws of chemistry and their associated models may be subject to scrutiny, even if successful revision is unlikely. In a famously tongue-in-cheek response to an attempt to synthesize a "molecular ratchet"[69] that would, if it worked as proposed, violate the second law of thermodynamics, Anthony Davis made a serious point using rather theological language.

> Some would argue that this experiment was misconceived. To challenge the Second Law may be seen as scientific *heresy* … and the theoretical arguments against molecular ratchets and trapdoors are well developed. However, as scientists we should take the view that nothing is *sacred*, that experimental results outweigh all theoretical considerations, and that it is quite appropriate to revisit old questions as new techniques become available.[70]

A more serious challenge involved the model of chemical structure. Johannes Hunger claimed, "The structure of a molecule, however depicted, is one of the very central concepts in chemistry,"[71] yet in 1988, R. Guy Woolley challenged this central dogma in a paper entitled "Must a Molecule Have Shape?" Woolley argued that the "idea of molecular structure (or 'molecular shape')" which was so "familiar and deeply ingrained in our thinking" might not be an intrinsic property of a molecule in isolation.[72] The significance of this challenge is hard to underestimate since stereochemistry—one of the major fields of organic and inorganic chemistry—is predicated on the concept of molecular shape. Yet, as Ramsey noted, "Woolley claims shape is only "a powerful and illuminating metaphor" rather than an "object of belief."[73] Woolley's 1988 paper and subsequent publications prompted a veritable cottage industry of academic discussion concerning the reality of molecular shape.[74]

Woolley's argument was based on the well-known fact that "molecular structure makes no appearance in a quantum treatment of molecules starting from first principles."[75] It is only by applying various assumptions, principally the Born-Oppenheimer approximation, that shape and structure can be derived from quantum theory.[76] The empirical model of shape is required for the concept of molecular structure to emerge. This theoretical lacuna was largely ascribed to the inability to solve the immensely complex Schrödinger equation for the many-body case.[77]

Woolley's proposition implied a complete break between the model of molecular structure and the theory (truth?) of chemistry. It is tempting to see this as a challenge to a useful model that does not cohere with the truth of theory—a challenge to a central "belief" or "dogma" of organic chemistry (Woolley's choice of language is significant). However, the utility of the concept cannot be denied. Molecular shape has been enormously effective in accounting for stereochemistry, isomerism, reaction mechanism, and a host of other aspects of the chemical endeavor, suggesting that the idea of shape may be a warranted model in chemistry—because it must be true? However, subsequent authors have pointed out that while an isolated molecule may not have shape, the act of observing the molecule and its interaction with its environment may bestow shape upon it,[78] essentially resolving the apparent paradox.

While it seems likely that this story has not yet been fully told, this is a rather rare example in which a model is being modified to make it cohere to theory without the addition of experimental support. It also demonstrates the willingness of chemists to modify

even a central tenet of chemistry when confronted with contrary theoretical insights.

That the warranted model is found more frequently in theology is not without nuance. Some theologians understand the various atonement theories as models in a way similar to how models function in chemistry. Others adopt an inclusively warranted position—selecting one model as dominant but allowing others as subordinate. Yet others take an exclusively warranted stance (where only one model is accepted).

Oliver Crisp rejects metaphor and theory as appropriate descriptors of the various perspectives on the atonement and concludes, "If we have to use language other than doctrines of atonement, it might be more appropriate to speak about *models* of atonement instead."[79] Notably, Crisp draws on the analogy with models in the natural sciences in supporting his view.

Joel Green also appears to be sympathetic to this position.

> At the interface of the particular moment of Jesus' crucifixion and the eternal mission of God, we can find not one but many models of the atonement. So limited is the ground on which we walk and so infinite the mystery of God's saving work that we need many interpretive images, many tones, many voices.[80]

Other theologians, however, reject this concept of multiple models.

For theologians allowing an inclusive warrant, one particular model dominates. The other models are not rejected outright, but rather they play a supporting role providing additional color to the primary construct. Thus, Gregory Boyd argues,

> [The Christus Victor] model centers on the truth that through the incarnation, life, death and resurrection of Christ, *God defeated the devil* … I will argue that this aspect of Christ's work can plausibly be construed as more fundamental than other aspects of Christ's work and that other aspects of the "rich variety" of the wisdom of Christ's work can be best understood within this context.[81]

While Thomas Schreiner counters that a different model of the atonement dominates, he explains,

> I am not claiming that [penal substitution] is the *only* truth about the atonement taught in the Scriptures. Nor am I claiming that penal substitution is emphasized in every piece of literature or that every author articulates clearly penal substitution. I am claiming that penal substitution functions as the anchor and foundation for all other dimensions of the atonement when the Scriptures are considered as a canonical whole.[82]

For theologians promulgating an exclusively warranted model, other views are either rejected outright or in some way subsumed within the one model. Thus, James Packer writes,

> Exegetically, it is clear that penal substitution (Christ bearing in our place the curse, that is, the retribution that hung over us) is Paul's final and fundamental category for understanding the cross … How did the Savior's self-sacrifice have this propitiatory effect? By being a vicarious enduring of the retribution declared due to us by God's own law … in other words, by *penal substitution*.[83]

John Stott takes a similar position:

> So substitution is not a "theory of the atonement." Nor is it even an additional image to take its place as an option alongside others. It is rather the essence of each image and the heart of the atonement itself.[84]

Stott was writing in 1986 and Packer in 2004, but this is very much a live issue as witnessed by the furor that arose recently when a well-known evangelical questioned the value of the penal substitutionary model of the atonement.[85]

For theologians such as Crisp and Green, the doctrine of the atonement is a high-level description of the teaching of the church on the fact of Jesus's saving actions, but the doctrine does not include the mechanisms—Crisp's word—that describe how that saving action works. These mechanisms are described by multiple models. The models inform and flesh out the doctrine but are not integral to it—the doctrine is sufficient without supporting models. In contrast, Boyd and Schreiner do not view all the descriptions of the atonement on an equal basis. For these theologians, the one inclusively warranted model that they espouse is less a model in the chemical sense and more an integral part of the doctrine.

It is highly questionable whether an exclusively warranted model should still be considered a model. Stott's use of the word "image" suggests that he may still retain some sort of metaphorical/model conception of penal substitution. However, this is unclear, and his position is more likely closer to that of Donald Bloesch who, discussing the issue of God the Father described above, specifically rejects any

metaphorical/model language in favor of analogy and symbol:

> To say that God is a Rock or Fortress is metaphorical, but to call God Father or Lord is analogical. A metaphor connotes a suggested likeness between two things that are manifestly dissimilar, whereas an analogy presupposes an underlying similarity or congruity in the midst of real difference.[86]

Citing Barth as a source, Bloesch further claims:

> [These] foundational symbols … cannot be replaced because they are based not on cultural experience but on a divine intrusion into cultural experience, a revelation that originates not in history or culture, but in eternity.[87]

And further:

> God is not a man, but, for the most part, he chooses to relate himself to us as masculine.[88]

For Bloesch, the conceptualization of God as Father is not a model or a metaphor but a divinely revealed doctrine. By removing the concept from the arena of metaphor/model, Bloesch attempts to blunt criticism of the symbol. God the Father is a revealed truth about God that, in Bloesch's view, is critical to the doctrine of the Trinity. God may have feminine aspects, but God is male, and "he" is God's chosen pronoun. It seems that when a model is inclusively, and especially exclusively, warranted, it begins to lose its metaphorical content. The "is" begins to outweigh the "is not" and the model starts to merge with and becomes identified with doctrine and even dogma.

Conclusion

In this study, we have juxtaposed a chemical and theological perspective on models and concluded that a good model is both useful and true—useful in enabling and communicating a concept, and true in cohering with theory or doctrine, albeit in a limited sense. Previous studies have identified important differences between chemical and theological models, but one difference that has not received attention is the existence of warranted models as a feature of theology absent from chemistry. Many theologians adopt an attitude toward models similar to that found in chemistry: useful models should be retained but models that no longer function should be modified or rejected. But some traditions insist on retaining models that are of questionable value and resist attempts to revise their models. They insist that particular models are true—revealed in whole cloth—and that such models must, therefore, be useful.

The chemist—ever the pragmatist—might ask why some theologians insist on, for example, a patriarchal model of God and its entailments that has the potential to offend half the population and does offend many.[89] Why insist on the penal substitutionary model of the atonement, with its entailments of blood sacrifice and "cosmic paternalism, neglect, and child abuse"[90] that are found offensive in the current era? Do these models work? Do these models serve to effectively communicate the Gospel to the world? If, as appears to be the case, they have become detrimental to spreading the good news of God's love, then the pragmatic chemist would say that they are no longer good models because they are no longer useful—they fail to communicate.

The theologians of patriarchy and penal substitution might respond that these models are warranted in scripture and therefore to be faithful to scripture they cannot be discarded and, further, *must be useful* because they are God given. However, as discussed above, models are not *given* but *constructed* by the human mind from the smaller-scale metaphors that are *found* in scripture. Those metaphors, and others that can be *found* in scripture, can be used to *construct* models appropriate for the twenty-first century, just as Jürgen Moltmann uses the metaphor of God the Father to construct a non-patriarchal model of a trinitarian God and as Green uses multiple metaphors of the atonement to construct the kaleidoscopic model.[91] It is possible to retain adherence to scripture and work creatively to construct new models appropriate for the twenty-first century from the metaphors of scripture. The metaphors may live, even as the old model dies. If the juxtaposition of models in chemistry and theology shows anything, it is that the work of creative model building and modification must go on in theology just as it does in chemistry, refining and constructing models that effectively illuminate the love of God for today's world.

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Notes

[1]A classic example of this is found in the many "four views" books on Christian doctrine. In these texts, the authors almost exclusively work within theological parameters, comparing the truth of their doctrinal positions or coherence with scripture, but they rarely ask whether the models that they espouse communicate the gospel outside of the theological world. See IVP Spectrum Multiview Series (22 titles), https://www.ivpress.com/spectrum-multiview-book-series, and Zondervan Counterpoints Series (38 titles), https://zondervanacademic.com/products/category/counter-points, both accessed July 30, 2024.

[2]An exception to this is the work of David Klemm and William Klink cited below. However, this work was aimed at validating theology and its models as an academic subject comparable with other academic subjects.

[3]Michael J. S. Dewar, "Chemical Implications of .sigma. conjugation," *Journal of the American Chemical Society* 106, no. 3 (1984): 669–82, https://doi.org/10.1021/ja00315a036.

[4]Sallie McFague, *Metaphorical Theology: Models of God in Religious Language* (Philadelphia, PA: Fortress Press, 1982), 67.

[5]Mary B. Hesse, *Models and Analogies in Science* (Notre Dame, IN: Notre Dame Press, 1966), 8.

[6]Harré claims that there is a real difference between metaphors and models, but also notes that this difference is seldom observed by authors: Rom Harré, "Review of David E. Leary, ed. *Metaphor in the History of Psychology*," *British Journal for the Philosophy of Science* 47, no. 1 (1996): 142.

[7]Theodore L. Brown, *Making Truth: Metaphor in Science* (Chicago, IL: University of Illinois Press, 2003), 29.

[8]Correspondence view: X is true *iff* X corresponds to the facts. Coherence view: X is true *iff* X appropriately belongs to a coherent set S. See Pascal Engel, *Truth* (Montreal, ON: McGill-Queen's University Press, 2002), chapter 1, for a summary of classical definitions of truth.

[9]Throughout this study, theology refers to Christian theology. Since Christianity is based on the life and work of Jesus Christ and scripture is the primary source for data on the life and work of Jesus, it is not unreasonable to claim that scripture is the arbiter of theological truth. Others may wish to include reason and tradition alongside scripture, but ultimately in *Christian* theology these will also be colored and shaped by the scriptural account of Jesus's life.

[10]In contrast to a deflationist position that adding the phrase "is true" to an assertion does not change that assertion (Engel, *Truth*, chap. 2).

[11]For example, "Scientific realism comes in many different flavors, but nearly everyone agrees on a couple of basic premises. First, there is a real world out there, and it exists independently of our knowledge of it. Second, the great successes of modern science and technology go a long way toward assuring us that we can have stable, reliable knowledge of it." Brown, *Making Truth*, 186.

[12]For example, "Religious realism is the view that the existence or non-existence of God is a fact independent of whether you or I or anyone else believes that God exists. If God exists, God is not simply an idea or ideal in our minds, but an ontological reality, the ultimate creative power of the universe." John Hick, "Believing—And Having True Beliefs," in *Is God Real*, ed. Joseph Runzo (London, UK: Macmillan Press, 1993), 115.

[13]Ian T. Ramsey, *Models and Mystery* (London, UK: Oxford University Press, 1964).

[14]Frederick Ferré, "Metaphors, Models, and Religion," *Soundings: An Interdisciplinary Journal* 51, no. 3 (1968): 327–45, https://www.jstor.org/stable/41177726.

[15]Thomas Fawcett, *The Symbolic Language of Religion* (Minneapolis, MN: Augsburg Publishing House, 1971).

[16]Robert P. Scharlemann, "Theological Models and their Constructions," *The Journal of Religion* 53, no. 1 (1973): 65–82, https://www.jstor.org/stable/1201666.

[17]Ian G. Barbour, *Myths, Models, and Paradigms* (London, UK: SCM Press, 1974).

[18]Ian G. Barbour, *Religion and Science: Historical and Contemporary Issues* (San Francisco, CA: Harper, 1997).

[19]McFague, *Metaphorical Theology*.

[20]Sallie McFague, *Models of God: Theology for an Ecological, Nuclear Age* (Philadelphia, PA: Fortress Press, 1987).

[21]Janet Martin Soskice, *Metaphor and Religious Language* (Oxford, UK: Clarendon Press, 1985).

[22]Arthur Peacocke, *Intimations of Reality: Critical Realism in Science and Religion* (Notre Dame, IL: University of Notre Dame Press, 1984).

[23]Alister E. McGrath, *Science and Religion: A New Introduction,* 3rd ed. (Chichester, UK: Wiley Blackwell, 2020).

[24]David E. Klemm and William H. Klink, "Dialogue on Theological Models: Constructing and Testing Theological Models," *Zygon* 38, no. 3 (2003): 495, http://dx.doi.org/10.1111/1467-9744.00517; Langdon Gilkey, "Problems and Possibilities of Theological Models: Responding to David Klemm and William Klink," *Zygon* 38, no. 3 (2003): 529, https://doi.org/10.1111/1467-9744.00518; and David E. Klemm and William H. Klink, "Models Clarified: Responding to Langdon Gilkey," *Zygon* 38, no. 3 (2003): 535, https://doi.org/10.1111/1467-9744.00519.

[25]Janet Martin Soskice, *The Kindness of God: Metaphor, Gender, and Religious Language* (Oxford, UK: Oxford University Press, 2007), chap. 4.

[26]Michael Fuller, "Nescience: A Contrast in the Uses of Models in Science and Theology," in *Issues in Science and Theology: Creative Pluralism?,* ed. Michael Fuller, Dirk Evers, and Anne Runehov (Cham, Switzerland: Springer, 2022), 166.

[27]Robert K. Bolger, *Kneeling at the Altar of Science: A Mistaken Path of Contemporary Religious Scientism* (Eugene, OR: Pickwick Publications, 2012), 57.

[28]Scientism has been variously defined as the view that "the scientific method is the only reliable path to knowledge," (Barbour), and "Science is our only means of access to reality," (Trigg). Ian Barbour, *Religion in an Age of Science* (New York: Harper and Row, 1990), 4; and Roger Trigg, *Rationality and Science* (Oxford, UK: Blackwell, 1993), 90.

[29]Taede A. Smedes, "Beyond Barbour or Back to Basics? The Future of Science-and-Religion and the Quest for Unity," *Zygon* 43, no. 1 (2008): 235, http://dx.doi.org/10.1111/j.1467-9744.2008.00910.x.

[30]Ian G. Barbour, "Taking Science Seriously without Scientism: A Response to Taede Smedes," *Zygon* 43, no. 1 (2008): 259, https://doi.org/10.1111/j.1467-9744.2008.00911.x.

[31]Taede A. Smedes, "Taking Theology and Science Seriously without Category Mistakes," *Zygon* 43, no. 1 (2008): 271, https://doi.org/10.1111/j.1467-9744.2008.00912.x.

[32]Bolger, *Kneeling at the Altar of Science*, 5.
[33]Ibid., 8.
[34]McFague, *Metaphorical Theology*, 103; and Soskice, *Metaphor and Religious Language*, 104–5.
[35]Hirofumi Ochiai, "The Logical Structure of Organic Chemistry and the Empirical Adequacy of the Classical Concept of the Molecule," *ChemInform* 45 (2013): 139, https://doi.org/10.1002/CHIN.201441284.
[36]Fawcett, *The Symbolic Language of Religion*, 82.
[37]McFague, *Metaphorical Theology,* 107.
[38]Ibid., 107.
[39]John Polkinghorne, *Science and Religion in Quest of Truth* (New Haven, CT; Yale University Press, 2011), 21. Although this quotation indicates that Polkinghorne is taking a NOMA view, his later writings on the anthropic principle and chaos theory might suggest a partial overlap. However, even here, Polkinghorne writes, "Metaphysical questions must receive metaphysical answers that are given for metaphysical reasons." John Polkinghorne, *Faith, Science and Understanding* (New Haven, CT: Yale University Press, 2000), 99.
[40]Stephen Contakes, "Chemistry, Christianity, and Wisdom," in *Where Wisdom May Be Found: The Eternal Purpose of Christian Higher Education*, ed. Edward P. Meadors (Eugene, OR: Pickwick Publications, 2019), 192.
[41]Alister E. McGrath, *An Open Secret: A New Vision for Natural Theology* (Oxford, UK: Blackwell, 2008), 184.
[42]McFague, *Metaphorical Theology*, 107.
[43]"Sometimes a light surprises the Christian while he sings," from the hymn by William Cowper (1731–1800).
[44]Peter Harrison, *The Territories of Science and Religion* (Chicago, IL: University of Chicago Press, 2015), chap. 1.
[45]McGrath, *Science and Religion: A New Introduction*, 170.
[46]Ibid.
[47]Scharlemann, "Theological Models and their Constructions."
[48]Max Black, *Models and Metaphors: Studies in Language and Philosophy* (Ithica, NY: Cornell, 1962), chap. 13.
[49]Peter Achinstein, *Concepts of Science: A Philosophical Analysis* (Baltimore, MD: Johns Hopkins Press, 1968), chap. 7.
[50]Rom Harré, *The Principles of Scientific Thinking* (Chicago, IL: University of Chicago Press, 1970), 133 ff.
[51]Jacopo Tomasi, "Towards 'Chemical Congruence' of the Models in Theoretical Chemistry," *Hyle – An International Journal for the Philosophy of Chemistry* 5, no. 2 (1999): 79–115, https://api.semanticscholar.org/CorpusID:53348965.
[52]Jaap van Brakel, *Philosophy of Chemistry: Between the Manifest and the Scientific Image* (Louvain, Belgium: Leuven University Press, 2000/2013), 156.
[53]Marx W. Wartofsky, "Telos and Technique: Models as Modes of Action," in *Models: Representation and the Scientific Understanding*, ed. Robert S. Cohen and Marx W. Wartofsky (Dordrecht, Holland: D. Reidel Publishing, 1979), 142.
[54]For example, Navigators, "The Bridge to Life" (NavPress, 1976), https://www.navigators.org/resource/the-bridge-to-life/, accessed 7/28/2023.
[55]Roald Hoffmann and Pierre Laszlo, "Representation in Chemistry," *Angewandte Chemie, International Edition* 30, no. 1 (1991): 1–16.
[56]The molar mass of each of the components can be calculated by summing the relative atomic masses of each of the molecular formulae. The ratio of the relative molecular masses of the reactants in a chemical reaction allows calculation of the masses of each component required.
[57]Diagrams drawn using ACD Labs ChemSketch.
[58]Hoffmann and Laszlo, "Representation in Chemistry," 5.
[59]McFague, *Metaphorical Theology,* 105.
[60]John Goldingay, *Models for Scripture* (Toronto, ON: Clements Publishing, 2004), 18; and John Goldingay, *Models for Interpretation of Scripture* (Grand Rapids, MI: Eerdmans, 1995).
[61]Avery Dulles, *Models of the Church* (New York: Doubleday, 1987); and Stephen B. Bevans, *Models of Contextual Theology* (Maryknoll, NY: Orbis Books, 1992).
[62]G. García Zerecero, "Molecular Models and Scientific Realism," *Foundations of Chemistry* 22, no. 3 (2020): 467–76, https://doi.org/10.1007/s10698-020-09363-7.
[63]McFague, *Metaphorical Theology,* 105.
[64]Kevin W. Irwin, *Models of the Eucharist* (New York/Mahwah, NJ: Paulist Press, 1991), 298.
[65]It should be noted that the concept of the warranted model is descriptive and not prescriptive. Warrant is viewed from the observer's perspective—those who adopt a warranted model most likely would not describe it in this way.
[66]Harriet Sherwood, "Lord's Prayer Opening May Be 'Problematic,' Says Archbishop," *The Guardian*, July 7, 2023, https://www.theguardian.com/world/2023/jul/07/lords-prayer-our-father-opening-may-be-problematic-archbishop-of-york-stephen-cottrell, accessed 7/18/2023.
[67]McFague, *Metaphorical Theology*, 145 (italics original).
[68]McFague, *Models of God*.
[69]A molecular ratchet is a molecule that was designed to rotate in only one direction about an intramolecular axis: T. Ross Kelly, Imanol Tellitu, and José Pérez Sestelo, "In Search of Molecular Ratchets," *Angewandte Chemie, International Edition* 36, no. 17 (1997): 1866–68, https://doi.org/10.1002/anie.199718661; and T. Ross Kelly, José Pérez Sestelo, and Imanol Tellitu, "New Molecular Devices: In Search of a Molecular Rachet," *Journal of Organic Chemistry* 63, no. 11 (1998): 3655–65, https://doi.org/10.1021/jo9723218.
[70]Anthony P. Davis, "Tilting at Windmills? The Second Law Survives," *Angewandte Chemie, International Edition* 37, no. 7 (1998): 909–10, italics added, https://doi.org/10.1002/(sici)1521-3773(19980420)37:7%3C909::aid-anie909%3E3.0.co;2-x.
[71]Johannes Hunger, "How Classical Models of Explanation Fail to Cope with Chemistry—The Case of Molecular Modeling," in *Philosophy of Chemistry: Synthesis of a New Discipline*, ed. Davis Baird, Eric Scerri, and Lee McIntyre (Dordrecht, The Netherlands: Springer, 2006), 131.
[72]Richard Guy Woolley, "Must a Molecule Have Shape?," *New Scientist* 120 (1988): 53–57, https://www.researchgate.net/publication/314751850_Must_a_molecule_have_shape.
[73]Jeffry L. Ramsey, "Realism, Essentialism, and Intrinsic Properties: The Case of Molecular Shape," in *Of Minds and Molecules: New Philosophical Perspectives on Chemistry*, ed. Nalini Bhushan and Stuart Rosenfeld (Oxford, UK: Oxford University Press, 2000), 120.
[74]For example: R.W. Woolley, "The Molecular Structure Conundrum," *Journal of Chemical Education* 62, no. 12 (1985): 1082–84, https://api.semanticscholar.org/CorpusID:97783213; Stephen J. Weininger, "The Molecular Structure Conundrum: Can Classical Chemistry Be Reduced to Quantum Chemistry?," *Journal of Chemical Education* 61, no. 11 (1984): 939–44, https://doi.org/10.1021/ed061p939; Sebastian Fortin and Olimpia Lombardi, "Is the Problem of Molecular Structure Just the Quantum Measurement Problem?," *Foundations of Chemistry* 23, no. 3 (2021):

379–95, https://doi.org/10.1007/s10698-021-09402-x; and Hirofumi Ochiai, "Understanding Molecular Structure Requires Constructive Realism," *Foundations of Chemistry* 22, no. 3 (2020): 457–65, https://doi.org/10.1007/s10698-020-09362-8.

[75]Hirofumi Ochiai, "Philosophical Foundations of Stereochemistry," *Hyle – International Journal for Philosophy of Chemistry* 21, no. 1 (2015): 1–18, https://www.researchgate.net/publication/289619938_Philosophical_Foundations_of_Stereochemistry.

[76]Hunger, "How Classical Models of Explanation Fail to Cope with Chemistry – The Case of Molecular Modeling," 132.

[77]Paul Dirac states, "The underlying physical laws necessary for the mathematical theory of a large part of physics and the whole of chemistry are thus completely known, and the difficulty *is only* that the exact application of these laws leads to equations much too complicated to be soluble," in P.A.M. Dirac, "Quantum Mechanics of Many-Electron Systems," *Proceedings of the Royal Society of London A* 123, no. 792 (1929): 714–33, https://doi.org/10.1098/rspa.1929.0094; and interestingly, Woolley disagrees with the Dirac aphorism noting "For quantum chemistry beyond the Born-Oppenheimer approximation the difficulty is not the complications of the equations; rather it is the lack of appropriate equations," in R.G. Woolley, "Quantum Chemistry beyond the Born-Oppenheimer Approximation," *Journal of Molecular Structure: Theochem* 230 (1991): 17–46, https://doi.org/10.1016/0166-1280(91)85170-C.

[78]Alexander Franklin and Vanessa A. Seifert, "The Problem of Molecular Structure Just Is the Measurement Problem," *The British Journal for the Philosophy of Science* 75, no. 1 (2024): 31–59, https://doi.org/10.1086/715148; and Vanessa A. Seifert, "Do Molecules Have Structure in Isolation? How Models Can Provide the Answer," in *Philosophical Perspectives in Quantum Chemistry*, ed. Olimpia Lombardi, Juan Camilo Martínez González, and Sebastian Fortin (Cham, Switzerland: Springer, 2022), 125–46.

[79]Oliver D. Crisp, *Approaching the Atonement: The Reconciling Work of Christ* (Downers Grove, IL: IVP Academic, 2020), 25.

[80]Joel B. Green, "Kaleidoscopic View," in *The Nature of the Atonement: Four Views*, ed. James Beilby and Paul R. Eddy (Downers Grove, IL: IVP Academic, 2006), 185.

[81]Gregory A. Boyd, "Christus Victor View," in *The Nature of the Atonement,* ed. Beilby and Eddy, 24, italics added.

[82]Thomas R. Schreiner, "Penal Substitution View," in *The Nature of the Atonement,* ed. Beilby and Eddy, 67, italics original.

[83]J. I. Packer, "The Atonement in the Life of the Christian," in *The Glory of the Atonement,* ed. Charles E. Hill and Frank A. James III (Downers Grove, IL: IVP Academic, 2004), 416, italics original.

[84]John R. W. Stott, *The Cross of Christ* (Leicester, UK: IVP, 1986), 202.

[85]Steve Chalke and Alan Mann, *The Lost Message of Jesus* (Grand Rapids, MI: Zondervan, 2003) and responses: Steve Jeffery, Mike Ovey, and Andrew Sach, *Pierced for Our Transgressions* (Nottingham, UK: IVP, 2007); and Derek Tidball, David Hilborn, and Justin Thacker, *The Atonement Debate* (Grand Rapids MI: Zondervan, 2008).

[86]Donald G. Bloesch, *The Battle for the Trinity* (Ann Arbor, MI: Servant Publications, 1985), 21.

[87]Ibid., 23.

[88]Ibid., 33.

[89]Janet Martin Soskice, *The Kindness of God*, 67.

[90]Rita Nakashima Brock, "And a Little Child Will Lead Us," in *Christianity, Patriarchy and Abuse,* ed. Joanne Carlson Brown and Carole R. Bohn (New York: Pilgrim Press, 1989): 52.

[91]Jürgen Moltmann, *The Trinity and the Kingdom* (Minneapolis, MN: Fortress Press, 1993), 164; and Green, "Kaleidoscopic View," in *The Nature of the Atonement,* in ed. Beilby and Eddy.

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Harry Lee Poe

Article

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C. S. Lewis on Science and Technology

Harry Lee Poe

C. S. Lewis (1898–1963) found science both fascinating and helpful to him in his understanding of the world, both physical and spiritual. He incorporated scientific concepts into his apologetics and his fiction. He found that the new scientific discoveries of the twentieth century illuminated his theology. Instead of a conflict with science, Lewis waged an ongoing war against the confusion of materialistic philosophy with science. He was also concerned with the problem of "value-free" technological innovations which have an implication for what it means to be human. Lewis believed that ethics must have a place in the scientific enterprise.

Keywords: scientism, theology, relativity, quantum, big bang theory, natural selection, science fiction, *The Abolition of Man*, *That Hideous Strength*, *Mere Christianity*, Chronicles of Narnia, rationality, philosophy of science, technology

Some critics of the science fiction trilogy of C.S. Lewis have charged that Lewis had an aversion to science and scientists. Lewis answered this charge in "A Reply to Professor Haldane," in which he explained that his aversion was to the corruption of science by what he called scientism:

> the belief that the supreme moral end is the perpetuation of our own species, and that this is to be pursued even if, in the process of being fitted for survival, our species has to be stripped of all those things for which we value it—of pity, of happiness, and of freedom.[1]

Rather than an aversion to science, Lewis found science both fascinating and helpful to him in his understanding of the world, both physical and spiritual. Science informed his theology.

This article will explore several of the ways that Lewis incorporated science into his writings. First, Lewis employed science to illustrate the theological ideas he addressed in his essays, especially in his last series of radio broadcasts in 1944. Second, when Lewis turned to writing fiction, he chose science fiction over fantasy as his literary form. Third, more than simply illustration, science brought theological illumination to Lewis in his fantasy fiction and in his apologetic essays. Fourth, science also provided Lewis with critical information, which he included in a number of his essays, in refuting a growing tendency to confuse materialistic views with science. Finally, Lewis distinguished scientific knowledge from technological invention in his effort to warn his world of the dangers to humanity of technological development unhindered by the constraints of moral values.

C.S. Lewis took the view that Christians who intend to represent Jesus Christ to the world should stay abreast of scientific advances and changes in thought. During his lifetime, Lewis witnessed the scientific revolutions that came with Einstein's theory of relativity, Niels Bohr's quantum theory, Edwin Hubble's big bang theory,

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and the revisions to Darwin's theory of natural selection following the discovery of DNA by Watson and Crick. He was familiar with them all. He was reading Arthur Eddington, Erwin Schrödinger, Alfred North Whitehead, J.B.S. Haldane, F.B. Hoyle, and many others.[2] He dined and talked with the great scientists of Oxford. He thought it was important to keep up because the current scientific attitude toward Christianity was constantly changing, even as the science changed. Because of the changing science, Lewis warned against linking one's theology or apologetics to any scientific theory.[3] Luther and Calvin had made this mistake by linking their interpretation of the Bible to Aristotle's and Ptolemy's theory of an Earth-centered cosmos. Lewis took the view that in questions of theology, "Sentences beginning with 'Science has now proved' should be avoided."[4]

Lewis had not originally developed his knowledge of science as a Christian who wanted to be aware of something at work in the culture. Instead, he approached it in his younger days as a passionate disciple who worshipped at the altar of Darwin and Freud. When he abandoned the Christian faith in his mid-teens, he found a new belief system in a materialistic view of science which he acquired from his tutor, W.T. Kirkpatrick, with whom he lived and studied between the ages of fifteen and seventeen.[5] Of those days of his youth, Lewis would remark decades later, "Yet though I could never have been a scientist, I had scientific as well as imaginative impulses, and I loved ratiocination."[6] As an undergraduate reading English at Oxford in the early 1920s, Lewis's interest in science expanded to include psychology. He devoured the new psychology beginning with William James's *Varieties of Religious Experience* to which he added Miller's *The New Psychology and the Teacher*, Rivers's *Instinct and the Unconscious*, Hingley's *Psycho-analysis*, and Havelock Ellis's *Psychology of Sex*.[7]

Science as Illustration

Faith in Jesus Christ provided Lewis with a larger vision for understanding reality, but this larger vision did not mean the jettisoning of his interest in science. This interest can be clearly seen in the conversational way he incorporated illustrations from various sciences in his last series of radio broadcast talks in 1944.[8] His earlier broadcasts utilized war imagery almost to the exclusion of any other illustrations. War was an apt metaphor when Britain stood alone against Hitler's Germany. He could talk about the spiritual condition of the world as enemy-occupied territory, and his audience would appreciate the gravity of the situation.

By 1944, however, the tide had turned. Victory seemed certain, and Lewis changed his metaphors to science, for science was being touted as the solution to all the world's problems. In "Making and Begetting," he discussed biology. In "The Three-Personal God," he discussed the concept of multiple dimensions from physics. In "Time and Beyond," Lewis explored the concept of eternity in terms of the relativity of time from the perspective of Einstein. In "The Good Infection," he returned to biology to explore the concept of Christ in us. With "The Obstinate Toy Soldier," he combined the implications of the previous discussions of biology and physics to discuss what the death of Christ means for the human race. In "Two Notes," he touched on cosmology and possible universes to discuss briefly why God would have made this kind of universe and dealt with sin the way Christ did. He also touched on anatomy, like Paul, to discuss how the individual (an organ in the body) can be important while at the same time the individual belongs to a huge organism. In "Let's Pretend," he used the image of an injection to explain how Christ puts his life into us while repeating the notion of a "good infection." He once again used cosmology in "Is Christianity Hard or Easy?" to consider the spiritual condition of creatures who might live on other planets. In "Counting the Cost," he compared Christ to a dentist who extracts the cause of our pain and does not just relieve the pain. Lewis explored natural causality in "Nice People or New Men" to discuss why God does not force people to be nice. In "The New Men," he discussed evolution in order to distinguish it from the transformation involved in salvation. Lewis found science a useful partner in his apologetic work. True science merely describes what God has done in creation; of course, it would be consistent with anything God said in scripture.

From Science to Science Fiction

At a deeper level, science found its way into Lewis's fiction. While essays and sermons and lectures allow the author to explain and inform and attack and persuade, a story allows an author to show and to touch someone at the feelings level. By turning to science fiction long before he tried his hand at rationalistic apologetics, Lewis indicated where his heart lay. By 1937, he knew that he was a storyteller and

not a philosopher, and that was his choice. At the end of World War II, he explained to a group of youth ministers, while discussing apologetic issues related to science, that the best apologetics is not little Christian books, but little books by Christians on every subject—books with the Christianity latent.[9] Lewis had learned this approach through his own scholarship, particularly in *The Allegory of Love* (1936), *A Preface to Paradise Lost* (1942), and *The Abolition of Man* (1943).

From his childhood days, C.S. Lewis had a fascination with science that only increased when his father introduced him to the science fiction of H.G. Wells. Eventually, the pleasure he derived from science fiction led to Lewis's first piece of prose fiction, *Out of the Silent Planet*, a space adventure published in 1938. He would go on to write two more science fiction novels over the next six years, *Perelandra* and *That Hideous Strength*. Though Lewis spoke of himself as an example of Old Western Man, a dinosaur, a Neanderthal among modern men in his 1954 inaugural address at Cambridge, he chose a form of storytelling that speaks to the heart of his newly transformed culture, for science fiction itself arose as a new form of story during the nineteenth century. Lewis believed that the greatest division of eras in human history was not the division between the medieval world and the renaissance, but the division that comes in the nineteenth century after Jane Austen with the explosion of technology. His analysis of this great divide in human history helps us see how and why science fiction suddenly arose as an important artifact of our culture.

Though one might argue that Kepler's *Somnium* (ca. 1630) and Voltaire's "Micromégas" (1752) could be classified as science fiction, we do not have true science fiction until Mary Shelley and Edgar Allan Poe, just after the age of Jane Austen. In Shelley's *Frankenstein* (1818) and in Poe's eleven science fiction short stories of the 1830s and 1840s, both authors use this new form of storytelling to explore profound questions of morality, ethics, philosophy, and theology. Inspired by Poe's stories, Jules Verne took up the new kind of story and developed many of Poe's plots into full novels. For a century after *Frankenstein*, however, the new kind of story struggled without the benefit of a name. Critics referred to Poe's science fiction as "hoaxes." *Frankenstein* was merely gothic horror. Lewis first called it *scientifiction*. He was one of the new generation of writers who went through The Great War before giving science fiction a name and a new lease on life. In science fiction, the author imagines what science might discover in the future and how those discoveries might lead to new technologies. Instead of fiction stories about real science, science fiction weaves a tale of fictional science.

In his first letter to Charles Williams in March 1936, Lewis mentioned how Williams had treated one of the great scenarios of science fiction:

> I have read *Many Dimensions* with an enormous enjoyment—not that it's as good as the [*Place of the*] *Lion*, but then in a sense it hardly means to be. By Jove, it is an experience when this time-travelling business is done by a man who really thinks it out. I believe all your conclusions do follow—and I never thought of being caught in that perpetual to-and-fro.[10]

Sister Penelope, an Anglican nun who belonged to the convent of St. Mary in nearby Wantage, wrote a fan letter to Lewis after reading *Out of the Silent Planet*. A prolific author and Classics scholar, she wrote dozens of books, including translations of the early Church Fathers, but she also loved science fiction. From this initial common interest in science fiction, a significant friendship grew, and the two would correspond for years. In his first letter to her in August 1939, just a few weeks before the German invasion of Poland, Lewis discussed several aspects of *Out of the Silent Planet*:

> The letter at the end is pure fiction and the "circumstances wh. put the book out of date" are merely a way of preparing for a sequel. But the danger of "Westonism" I mean to be real. What set me about writing the book was the discovery that a pupil of mine took all that dream of interplanetary colonization quite seriously, and the realization that thousands of people, in one form or another depend on some hope of perpetuating and improving the human species for the whole meaning of the universe—that a "scientific" hope of defeating death is a real rival to Christianity.[11]

To Sister Penelope in a letter on November 4, 1940, Lewis remarked:

> Isn't *Phantastes* good? It did a lot for me years before I became a Christian, when I had no idea what was behind it. This has always made it easier for me to understand how the better elements in mythology can be a real *praeparatio evangelica* for people who do not yet know whither they are being led.[12]

In his first letter to Sister Penelope, he had remarked on the profound spiritual ignorance of educated England and how science fiction could be an aid to evangelism in this state of cultural collapse:

> You will be both grieved and amused to learn that out of about 60 reviews, only 2 showed any knowledge that my idea of a fall of the Bent One was anything but a private invention of my own? But if only there were someone with a richer talent and more leisure, I believe this great ignorance might be a help to the evangelization of England: any amount of theology can now be smuggled into people's minds under cover of romance without their knowing it.[13]

In a letter to Ruth Pitter in January 1947, Lewis connected the dots between his love of fantasy and his love of science fiction. Pitter thought that David Lindsay had relied upon Lewis when he wrote *Voyage to Arcturus.* Quite the opposite was in fact the truth. In acknowledging his dependence on David Lindsay, Lewis wrote:

> Can you bear the truth?—*Voyage to Arcturus* is not the parody of *Perelandra* but its father. It was published, a dead failure, about 25 years ago. Now that the author is dead it is suddenly leaping into fame: but I'm one of the old guard who had a treasured second hand copy before anyone had heard of it. From Lyndsay [sic] I first learned what other planets in fiction are really good for: for *spiritual* adventures. Only they can satisfy the craving which sends our imaginations off the earth. Or putting it another way, in him I first saw the terrific results produced by the union of two kinds of fiction hitherto kept apart: the Novalis, G. Macdonald, James Stephens sort and the H. G. Wells, Jules Verne sort.[14]

As it turns out, science fiction does not have to be about other worlds to provide a platform for exploring deep religious, moral, and philosophical issues. All kinds of science fiction provide this opportunity, as Lewis had already demonstrated in *That Hideous Strength*.[15]

Science as Theological Illumination

Lewis found that the new science of his day offered remarkable insights into theological problems. Science did not merely provide the useful devotional illustrations of his radio broadcasts; it also offered illumination to biblical faith. The old science of the Enlightenment had its roots in Aristotle's understanding of reality. The old science was wed to the assumptions and presuppositions of Aristotle's pagan view of the world—a universe without beginning, of infinite size and absolute time. Of course, this science conflicted with scripture, but the medieval scholastics managed to reconcile them. Lewis found, however, that the new science of the twentieth century helped to clarify some aspects of faith such as time and eternity, miracles, and rationality.

Time and Eternity

Lewis's most enduring works may, in the long run a century from now, be The Chronicles of Narnia in which the very idea of time played a part. With The Chronicles of Narnia, Lewis demonstrated that he could explore a major scientific idea in a story that was not science fiction. In fact, it would not be a stretch to say that Lewis employed more scientific ideas in his Narnia stories than in his Ransom stories. One of the most notable features of the Narnia stories is the concept of time. Lewis had long been interested in time and Einstein's insight into how time actually works in our universe. Aristotle had propounded the idea of absolute time which dominated western thinking for 2,300 years. Lewis did not particularly care for Aristotle whom he called "the philosopher of divisions."[16] With the overthrow of absolute time by Einstein's theory of relativity, however, Lewis had at his disposal a valuable tool with which to think and with which to imagine.

When Lucy returned from her first visit to Narnia where she spent "hours and hours, and had tea," she was shocked to realize that only a moment had passed at the Professor's house.[17] At the end of *The Lion, the Witch and the Wardrobe*, the children reign as kings and queens of Narnia together. They grow up into adults and forget their early years and their passage from one world to another through a wardrobe. Then one day while hunting, they chance—if chance is really the right word—to come upon the lamppost in the woods, and then tumble back into the wardrobe. After a lifetime in Narnia, they found "It was the same day and the same hour of the day on which they had all gone into the wardrobe to hide."[18] *Prince Caspian*, the second book of The Chronicles of Narnia, begins with the narrator's comment that, though the children had reigned "for years and years," upon their return to England "it all seemed to have taken no time at all."[19]

When the children return to Narnia, they find the great castle of Cair Paravel in ruins on an island, its peninsula long since cut off by the sea. They wonder how centuries could have passed in Narnia when only one year had passed in England. Edmund concluded that "once you're out of Narnia, you have no idea how Narnian time is going. Why shouldn't hundreds of years have gone past in Narnia while only one year has passed in England?"[20]

According to Einstein's theory of relativity, time is a dimension within the physical universe like height, width, and depth. In understanding the nature of time, it may be more helpful to use the word duration since time has so many connotations connected with clocks and calendars. Duration involves the persistence of physical matter. As such, Einstein regarded time or duration as a physical thing. The metaphysical implications of this theory are staggering. God is not physical; therefore, God is not bound by time. In his radio talks during World War II and in their published form as *Mere Christianity*, Lewis remarked, "It was the Theologians who first started the idea that some things are not in Time at all: later the Philosophers took it over: and now some of the scientists are doing the same."[21]

When Lewis said "some Theologians," he meant Augustine who had declared 1,600 years ago that God created time when he created the universe. Thus, Augustine distinguished between time and eternity, the quality that most corresponds to time for God. By "the scientists," Lewis meant Einstein and the world of physicists who had accepted his theory whereby they had an entirely new understanding of reality. Lewis reasoned that if God is not physical, then "almost certainly God is not in time."[22] This would mean that God does not travel through time from one moment to the next. God has no past or future in the physical world, for all moments of the physical world lie open to God simultaneously. Lewis gave the illustration of a line drawn on a piece of paper that represents the movement of time from past to future. In this illustration, God is the piece of paper.

Lewis believed that this understanding of time helps in clearing up some problems of Christian teaching that people have because of their assumptions about reality. Here Lewis spoke autobiographically of his thinking before he became a Christian. It involved one of his objections to the incarnation. If God is everywhere and keeps the universe going, then how did everything keep going when he became a baby? Lewis explained,

> … I was assuming that Christ's life as God was in time, and that His life as the man Jesus in Palestine was a shorter period taken out of that time—just as my service in the army was a shorter period taken out of my total life. And that is how most of us perhaps tend to think about it. We picture God living through a period when His human life was still in the future: then coming to a period when it was present: then going to a period when He could look back on it as something in the past. But probably these ideas correspond to nothing in the actual facts. You cannot fit Christ's earthly life in Palestine into any time-relations with His life as God beyond all space and time.[23]

This view of time helped Lewis to understand how humans can have free will, that is, if God knows what they will do. Lewis argued that the apparent conflict between the knowledge of God and the freedom of people arises "from thinking that God is progressing along the Time-line like us: the only difference being that He can see ahead and we cannot."[24] Since God is not physical and is therefore outside the physical universe, he does not foresee what will happen tomorrow. He has no tomorrow. He does not foresee; he simply knows. He does not know what you *will* do; he simply knows what you do. Thus, our actions are not prescribed by prediction. In our time-space continuum, we experience the word of God as pointing to our future, but not to God's future. God only has his own eternity, an existence unaffected by time or space.

Finally, the being of God outside of time and space suggests how God attends to the prayers of millions of people.[25] God does not necessarily hear us all at the same time, since God has no time to hear us at all. Conversely, God has all the time in the world, none of which is needed for him to know our prayers. Time has nothing to do with God's attention to the world and all of his creatures. He does not have time; he has eternity. Lewis thought this insight of Einstein, which only added a formula to the musings of Augustine, absolutely ripping. Yet, he added a disclaimer. He was cautious not to build theology on the basis of science since the science is always changing. For instance, the view many people have that God created the plants and animals as fully formed, distinct species, is not a position taught in scripture, but by Lewis's old nemesis Aristotle. Here he distinguishes between theology and the actual authoritative basis for the Christian faith: the Bible and the creeds.

Miracles

Lewis thought that quantum theory shed light on the phenomenon commonly called miracles by the modern world. He also thought that the Enlightenment critique of miracles was entangled with the clockwork universe of Hume. Such a universe no longer existed.

Lewis devoted a good deal of energy on the problem of making sense of miracles to a culture committed to a self-existent universe, that of a closed system of interlocking parts—the great machine of the seventeenth century. If anything interferes with one of the gears of the great machine, then the whole mechanism will come to a grinding halt. Lewis provided a thought experiment to analyze this view. If you place a coin in a drawer, it should be there the next day with all the laws of the universe operating, unless a thief intervenes. If the thief takes the coin, the laws of the universe still continue on as they always have. In a second thought experiment, Lewis proposed calculating how a billiard ball would travel on a smooth billiard table. Yet, if someone knocks the ball with a billiard cue stick while it is in motion, the ball will move in a different way than had been calculated—while the laws of the universe still keep ticking away.[26] He mused that Nature is "an accomplished hostess" who assimilates a miraculous event into herself and makes complete accommodation for it.[27]

Lewis has demonstrated something most profound: our universe is designed in such a way as to allow for regular order which Francis Bacon called *God's* laws of nature, while at the same time allowing for interference. It is this interference that makes scientific experimentation and technology possible. Lewis did something else extremely important in this essay on "Religion and Science." He treats miracles as an *interference* with the laws of nature.[28] For Lewis, closing a window to keep out a draft represents an interference with the normal course of nature.[29] Since the time of Hume in the eighteenth century, materialists had defined miracles as a *violation* of the laws of nature which, unfortunately, many Christian theologians accepted. To accept such a definition is to deny the Holy Spirit and give the whole show away. Lewis corrected the error. Through his discussion of miracles, he insisted that "it is therefore inaccurate to define a miracle as something that breaks the laws of Nature."[30]

He also made clear that the laws of nature do not *cause* anything; they simply describe the behavior of the physical world. This task of describing is the activity of science. Science does not have the means or the method to consider, much less assess, if anything else exists.[31] In his reply to Professor H. H. Price who had addressed the Socratic Club in Oxford on the subject "The Grounds of Modern Agnosticism," in which Price had stated that modern science disproves miracles, Lewis countered that science does no such thing. Since a miracle is a unique, nonrepeatable event, the scientific method has no means of assessing such an event experimentally.[32]

Rationality

Lewis observed that scientists involved in the hard sciences of mathematics, physics, and chemistry tended to be religious and even mystical. Biologists were less likely to be religious. People involved in the social sciences like economics and psychology are seldom religious. He noted the nearer a program of study comes to humans, the more an anti-religious bias sets in.[33] In *The Abolition of Man*, Lewis explored the implications of the shift in scientific study from humans studying nature to humans becoming the object of study. In visualizing the effect of a value-free society on the development of science, Lewis wrote,

> Man's conquest of Nature, if the dreams of some scientific planners are realized, means the rule of a few hundreds of men over billions upon billions of men. There neither is nor can be any simple increase of power on Man's side. Each new power won *by* man is a power *over* man as well. Each advance leaves him weaker as well as stronger. In every victory, besides being the general who triumphs, he is also the prisoner who follows the triumphal car.[34]

Lewis insisted that he was not attacking science which he valued for its pursuit of knowledge. Instead, he attacked the idea of a value-free society that could not retain a value like the value of knowledge or truth. Without guiding universal values, science can be corrupted into something hideously strong but diabolical.[35] The human mind is susceptible to corruption from its base instincts and emotions if not guided by the mediating influence of the universal values of right and wrong instilled in human character. Yet, the idea of rationality has other implications.

The rationality of the mind itself became for Lewis the ultimate example of a miracle, an interference by God in the time-space continuum. In *Miracles*, Lewis began by arguing that for naturalism to be true, everything must find its explanation within the time-space continuum of matter and energy—the physical universe. If anything can be found that cannot be fully explained by the universe itself, or natural causes, then naturalism would be falsified and overthrown. Lewis pointed to the recent discoveries in quantum mechanics to demonstrate that the old

mechanical model of the universe no longer stood up and that the old closed, deterministic universe no longer existed before moving to his argument.[36]

Lewis suggested that the quantum world tells us that the universe is not a tightly interlocked machine of cause and effect and that the universe operates on several levels. While he allows for the regularity of nature as humans experience it, he also suggested a subnatural level to the universe that involves matter which behaves idiosyncratically. Instead of certainty, science is left with probability of how it will behave, and those probabilities do not deal with individual bits of matter but with the average behavior of all the bits of matter. The natural world receives its building blocks from the subnatural world of random and "lawless" events.[37]

When it comes to human knowing at the natural level, our minds receive sensations from the senses and interpret them. All human knowledge depends upon the validity of human reason. If human reason is not valid, then science is not true. For any confidence in reality as we experience it, humans must have confidence in the validity of reason. At this point, Lewis put the fly in the ointment. He proposed the rule that "*no thought is valid if it can be fully explained as the result of irrational causes*."[38] If the mind is the product of the total system of the universe as Naturalism insists, and the total system is not rational, then all thoughts are ultimately the result of irrational causes by the naturalist's definition.[39]

Elizabeth Anscombe brought a linguistic analytical critique of *Miracles* to a meeting of the Socratic Club in 1948 which prompted Lewis to clarify several terms found in chapter three of his 1960 revision of the book.[40] His result remained the same. Lewis quoted J.B.S. Haldane's *Possible Worlds* for the short form of his argument:

> If my mental processes are determined wholly by the motions of atoms in my brain, I have no reason to suppose that my beliefs are true … and hence I have no reason for supposing my brain to be composed of atoms.[41]

On these grounds, Lewis argued that in addition to the natural and the sub-natural, there must also exist the super-natural that feeds into our world of experience just as the sub-natural does. The super-natural is the source of rationality and is Lewis's example of a miracle that overthrows naturalism. In his private correspondence, Charles Darwin had expressed the same view. He believed that the human mind was the great problem with his theory of natural selection without the involvement of God in the process.

Distinguishing Science from Philosophy

The materialist believes that only physical matter exists. The naturalist believes there are only physical or natural causes. Lewis spent a great deal of time and effort, particularly in the 1940s, refuting these claims and helping people understand the difference between science and philosophy. Materialism and Naturalism are philosophical positions that do not arise from science. Instead, people who hold these views tend to impose them upon science as though they are the same thing or somehow logically related. If the universe is a closed system and all events and phenomena within the universe have physical causes, then even if a god of some kind exists, that god would not be involved in any way in the actual events within the closed time-space continuum. We see this view in both deism and pantheism.

Science and Scientism

Lewis realized that the science of the twentieth century was his greatest ally in combating the confusion of science with philosophy. Between 1939 and 1947, but particularly during World War II, Lewis devoted a great effort at debunking these philosophical views that allowed no room for revelation, miracle, or any interference in the universe from God.[42] He was particularly concerned to show the difference between such a philosophical view, which he termed *scientism* or *evolutionism*, and true science which does not have the method or tools to make such claims.[43]

He had a three-fold strategy for dealing with this problem that involved his fiction writing, his popular apologetic essays, and his scholarly work. His science fiction trilogy (*Out of the Silent Planet*, *Perelandra*, and *That Hideous Strength*) attacked the materialist/naturalist point of view at the affective level.[44] Thus, his science fiction dealt with philosophical/ethical issues rather than scientific problems. He wanted his readers to feel a certain way about the materialist/naturalist agenda and to see where it leads. With his short essays published in the denominational press, he sought to give Christians reassurance about their faith in short, easily digestible bites. With his academic lectures at the University of Durham that were published as *The Abolition of Man*, he indicated how a thoroughgoing materialism can destroy the scholarly enterprise by replacing it with a purely social agenda

to be set by whoever holds the reins of power, since no transcendent reality of value would be recognized as an alternative to the prevailing cultural value.

To discuss the unreasonableness of materialism and naturalism, however, Lewis turned to the findings of modern science to support his view. Lewis had a good working knowledge of the proposals of Edwin Hubble regarding an expanding universe, usually called the big bang theory. While defending the reasonableness of the resurrection and ascension of Christ in his little essay on "Miracles," Lewis reminded his audience that modern physics then understood the universe as "running down," and that at one point in the "not infinitely remote" past, it had all been wound up. He contrasted the universe of Aristotle, which prevailed until the third quarter of the twentieth century, with the new cosmology. Aristotle's universe had no beginning and would have no end. It was infinite in size and duration. Furthermore, it was as fixed and static as a picture. However, physics discovered, with the new measuring techniques that were not invented until the twentieth century, that the universe is more like a story with a beginning, a development, and an ending.[45]

Lewis essentially charged that theologians who denied the resurrection and ascension of Jesus were antiques living in a universe that never existed. They operated out of old, discredited science. They wanted the body of Jesus to behave as bodies do in the static universe of Aristotle, but the real universe that modern science is only barely beginning to understand is actually a "magical" space. It does not have only the three dimensions of Aristotle. Lewis explained that Schrödinger speculated that the explanation of the atom requires seven dimensions.[46] Today, that number has grown to ten dimensions or more at creation, according to one version of string theory. Lewis made mention of the new understanding of the cosmos in a sermon preached at St. Jude on the Hill Church in London in 1942 when even physicists were just beginning to understand Schrödinger's ideas.[47] In his own way, Lewis accused those theologians who abandoned the biblical testimony to the resurrection and ascension of not only being guilty of bad theology, but also of being guilty of bad science.[48]

The actual nature of the universe as understood by science is critical to the materialist's claim that the only thing that exists is the physical world, understood today as the relation of matter and energy. Lewis argued that all of the great materialist systems of the past have depended upon the view that the physical world is eternal and self-existent. David Hume, in the eighteenth century, had argued "in an eternal duration, that every possible order or position must be tried an infinite number of times."[49] Lewis declared that "if anything emerges from modern physics, it is that nature is not everlasting. The universe had a beginning, and it will have an end."[50]

As for the vastness of the universe, the materialist argues both sides against God. If we find life elsewhere in the universe, then the critic misstates the Christian faith and asserts that Christians claim the earth is unique and humans the only intelligent life that God created, and therefore false. If we find that we are alone, then the critic claims that life must only be an accident. To these assertions, Lewis countered that the size of the universe makes no difference.[51] (Size mattered in Aristotle's universe. From the time of Aristotle, scientists had believed that the size of an object determined how fast a dropped object would fall. Galileo put this Aristotelian fact to rest.)

As for other life, Lewis said that the universe "may be full of life that needs no redemption. It may be full of life that has been redeemed."[52] The Bible tells us only about our world, not the whole of the universe. Lewis rebuked the materialists who talk "as if revelation existed to gratify curiosity by illuminating all creation so that it becomes self-explanatory and all questions are answered."[53] Instead, Lewis said that the Bible is a practical book that relieves humanity's "most urgent necessities."[54] While he discussed these matters logically in his essay "Dogma and the Universe" in 1943, Lewis also addressed these issues in his science fiction trilogy and in The Chronicles of Narnia. In both fictional cases, he explored such "supposals" as suppose there were another world which had endured Satanic attack, as in *Out of the Silent Planet*. Or, suppose there were a world in which the first people did not surrender to temptation, as in *Perelandra*. Or, suppose there were a world of sentient animals in which God became incarnate, as in *The Lion, the Witch and the Wardrobe*. These are all speculations about the questions raised by the materialist, none of which challenge biblical faith in any way.

Another implication of the current cosmological model of a finite, expanding universe that will one day come to an end concerns biology. In *Out of the Silent Planet*, the story ends with the physicist

Weston giving his defense before the Oyarsa of Malacandra. His defense is simply that humans have the right to dominate the universe and subdue all things before them because they can. It is the right of power or power makes right argument. It is not to humans, however, that Weston bequeaths the universe. Rather, it is to the descendants of humans that evolve from the human race, "whatever strange form and yet unguessed mentality they have assumed."[55] Weston assumes an unending universe with an unlimited supply of worlds where evolving humanity can migrate, as one world after another dies. The Oyarsa then asked Weston what would happen once all the worlds had died.[56] In "Dogma and the Universe" Lewis answered the Oyarsa's question. The materialist was "committed to a sinking ship," because "entropy is the real cosmic wave, and evolution only a momentary tellurian ripple within it."[57] The universe as a whole is dying. It will not go on forever.

Distinguishing Evolution from Natural Selection

As regards the general concept of evolution, Lewis had no objection. Darwin's understanding of natural selection, however, once again raised the specter of philosophy for Lewis. For him, the idea of human descent from animals was not inconsistent with biblical teaching about creation.[58] This view does, however, violate Aristotle's view of the original forms which became the standard of Western science and, therefore, Christian theology during the medieval period. The confusion of Aristotle's science with Christian theology during the medieval period, the period of Lewis's study, is a major reason he urged Christians not to build their theology on passing science as process theologians tended to do in his day.

In *The Problem of Pain*, Lewis offered what he called "a 'myth' in the Socratic sense" to describe how God might be involved in what is popularly called evolution.[59] Lewis described God perfecting the animal form over many long centuries, before arriving at the form he would use as the vehicle for his own image. This creature may have existed for ages before God bestowed a new kind of consciousness in this animal such that it became human. This new creature would have had a relationship to the rest of creation, to the other animals, and to God unlike anything that exists today in terms of its harmony. Lewis speculated that we do not know how many of these first humans God made or how long they existed in a paradisal state, but finally they fell into sin.[60]

Darwin, on the other hand, could not tolerate a view that included God in the development of life. Eighteen times in his argument in *Origin of Species*, Darwin rejected the Aristotelian view that each organism resulted from an independent or special act of creation.[61] More specifically, he rejected, eleven times, the idea that God had a "plan of creation."[62] Yet, he had no way of knowing whether God was involved through any known science or scientific instrument. He knew better than to make the claims he did about God's involvement in the world, because Darwin was a trained theologian from Cambridge, as well as a founder of modern biology. Lewis thought Darwin overstepped his bounds as a biologist by discussing what God could or could not do, in that biology does not have the tools to examine such questions. Lewis accepted the observations of evolutionary biology but not the theological assertions of Darwin.

Having offered what he called his own "myth" of evolution as a divine act of interference in the normal course of nature, Lewis then described the naturalistic cosmic myth of evolution that had grown up in the twentieth century, a myth that went far beyond the simple biological theorem that organisms change over time. The biological concept of evolution has nothing to say about the origin of life, and even less to say about the entire universe evolving.[63] At this point and in numerous other essays, Lewis reminds us that biology lends itself to mythmaking whereas physics does not.[64] Increasingly, we hear people speaking of nature not merely in anthropomorphic terms but even of the earth as a living thing, such as the new Gaia theology.[65] Citing Haldane on the law of entropy, he repeated the idea that degeneration is the rule.[66]

The Dangers of Technology

Though Lewis had a lifelong love of science, he had no such love of technology. Lewis tried to learn to drive several times, but he could not master it. He loved the gramophone as a boy, but he never had the same love of a radio or television. Surprisingly, he fell in love with air flight when he flew with his wife to Ireland and could view the patchwork quilt of England from the sky. Nonetheless, he maintained a lifelong dread of the impact of technology on people.

In his inaugural lecture as professor of Mediaeval and Renaissance Literature at Cambridge University in 1954, C.S. Lewis sought to identify the greatest

point of demarcation in human history. Rejecting such gradual divides as those between the classical and medieval periods, or between the medieval and modern periods, Lewis chose instead something closer at hand. Even with the birth of modern science in the seventeenth century, the division had not come, because the new learning had not yet affected "the tone of the common mind" as would happen later.[67] Lewis explained,

> Science was not the business of Man because Man had not yet become the business of science. It dealt chiefly with the inanimate; and it threw off few technological by-products. When Watt makes his engine, when Darwin starts monkeying with the ancestry of Man, and Freud with his soul, and the economist with all that is his, then the lion will have got out of its cage. Its liberated presence in our midst will become one of the most important factors in everyone's daily life. But not yet; not in the seventeenth century.
>
> It is by these steps that I have come to regard as the greatest of all divisions in the history of the West that which divides the present from, say, the age of Jane Austen and Scott.[68]

In the period since *Persuasion* and the Waverley Novels, great changes had come in politics, art, and religion, but Lewis argued that the greatest transformation of culture came from a new source:

> Between Jane Austen and us, but not between her and Shakespeare, Chaucer, Alfred, Virgil, Homer, or the Pharaohs, comes the birth of the machines. This lifts us at once into a region of change far above all that we have hitherto considered.[69]

Unlike the change from stone to bronze or the change from a pastoral to an agricultural society, the machine "alters Man's place in nature."[70] Lewis focused on the psychological effect of this alteration as he asked, "How has it come about that we use the highly emotive word 'stagnation,' with all its malodorous and malarial overtones, for what other ages would have called 'permanence'?"[71] Lewis's stress on machines reminds us not only of his fascination with science but also of his suspicion of technology. Science is the discipline that describes the behavior of the physical world while technology (machines and such) is the practical application of what we know of the physical world; this results in invention. From a theological perspective, God established the laws of nature which science makes known, while people make technology.

In observing a new common mindset that regards old as bad and new as good, Lewis proposed that a new value now dominates Western thinking. Lewis argued,

> … that what has imposed this climate of opinion so firmly on the human mind is a new archetypal image. It is the image of old machines being superseded by new and better ones. For in the world of machines, the new most often really is better and the primitive really is the clumsy. And this image, potent in all our minds, reigns almost without rival in the minds of the uneducated. For to them, after their marriage and the births of their children, the very milestones of life are technical advances.[72]

In this mindset, the values of a culture that arose over thousands of years, and only painstakingly emerged through the struggle, are in danger of being discarded as outmoded simply because old fashioned. As he began to elaborate on the danger of neglecting the instruction of the accumulated wisdom of the past, Lewis could not help slipping from what had been a straightforward scholarly address into science fiction. In his effort to explain the importance of a common received tradition, Lewis remarked,

> If one were giving a lecture on Warwickshire to an audience of Martians (no offence; Martians may be delightful creatures) one might loyally choose all one's *data* from that county; but much of what you told them would not really be Warwickshire lore but "common tellurian."[73]

Thus, the pervasiveness of technological advances alters culture not just locally, but globally. Lewis's views on technology are most clearly expressed as an argument in *The Abolition of Man* and most clearly as an appeal to the emotions in *That Hideous Strength*. For better or worse, technology changes the human relationship to the rest of nature, but it also changes human behavior and how we understand ourselves. The current concerns about transhumanism and AI were science fiction when Lewis wrote about them, but they are technological advances which have profound implications for what it means to be human from a theological perspective. The future which Lewis anticipated we now call the present.

Conclusion

In his essay on "Christian Apologetics," Lewis argued that Christians should be familiar with the latest discoveries in the sciences. As we have seen, Lewis was familiar with relativity, big bang cosmology, quantum theory, and natural selection. This kind of awareness would be especially important for theologians and those interested in making an apologetic for the faith. He also insisted that Christian

apologists who engage the sciences would have to be "perfectly honest" in their science. He stressed that "science *twisted* in the interests of apologetics would be sin and folly."[74] This admonition did not come as mere speculation for Lewis, but from years of experience. He had a life-long fascination with what God had made, and science is simply the discipline that describes how creation behaves. For Lewis, no possible conflict could exist between science and faith.

Lewis was not a scientist any more than he was a theologian, but he was a brilliant classicist and medievalist, having taken a first in both his Oxford degrees. From his study of literature, which included science and theology from 800 BC through AD 1600, Lewis understood how western theology had mingled the science of Aristotle and the religion of the Celtic pagans with Christian faith. Though he loved the medieval world, he was never hoodwinked by the medieval synthesis which he called a syncretism of pagan beliefs with Christianity. Though it was a beautiful example of the power of imagination to harmonize contradictory beliefs, in his "Epilogue" to *The Discarded Image,* he remarked that it was simply not true.[75] His warning to modern apologists was not to make the same mistake.

In the modern western cultural crisis over God and nature, however, many conflicts can occur. This cultural crisis has little, if anything, to do with faith or with science. Instead, the problems tend to emerge from philosophy and tradition (or old habits of thinking). Science presents no challenge to biblical faith, but naturalism and materialism and pragmatism and utilitarianism present enormous challenges for people who confuse these philosophical positions with science. Through many essays, sermons, poems, stories, and monographs, Lewis fought the tenacious grip that these philosophies have on the modern western mind. As long as these pernicious philosophies permeate the thinking of the philosophically unsophisticated culture of the west, the writings of C.S. Lewis will be relevant and helpful to people in pursuit of the truth about reality.

Notes

[1]C.S. Lewis, "A Reply to Professor Haldane," in *Of Other Worlds*, ed. Walter Hooper (New York: A Harvest Book, 1994), 77. See also, David C. Downing, *Planets in Peril* (Amherst, MA: University of Massachusetts Press, 1995), 144.

[2]Harry Lee Poe, *The Making of C.S. Lewis* (Wheaton, IL: Crossway, 2021), 194, 331; Walter Hooper, ed., *The Collected Letters of C.S. Lewis*, vol. 2 (New York: HarperSanFrancisco, 2004), 407, 1011; C.S. Lewis, "Miracles," in *God in the Dock: Essays on Theology and Ethics*, ed. Walter Hooper (Grand Rapids, MI: Eerdmans, 1979), 35; C.S. Lewis, "Dogma and the Universe," in *God in the Dock*, ed. Hooper, 39; C.S. Lewis, "Is Progress Possible? Willing Slaves of the Welfare State," in *God in the Dock*, ed. Hooper, 311; C.S. Lewis, *Miracles* (London, UK: Geoffrey Bles, 1947), 28–29, 60, 106, 126, 127–128; and C.S. Lewis, "Religion and Rocketry," in *The World's Last Night and Other Essays*, ed. Walter Hooper (New York: A Harvest Book, 1988), 83. I have named books and articles and people in this article and not mentioned them in these Notes. Lewis mentions the ideas of these and others in many other places.

[3]Lewis, "Religion and Rocketry," in *The World's Last Night and Other Essays*, ed. Hooper, 92.

[4]Ibid.

[5]Harry Lee Poe, *Becoming C.S. Lewis* (Wheaton, IL: Crossway, 2019), 119–21, 125, 153–57.

[6]C.S. Lewis, *Surprised by Joy* (London, UK: Geoffrey Bles, 1955), 131.

[7]Walter Hooper, ed., *All My Road before Me: The Diary of C.S. Lewis, 1922–1927* (New York: Harcourt Brace Jovanovich, 1991), 44, 62, 64, 70, 75.

[8]Poe, *The Making of C.S. Lewis*, 291–93.

[9]C.S. Lewis, "Christian Apologetics," in *God in the Dock*, ed. Hooper, 93.

[10]Hooper, ed., *The Collected Letters of C.S. Lewis*, vol. 2, 187.

[11]Ibid., 261–62.

[12]Ibid., 453.

[13]Ibid., 262.

[14]Ibid., 753.

[15]For a critical study of Lewis's science fiction trilogy, see Downing, *Planets in Peril*. See also, Diana Pavlac Glyer and Julianne Johnson, eds., *A Compass for Deep Heaven: Navigating the C.S. Lewis Ransom Trilogy* (Baltimore, MD: Square Halo Books, 2021) for a collection of essays on the science fiction trilogy.

[16]C.S. Lewis, *The Allegory of Love* (Oxford, UK: Clarendon Press, 1936), 88.

[17]C.S. Lewis, *The Lion, the Witch and the Wardrobe* (New York: Macmillan, 1950), 18–19.

[18]Ibid., 153.

[19]C.S. Lewis, *Prince Caspian* (New York: Macmillan, 1951), 1.

[20]Ibid., 25–26.

[21]C.S. Lewis, *Mere Christianity* (New York: Macmillan, 1952), 131.

[22]Ibid., 131.

[23]Ibid., 132.

[24]Ibid., 133.

[25]Ibid., 130.

[26]Lewis, "Religion and Science," in *God in the Dock*, ed. Hooper, 73–74.

[27]C.S. Lewis, *Miracles*, 170.

[28]Ibid., 73. Lewis also provided this definition at the beginning of chapter two of *Miracles*, 15.

[29]Lewis, *Miracles*, 169.

[30]Ibid., 72.

[31]C.S. Lewis, "The Laws of Nature," in *God in the Dock*, ed. Hooper, 76–79.

[32]C.S. Lewis, "Religion without Dogma," in *God in the Dock*, ed. Hooper, 134–35.

[33]Ibid., 135.

[34]C.S. Lewis, *The Abolition of Man* (New York: Macmillan, 1955), 71. Michael Ward has produced a new commentary-style guide to *The Abolition of Man,* a guide which he published as *After Humanity: A Guide to C.S. Lewis's The Abolition of Man* (Des Plaines, IL: Word on Fire Academic, 2021).
[35]Ibid., 86–87.
[36]C.S. Lewis, *Miracles*, 23–24.
[37]Ibid., 24–25.
[38]Ibid., 27.
[39]Ibid., 28.
[40]For a helpful summary of *Miracles* and the revisions to chapter three, see Walter Hooper, *C.S. Lewis: A Companion and Guide* (New York: HarperSanFrancisco, 1996), 342–56.
[41]Ibid., 28–29. See J. B. S. Haldane, *Possible Worlds and Other Essays* (Chatto & Windus, 1927), 209.
[42]For a discussion of how Lewis addressed the confusion of science with the philosophy of materialism in historical context, see Poe, *The Making of C.S. Lewis*, 194–99, 266–69, 282–88, 290–300, 324–31. Michael Ward examines several of Lewis's essays that deal with the confusion of science and philosophy in Michael Ward, "Science and Religion in the Writings of C.S. Lewis," *Science and Christian Belief* 25, no. 1 (2013): 3–16. See also, Downing, *Planets in Peril*, 36, 128, 144.
[43]For an important treatment of Lewis's understanding of scientism and its flaws, see Michael D. Aeschliman, *The Restitution of Man: C.S. Lewis and the Case against Scientism* (Grand Rapids, MI: Eerdmans, 1983). See also, Alister McGrath, *C.S. Lewis: A Life* (Carol Stream, IL: Tyndale House, 2013), 234–38.
[44]For a discussion of Lewis's treatment of these issues in his science fiction trilogy, see Sanford Schwartz, *C.S. Lewis on the Final Frontier: Science and the Supernatural in the Space Trilogy* (New York: Oxford University Press, 2009).
[45]C.S. Lewis, "Miracles," in *God in the Dock*, ed. Hooper, 33. This was the view expressed by Edgar Allan Poe in *Eureka,* which Dorothy L. Sayers borrowed in *The Mind of the Maker*.
[46]Lewis, "Miracles," in *God in the Dock*, ed. Hooper, 35.
[47]Lewis, "Preface," in *God in the Dock*, ed. Hooper, 13.
[48]Lewis, "Miracles," in *God in the Dock*, ed. Hooper, 35.
[49]David Hume, *Dialogues and Natural History of Religion* (New York: Oxford University Press, 1998), 84.
[50]Lewis, "Dogma and the Universe," in *God in the Dock*, ed. Hooper, 39.
[51]Lewis, "Dogma and the Universe," in *God in the Dock*, ed. Hooper, 40. He returned to this topic in his article "Will We Lose God in Outer Space?," which was published as "Religion and Rocketry" in *The World's Last Night*, ed. Walter Hooper (New York: Harcourt, Brace and Company, 1960), 83–92.
[52]Lewis, "Dogma and the Universe," in *God in the Dock*, ed. Hooper, 43.
[53]Ibid.
[54]Ibid.
[55]C.S. Lewis, *Out of the Silent Planet* (New York: Macmillan, 1943), 148.
[56]Ibid., 151.
[57]Lewis, "Dogma and the Universe," in *God in the Dock*, ed. Hooper, 44.
[58]C.S. Lewis, *The Problem of Pain* (New York: HarperOne, 1996), 67. Again in "The Funeral of a Great Myth," Lewis insisted, "I am not in the least denying that organisms on this planet may have 'evolved.'" See, C.S. Lewis, "The Funeral of a Great Myth," in *Christian Reflections*, ed. Walter Hooper (Cambridge, UK: C.S. Lewis Pte. Ltd., 1967), 91.
[59]Lewis, *The Problem of Pain*, 71.
[60]Ibid., 72–76.
[61]Charles Darwin, *The Origin of Species* (New York: Gramercy Books, 1979), 101, 110, 113, 189, 192, 195, 198, 201, 216, 217, 223, 444, 445, 446, 448, 452, 454, 457. This volume is a republication of the first edition in 1859.
[62]Darwin, 399, 415, 417, 432, 444, 446, 447, 450, 453, 458.
[63]C.S. Lewis, "The Funeral of a Great Myth," in *Christian Reflections*, 86.
[64]C.S. Lewis, "Revival or Decay," in *God in the Dock*, ed. Hooper, 253; C.S. Lewis, "The Grand Miracle," in *God in the Dock*, ed. Hooper, 86; and C.S. Lewis, *The Abolition of Man* (New York: Macmillan, 1955), 82–83.
[65]See Simon Winchester's discussion of the modern view of the Earth as a living being in *Krakatoa: The Day the Earth Exploded* (New York: Harper Collins, 2003).
[66]C.S. Lewis, "*De Futilitate*," in *Christian Reflections*, 8.
[67]C.S. Lewis, "*De Descriptione Temporum*: An Inaugural Lecture" (Cambridge, UK: Cambridge University Press, 1955), 10.
[68]Ibid., 11.
[69]Ibid., 15.
[70]Ibid., 16.
[71]Ibid.
[72]Ibid., 16–17.
[73]Ibid.
[74]C.S. Lewis, "Christian Apologetics," in *God in the Dock*, ed. Hooper, 92–93.
[75]C.S. Lewis, *The Discarded Image* (Cambridge, UK: Cambridge University Press, 1964), 216.

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Congenital Disabilities and Gender Nonconforming Identities as Parts of God's Intended Creation

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Some Christians believe that God's creational norm for humanity is binary sex and gender, and that intersex or transgender variations resulted from humanity's fall into sin. Likewise, some Christians believe that conditions like hereditary deafness or Down syndrome would not exist were it not for the Fall. However, scientific study shows that some of these conditions are caused by physical and chemical processes that are inevitable consequences of how natural laws operate. This adds weight to theological arguments that they are intended parts of God's creation, included for human diversity. How we theologically classify congenital disabilities or gender nonconforming identities can profoundly affect how we treat individuals. Psychological studies demonstrate significant positive or negative consequences for physical and mental health of gender nonconforming individuals correlated with the theological views of their religious community.

Keywords: intersex, transgender, LGBTQ, disability, diversity, ableism, creation, gender identity, creational variance, the fall

Parents of a child with Down Syndrome overhear church members speculating whether they are being punished for some sin. A teenager who is intersex hears a pastor preach that humans were created "male and female," and that anything different is "not the way it's supposed to be." By anecdotal accounts at least, these are not uncommon occurrences.

What changed in the natural world after humanity sinned? Christians have long speculated whether things such as animal death or earthquakes were parts of God's initial creation, or results of humanity's fall into sin. When these discussions turn to human conditions, they can significantly harm, or help, the way our siblings in Christ think about God, think about themselves, and think about the church.

Many Christians believe that congenital disabilities and gender nonconforming identities are results of the Fall. However, taking into account the genetic basis of some of these conditions, theological considerations from disability studies and gender studies, and psychological research on the effects these beliefs have on the well-being of individuals, we believe it is more likely that at least some of these conditions are parts of God's creational intention for human diversity.[1]

Before considering human conditions, let's examine some less controversial examples in which science provides helpful information when considering what is, and what is not, a result of the Fall.

Animal Death: Ancient Debates and Modern Science

Some church fathers (e.g., Irenaeus of Lyons and Theophilus, bishop of Antioch) believed that animal death resulted from the sin of Adam and Eve.[2] They quoted prophetic passages such as Isaiah 11:6–7 and 65:25 that portray wolves and lions living peacefully with cows and lambs. While these Old Testament passages pointed forward to messianic times, and today are thought to point to the new heaven and new earth that will appear with Jesus's second coming, these theologians believed these scriptures also described life on earth before human sin.

Other church fathers (e.g., Basil of Caesarea and Augustine of Hippo) argued that these passages apply only to the post-resurrection new creation,[3] and that limited lifespan is a natural part of any animal's creaturely existence. Job 38:39–40 and Psalm 104:21 refer to God providing prey for predators, using language that suggests a celebration of God's original creation, rather than an accommodation to a fallen creation. Moreover, the new heaven and new earth described in Revelation 21–22 are not simply a restoration of this creation to its state prior to human sin, in that the new earth is described as no longer having a sea, and the new Jerusalem no longer needs the sun.

In recent centuries, scientific study of God's "book of nature" has given new insights on this long-standing theological debate. Science doesn't dictate how we interpret scripture; theology decides on the best interpretations. But science sometimes provides additional data for theology to consider.

Animal death was part of God's created system long before humans existed. A predatory animal's anatomy, physiology, digestion, neurology, and social behavior are all geared towards predation; they cannot be changed into herbivores with a few minor tweaks. Predation often forms an important part of complex and healthy ecosystems: for example, when wolves were removed from Yellowstone Park, the ecosystem suffered loss of native plant species, biodiversity, and ecosystem services.[4] These scientific insights strongly support the theological interpretation that animal death was part of God's original created order and not a result of humanity's sin.

Fundamental Laws of Nature Did Not Change When Humans Sinned

Genesis 3:17–18[5] and Romans 8:20–21[6] have led some Christians to wonder whether the regular operation of nature profoundly changed after humans sinned, perhaps including some fundamental laws of nature. The second law of thermodynamics, about the increase of entropy, is occasionally mentioned as a suspect.[7] But other passages such as Jeremiah 33:20–26, which talk about God's "covenant with day and night and … the fixed laws of heaven and earth," support a different interpretation, that effects of humanity's sin—whatever they may be—do not extend to the basic functioning of all of creation.

While scripture could support either interpretation, the evidence from investigating God's book of nature strongly supports the second. A study of thermodynamics shows that the second law is an inevitable statistical consequence of any system with many particles interacting in interesting ways; it plays a vital role in nearly every natural process, from star formation, to the sun shining, to photosynthesis, to respiration, digestion, and thinking.

Each type of atom or molecule on earth emits and absorbs light in a unique set of spectral lines. Those lines tell us about atomic structure and the fundamental laws of quantum mechanics, electromagnetism, and nuclear physics. When we look at the spectral lines from nearby stars and the most distant galaxies, we find that they are made of exactly the same atoms, obeying the same laws of nature, as here on earth. Because light takes time to travel, by looking at distant stars and galaxies, we are studying what these laws were in the distant past when the light was emitted. Creation gives clear evidence that its fundamental laws have not changed in the past.

Things Which Can Harm: Earthquakes, Wildfires, Bacteria, and Mutations

Some natural processes and organisms are dangerous. Were some of these caused by humanity's fall into sin? Here are several examples that show a relevant pattern.

Earthquakes can be terribly destructive. They are caused by tectonic plates rubbing against each other. Tectonic plates move because of convection cycles in the mantle beneath them. These convection cycles are a result of the properties of mantle materials and

the basic laws of thermodynamics. Tectonic motion has occurred for billions of years. Over time it created a wide variety of ecological niches, from high mountains to ocean trenches, and has recycled mineral nutrients necessary for life back to the earth's surface.

Wildfires can be destructive. But wildfires inevitably result from the basic laws of physics and chemistry under certain environmental conditions that occur periodically. Moreover, some ecosystems are adapted to recurring wildfires, and some tree species depend on fires for reproduction. There is geological evidence that wildfires, like earthquakes, occurred long before humans existed.

Some single-celled organisms live in symbiotic relationships with multicellular organisms, some live in neutral relationships, and some are harmful. The same biological and evolutionary processes lead to both symbiotic and parasitic relationships. Both symbiotes and disease-causing organisms play important roles in complex ecosystems. And there is evidence that both types existed far back in natural history.

Some genetic mutations allow increased adaptation and diversity within a species, some mutations are neutral, and some are harmful. Mutations are a necessary part of the evolutionary processes and have been since far back in the history of life. Moreover, mutations are inevitable results of the laws of physics and chemistry acting on DNA molecules, so that some types of mutations happen with predictable frequencies.

These things sometimes cause human suffering. To prevent all such suffering, God would need to miraculously intervene again and again and again in the regular operation of creation. God can of course do miracles, but God is also in providential control when things happen in ordinary, scientifically explainable ways. Our study of God's world, at least thus far, indicates that God designed creation such that his ordinary providential governance does not require repeated miraculous interventions to keep the natural world functioning as he desires.

In summary, because these natural processes and organisms can cause suffering, it is reasonable to speculate that they were caused by the Fall. However:

1. They have been part of the created world since before humans existed.
2. They inevitably occur because of how the basic laws of nature operate.
3. They are parts of larger systems which, on the whole, are beautiful and complex and life sustaining.
4. God would need to miraculously intervene repeatedly in the operation of creation if God were to prevent that suffering from ever occurring to humans.

This is how creation *is* now. By itself, that does not prove that this is how creation *ought* to be. But given that biblical hermeneutics and systematic theology offer contending arguments—did these things result from the Fall or were they intended by God from the beginning to be parts of this creation—this additional scientific information significantly strengthens the latter case.

If Not the Fall, Then What?

If these natural processes and organisms are not due to the Fall, scripture offers several other categories. In Genesis 1:28 (NRSV), before sin is mentioned, God commands humans to "fill the earth and *subdue* it." Hebrew scholars note that the word *kabas*, translated "subdue," is used elsewhere in scripture[8] to indicate strong action against real opposition.[9] Genesis 2 speaks of a garden, and in the ancient Near East gardens often were walled enclosures. Early Genesis chapters indicate God made a creation with a lot of wildness in it, with a lot for humanity to subdue.[10]

Scripture offers a second category for natural processes that cause harm, but that are not a result of the Fall; they might need to be *healed*. In John 9:1–3, Jesus's disciples asked whether a man was born blind because of his sin or his parents' sin. Jesus answered "neither," but he then gave the man eyesight. When someone is suffering from a disease or natural disaster, the correct response is seldom to have a theological debate about whether it was caused by their sin, the sin of their ancestors, or some dangerous part of God's original creation. The right response might be to relieve suffering.

This raises theodicy questions. Why would God create a world which includes wild and dangerous things which might need to be subdued or healed? How might those things be transformed, after the resurrection, in the new creation? These very important questions go beyond the scope of this article.

Possible answers involving *soul-making theodicy* and *agape theodicy* have been explored in books and articles in recent decades, including in this journal,[11] and we refer readers to those.

Scripture offers a third category of response for parts of nature which are beyond our control and sometimes dangerous: *respectful appreciation* (sometimes from a distance) with acknowledgement that God is their creator. In Job 38:39–41:34, God describes many wild and powerful creatures in glowing terms. Psalm 104:21 and 25 praise God as One who created, and who provides food to, predators such as lions and countless sea creatures. As we study creation, our knowledge and appreciation for this third category—things we have discovered but are still beyond our control—continues to grow. Biologists frequently find new lifeforms when they study new ecosystems, some in environments so extreme that we can barely send probes. Astronomers discover astonishing things every time they build telescopes with new capabilities.

Implications for Human Conditions

Some human congenital disabilities have clear genetic causes. Many intersex and some transgender conditions also have clear genetic causes.[12] The genetic rearrangements that lead to these conditions result from the fundamental laws of physics and chemistry acting on DNA. These natural processes also occur in nonhuman organisms, sometimes with predictable frequencies, have done so since long before humans existed, and are part of a system used by God to produce a complex living world.

There is a great deal of human genetic diversity (height, body type, skin color, and many other gene-influenced traits) which we are learning to respectfully appreciate as good features of God's creation of humanity. On the other hand, some human congenital disabilities cause so much suffering that we should strive to prevent or cure them. *Medically* these could be classified as disorders while affirming *theologically* that they are parts of God's creation that we should subdue or heal.

We believe that these scientific arguments support a theological case that at least some types of congenital disability, and at least some types of gender nonconforming identities, are part of God's intended creation of humanity. Whether a particular instance is something to be subdued, healed, or respectfully appreciated depends on context. One person born deaf might wish they had been born hearing; another might contend that their deafness is integral to the person they have grown to become, and that to wish otherwise is, in effect, to wish that they as a person did not exist. One person born intersex might desire medical intervention to help them conform anatomically and hormonally with the gender they identify with psychologically; another might embrace an intersex identity and ask society, and the church, to affirm them as an intersex person. Even if the church agrees that such individuals are part of God's intention for human diversity, wisdom and further scholarship is needed to respond in loving ways to individual circumstances. But such reflection will proceed rather differently if we're antecedently committed to the claim that these conditions are always the result of sin.

Congenital versus Acquired Disabilities

We first consider disabilities because they are less contested than are intersex or transgender identities. This is not to say that the church doesn't have problematic views about disability. It often does. But disabilities aren't as closely connected with culture-war disagreements.

There are reasons to think that at least *some* disabilities are intended parts of God's creation rather than a result of the Fall. This isn't to make a claim about *all* disabilities. The range of conditions classified as disabilities is sufficiently varied that we often can't properly talk about them as if they shared a distinguishing feature or essence.[13] In making a claim about *some* disabilities, keep in mind that finding an example of a disability that doesn't align with what is said here does not thereby invalidate the central claim. For instance, lead-tainted water in Flint, Michigan, caused a dramatic increase in the number of children with intellectual disabilities. Where only 13.1% of Flint students received special education services in the 2012–2013 year, before the crisis began, the rate had increased by over half to 20.5% by 2018.[14] Insofar as Flint's water crisis was the result of structural racism,[15] at least some disabilities are the result of sin and its effects in the world. But that doesn't entail that all disabilities are a result of sin.[16]

Approximately 83% of disabilities are acquired, rather than congenital.[17] Many of those, like some of the instances of intellectual disability from the Flint water crisis or physical disabilities that result from war, are also the result of sin, either personal or sys-

temic. Such cases, like all the effects of sin, will be addressed in the redemption of Creation as part of God's eschatological coming kingdom. It may be that disabilities acquired because of sin's presence in the world will be "healed" or "cured" then. But that does not mean the same is also true of every congenital disability. It is not even clear what it would mean to "heal" or "cure" some forms of congenital disability.

Congenital Disabilities, Neurodiversity, and the Resurrection

It's not clear that it even makes sense to talk about healing a person who has had, say, Down syndrome, or a deletion on every copy of a certain chromosome of genetic coding that results in autism, because these conditions are present from the moment of their conception. People with Down syndrome are not ill. While the condition can have negative effects on a person's health (for instance, Down syndrome carries with it an increased risk of congenital heart disease), such effects are not present in all cases. Many people with Down syndrome are fully healthy despite having Down syndrome. The same is true of various forms of neurodiversity. Furthermore, an individual's congenital disabilities affect the entirety of their life experiences. Their self-identity, their relationship with others, and how they relate to God are shaped by those life experiences. This is not a bad thing. Genetic variation and neurodiversity, like diversity in height or body type, are part of natural human diversity, not something that people need to be saved from. Theologian John M. Hull notes that this diversity is spiritually enriching to all of God's people: "A spirituality of disability helps us to gain a wider concept of the human itself … The transfigured disabled person knows the variety of human conditions and thus has an opening into other worlds."[18]

Many Christians do not think that there will be disabilities present in the new heavens and the new earth. For some, they have not considered the possibility. Others have considered the possibility and find it problematic.[19] The church has learned, however, that our beliefs about what God's coming kingdom will be like are often skewed by sinful distortions of our present cultures. In James Baldwin's *The Fire Next Time*, in which he reflects on the racism that he found so prevalent in the American Christianity of his youth, he noted: "The vision people hold of the world to come [i.e., God's eschatological kingdom] is but a reflection, with predictable wishful distortions, of the world in which they live."[20]

Ableism in Christian Theology

The view that there will be no disabilities in heaven, because all disabilities are believed to be a result of sin, is found in much of Christian tradition.[21] On the opening page of her recent book *My Body Is Not a Prayer Request*, Amy Kenny, who is physically disabled, tells the following story of an encounter with a stranger:

> "God told me to pray for you," she says. Her words linger like cloying perfume in a claustrophobic space. "God wants to heal you!" She is undoubtedly thrilled by this opportunity.
>
> I've been here before. It never ends well.
>
> This woman does not know me. She doesn't have the intimacy that prayer or accountability or sarcasm require. She simply interprets my case as something that requires "fixing" and ropes God into her ableism, the belief that disabled people are less valuable or less human than our nondisabled counterparts.[22]

As we consider this issue, we should ask ourselves to what extent we might have internalized ableism. There are a number of different accounts of the nature of ableism. Disability advocate Talila "TL" Lewis is especially helpful, writing that ableism is

> a system that places value on people's bodies and minds based on socially constructed ideas of normalcy, intelligence, excellence and productivity. These constructed ideas are deeply rooted in anti-Blackness, eugenics, colonialism and capitalism. This form of systemic oppression leads to people and society determining who is valuable and worthy based on a person's appearance and/or their ability to satisfactorily produce, excel, and "behave."[23]

Much traditional philosophy of religion and theology simply assumes that disability is an instance of the problem of evil or suffering that needs to be explained away to justify God's goodness.[24] This leads to the view, summarized so clearly by Richard Swinburne, that "disabilities need to be prevented or cured."[25]

Something similar is found in the writing of Saint Augustine:

> By the same token, the resurrection is not to be denied in the cases of monsters which are born and live, even if they quickly die, nor should we believe that they will be raised as they were, but rather in an amended nature and free from faults.[26]

(Some might think Augustine's view here is caused by a faulty understanding of congenital abnormali-

ties, which illustrates how scientific understanding can inform our theology.)

Nancy Eiesland reflects on this history as follows:

> Three themes—sin and disability conflation, virtuous suffering, and segregationist charity—illustrate the theological obstacles encountered by people with disabilities who seek inclusion and justice within the Christian community. It cannot be denied that the biblical record and Christian theology have often been dangerous for persons with disabilities.[27]

Rejecting Ableism and Embracing Diversity

As numerous scholars have documented, much of the Christian tradition assumes that disabilities are a result of the Fall and our bodies will need to be resurrected non-deformed and non-disabled.[28] There are philosophical and theological arguments against this view; however, fully engaging those theological arguments and their criticisms would take us beyond the scope of this article.[29] For now, we point out two things.

First, as noted earlier, there are scientific reasons to reject the view that all disabilities came about as the result of the Fall. Fossil records indicate that congenital disabilities can be found in animal species prior to the evolution of humans.[30] The genetic variation made possible by mutation and natural selection gives rise to new forms, and thus the diversity, of life. Presumably, God had reasons for creating according to such a process. As theologian John Haught argues, we have reason to think that the biological processes that allow for the emergence and evolution of life "are woven everlastingly into the kingdom of heaven."[31] This evolutionary drama, he continues, "consists, at the very minimum, of the intensification of creation's beauty, a beauty that, to Christian faith, is everlastingly sustained and patterned anew within the life of God."[32] If there are good reasons for God to create according to that process, there are good reasons to create the necessary antecedent conditions that would allow for congenital disabilities that are the result of genetic mutation such as Down syndrome or Williams syndrome.

Second, when we think that all disabilities are the result of the Fall, that shapes how we think about and treat disabled people. There is practical (and political) significance that follows from our theological understanding of disability. Even if we do not, like Jesus's disciples, try to connect a disability with a specific person's sin, too many of our interactions with others presume that disability is bad, as evidenced in Amy Kenny's recent *My Body Is Not a Prayer Request*. When we assume that disability is something that always needs "curing" or "healing," that makes it easier to devalue the lives of those with disabilities. Disabled people are often instrumentalized. Disabled students are sometimes denied admission to private Christian schools given that these schools are exempt from the Americans with Disabilities Education Act. Church services often are not designed with various sorts of disabilities in mind. Disabled individuals pick up on these slights and may feel unwelcome.

The past few decades have seen numerous scholars, many of them themselves disabled, further explore the question of how misguided views about the nature of disability and the value of lives with disabilities have negatively shaped Christian practices.[33] Many of us have been enculturated to think about disabilities in ways rooted in a version of theological ableism—that to be disabled is to be broken, unwell, less than. When we think of people this way, we treat them in this way.

Just as we envision other kinds of human diversity as contributing to the range of goods God intends, both pre-Fall and eschatologically—not just tolerated but valued as part of God's kingdom and something that God intended—so we could with at least some disabilities. The ways we imagine the diversity of God's kingdom plays out in the ways we structure our communities. One of the reasons that racism is so easy and prevalent in the American church is that we have created Jesus in our own image. Our default understanding of the comparative value of lives limits our theological imagination.

Nonconforming Gender across History and Cultures

A common Christian belief is that the created order of humans comprises a strict gender binary, and that anything which scholars today discuss as gender variance (which includes not only intersex conditions but also a whole spectrum of LGBTQIA+ identities)[34] are a result of the Fall.[35] Intersex and transgender Christians who do not believe they are "disordered" and who do not seek or anticipate "healing" in a coming age pose an important challenge to those who believe that God created *only* male and female. They believe that God's creation of "human nature"

included the possibility of individuals with gender nonconforming identities.[36] Their views correlate with those who question the perspective that all disabilities are postlapsarian disorders to be "healed" in the age to come.

Anthropological and historical records, including sacred texts, reveal that definitions of male and female have varied over time and across cultures, as have cultural responses to gender variance. While it may seem to some that LGBTQIA+ identities constitute a new, perhaps trendy, cultural phenomenon, what we are seeing today may be more accurately described as a culture shift around visibility and inclusion. Gender scholars and historians believe the number of gender-variant persons, as a percentage of the population, has not changed over time.[37] Many ancient cultures recognized minority individuals who do not fit into a strict male-female dichotomy, and linguistic records document an expansive nomenclature for LGBTQIA+ persons throughout history and across cultures.[38] All cultures recognize a majority male-female dichotomy, obviously necessary for human survival, but their responses to sex and gender-variant persons vary widely, from reverence to acceptance to acknowledgment to denial to rejection.

Intersex and Transgender Prevalence

Modern science—consensus views in the fields of biology, psychology, and sociology—acknowledges that while most people can be identified as male or female, sex and gender are not strictly binary but exist on a spectrum that has been common in nature over time. Current research around intersex and transgender persons and identities has advanced significantly over the last few decades.

Research in sexual development has documented dozens of intersex conditions, variations in anatomical or genetic characteristics that have traditionally been used to assign a male or female identity to an individual at birth.[39] When "intersex" is defined broadly as persons born with genetic, chromosomal, hormonal, and/or gonadal variations that "do not fit typical binary notions of male or female bodies,"[40] and that often do not show up until later in life, researchers estimate the incidence as approximately 1.7% of the population.[41] Early research measured incidence only as including children born with noticeably atypical genitalia, commonly cited as 1 in 1,500 to 2,000 births.[42]

Transgender persons, as defined by the American Psychological Association (APA), are those whose "gender identity, gender expression or behavior does not conform to that typically associated with the sex to which they were assigned at birth." While scientific research into transgender identities does not always point to determinative genetic, neurobiological, or physiological markers, recent studies reveal neurological variances and correlates showing that transgender individuals "have a brain structure more comparable to the gender with which they identify."[43] Further, most research confirms that psychological attempts to change a person's gender identity (PACGI) have proved ineffective and often harmful.[44] While historically there is little systematic reporting of the prevalence of transgender individuals, the UCLA Williams Institute reports that in 2022, 0.6% of the U.S. population identified as transgender with higher numbers among youth (ages 13–17) than adults.[45] A 2022 Pew Research Center survey reports that 2% of the under-30 population identifies as trans and 5.1% of the same population identifies as gender nonconforming.[46]

Intersex and Transgender: Disorders or Integral to Identity?

Some Christian scholars who acknowledge the science on intersex and transgender identities nevertheless argue that these conditions are a result of the Fall and should be bracketed as "disorders of sexual development" in considerations of gender issues.[47] Christians who claim that these identities are postlapsarian disorders sometimes add that the existence of such individuals should be acknowledged, and they should be treated with Christian compassion and charity. Nevertheless, such bracketing has contributed to the historical marginalization, and often erasure, of intersex persons in Western culture.[48]

This perspective, that gender variance constitutes a postlapsarian disorder, is being challenged by other Christian scholars who have conducted research on intersex conditions.[49] Unfortunately, alongside this competent research into intersex and transgender issues, there is a relative dearth of theological discussion regarding the effects of the Fall and what might constitute a disorder to be healed in the age to come. This seems particularly regrettable in that the growing field of disability theology directly addresses questions of postlapsarian "disorders" and the effects of these views on individuals associated with diverse conditions. As noted earlier in this

article, disability theology demonstrates how labeling certain conditions as "disorders" has historically involved subjective reasoning in defining the "normal." Christians who have experienced the negative effects of being viewed as defective report that much of the suffering involved with having disabilities results not from the physical or psychological condition itself, but, rather, from the social stigmatization, marginalization, and prejudice associated with disabilities labeled "disorders."

Intersex and transgender individuals share similar stories relating the painful psychological effects of the secrecy, fear, stigmatization, and discrimination they experience. Many intersex individuals have undergone, without their consent, "corrective surgeries" in childhood that ultimately contradict their internalized gender identity. Others have experienced complications from surgeries and subsequent interventions that have negatively affected their health and sexual experience in adulthood.[50] Because many intersex conditions—even those not involving ambiguous genitalia at birth—can now be objectively identified, they often elicit compassion (if not misplaced pity) from the informed public. By contrast, transgender identities involve a person's psychological concept of themselves that others cannot "see," often resulting in heightened skepticism and discrimination by our society.[51]

The voices and stories of intersex and transgender Christians have been largely absent in development of theologies of the Fall. Because they are so significantly affected, their voices are essential to the development of just Christian perspectives on gender. Many Christians have shared their stories of the important role their sex/gender identities have played in their spiritual journeys and their joy when embraced by the Christian community.[52] Susannah Cornwall, from her interviews with intersex Christians, reports that "feelings of being acknowledged as acceptable and non-pathological persons were central to their faith journeys."[53] Studies show that telling their stories and talking about their identities "significantly increases [their] self-esteem and psychological well-being."[54] These Christians are calling on majority culture to accept the tension and discomfort that challenge their definitions of the normal. All Christians should be particularly sensitive to their appeal, inasmuch as we believe that every human being is an image bearer of God, and Jesus specifically identifies with the "least of these."[55]

Nonconforming Gender Historically and Biblically

Cultures throughout history have acknowledged gender-variant identities. In Hebrew and Greco-Roman cultures, the eunuch was a significant example of gender variance, acknowledged by Jesus, in Matthew 19, when he responded to the Pharisees' test question about divorce under Mosaic law. He quotes Genesis as it applied to men and women, but he continues with comments about eunuchs, acknowledging people who do not clearly fit the male-female paradigm associated with traditional marriage in his culture. Jesus refers to three types of eunuchs: (1) those who are "born that way" (v. 12): which would describe intersex individuals and, arguably, other sexual minorities (today, some LGBTQIA+ persons) who, by birth, do not fall into a male-female classification;[56] (2) those who are "made eunuchs," which describes the castrati, who were impressed into service in that culture; and (3) those who "choose to live like eunuchs for the sake of the kingdom of heaven" (v. 12). The first two types of eunuchs, identified in Hebrew texts and in Jewish law, faced many cultural and religious restrictions and were prohibited from entering "the assembly of the Lord."[57]

The third type of eunuch—individuals either cisgender or gender nonconforming who choose to live like eunuchs for the "sake of the kingdom"—is absent from other historical references but seems crucial in that Jesus chose to give this group—a group which includes himself—a label with negative connotations in that era. Although scholarship on eunuchs varies widely among historians, they were clearly a minority and marginalized group. While in the Greco-Roman culture of the first century, eunuchs could be found serving in official, sometimes even prestigious, roles, they were nevertheless considered "effeminate, gender-liminal figures with ambiguous social and sexual roles."[58] As Brittany Wilson points out, the literature of the period presented eunuchs as embodying "not only all that was unmanly, but also all that was non-elite and 'foreign.'"[59] Jesus's inclusion of this third type of eunuch seems quite radical because it places people like himself (and later, Paul) alongside sexual minorities who experienced cultural, legal, and religious discrimination.[60]

Eunuchs—biblical sexual minorities—lend insight into the marginalization surrounding gender variance, an injustice that Isaiah prophesies will be corrected in the age to come, not by "healing" of

bodies but by healing of the suffering caused by religious exclusion:

> Do not let the foreigner joined to the Lord say, "The Lord will surely separate me from his people"; and do not let the eunuch say, "I am just a dry tree."
>
> For thus says the Lord: To the eunuchs who keep my sabbaths, who choose the things that please me and hold fast my covenant, I will give, in my house and within my walls, a monument and a name better than sons and daughters; I will give them an everlasting name that shall not be cut off.[61]

This promise begins to be realized in Acts when Philip encounters the Ethiopian eunuch. The Holy Spirit directs Philip on a wilderness road where he runs to encounter the eunuch, who is reading Isaiah 53. When the eunuch asks for help identifying the suffering servant described (notably, his question suggests that he identifies with the suffering described), Philip shares the good news of the gospel and the eunuch exclaims, "Look, here is water! What is to prevent me from being baptized?"[62] Under Jewish law, there was much to stand in the way; eunuchs were prohibited from full inclusion into Jewish worship and life. At this point, rather than healing the eunuch as he had just done for many individuals in Samaria, Philip cites no difficulty: "both of them, Philip and the eunuch, went down into the water, and Philip baptized him."[63] Brittany Wilson argues that when Philip includes the Ethiopian eunuch as a "member of 'the Way,'" he signals the "eschatological in-breaking of God's action in the world," that is, the introduction of a new covenant of inclusion, as prophesied in Isaiah 56.[64]

Isaiah 53 reminds us that Jesus was "despised and rejected by humankind … Like one from whom people hide their faces, he was despised, and we held him in low esteem … We considered him punished by God, stricken by him, and afflicted … *cut off* [emphasis added] from the land of the living, stricken for the transgression of my people."[65] The stigmatization experienced by those whom society has devalued, *cut off* and oppressed, identifies them with the "despised and rejected" Christ, who, on his resurrected body, carries the physical marks of that stigmatization. As disability theologians remind us, Christ's resurrected body is not a "healed" one; it is a human body carrying the signs of Christ's divine identity and sacrifice. Jesus's life reminds us of the danger of excluding others, of stigmatizing them with labels that facilitate their oppression.

Susannah Cornwall challenges Christians who enjoy the power and privileges of majority culture to "empty themselves" of that privilege (*kenosis*) and of their expectation that others be like them. And she cautions against the dangers of believing that any of us fully understands the mind of God regarding the mysteries of gender and sex:

> Phil. 2:5–11 counsels that humans are to emulate Jesus, who did not consider equality with God something to be grasped; but to exploit, to cling to, or to grasp at equality with God is exactly what is happening when humans decide that a single present or historical reading of gender tells the whole story of God.[66]

The privilege enjoyed by those in the majority, who fall easily into a male-female binary, often causes them to dismiss those who fall outside these cultural categories as mere exceptions, whose voices and testimony do not matter. But we are reminded again that these are the very persons with whom Jesus identifies.

Christ reminds us that "you will know them by their fruits" (Matt. 7:20). What are the fruits of a theology labeling those who fall outside the norms as disordered? What are the effects on persons who have been told their gender-variant identities result from the Fall? If empirical evidence exists that certain theological ideas correlate with harm to individuals, it should alert us to the need to reexamine our theology.

Research about Views on Gender Nonconforming Identities within the Church

Considerable sociological and psychological data exist on correlations between religious identities and the mental health of LGBTQIA+ individuals. We now summarize some of those results. In doing so, we must broaden the scope of this article beyond our earlier focus on conditions with clear genetic causes. We don't know of any large-scale studies which examine the consequences of attitudes within the church, specifically affecting individuals with genetically caused intersex conditions. However, numerous studies offer data on the effects of attitudes within the church more broadly on LGBTQIA+ individuals. In these studies, religious spaces are typically categorized as "affirming" or "non-affirming."[67] While there are obviously more than just those two groups, even studies which identify more than two groups of

religious response usually collapse them into those two groups for analysis, either because of the number of participants per group or because there are no statistical differences between some groups.

Multiple factors beyond human control contribute to a person's sexual orientation. Research in recent decades documents evidence for genetic, prenatal environmental, hormonal, and other nonsocial environmental factors, while also noting the relative lack of empirical evidence for significant contributions of individual choices or social environment.[68] When it comes to sexual *behavior*, individual choices and social environment matter deeply, and the effects of human sin can be quite evident in hetero-, bi-, or same-sex behavior. When it comes to *orientation*, however, research points to factors largely beyond human control in a complex mixture that is incompletely understood.[69]

Despite this complexity, some Christian churches and organizations teach that all nonheterosexual orientation is a result of the Fall and/or individual sin.[70] The posture and policies within various denominations have implications for the ways that LGBTQIA+ people are treated within faith communities.

Christian denominations vary widely in their support for same-sex marriage: for example, with a majority of White mainline and Catholics in support, Black Protestants evenly divided, and the majority of White evangelicals opposing.[71]

Increasingly, psychologists and other social scientists have accumulated evidence regarding the impact of responses by religious communities toward LGBTQIA+ members on LGBTQIA+ religiosity/spirituality, mental health, and self-concept. In general, large-scale studies on the impact of religiosity and spirituality on mental health and coping have found a small but positive relationship between personal religious beliefs and involvement, and reductions in depression and anxiety accompanied by improvements in well-being and self-concept.[72] However, those studies do not report on disaggregated data regarding participants who have minoritized sexual orientations or gender identities; there are other studies that suggest that religious involvement may actually worsen mental health among LGBTQIA+ persons. For example, research has found that among young adults, self-rated importance of religion predicted reduced suicidal ideation and attempts for straight participants but actually increased the odds of experiencing suicidal ideation and attempts among LGBTQIA+ participants.[73]

LGBTQIA+ Christians have written extensively about the difficulties experienced within some churches and the personal harms of poor treatment from fellow Christians.[74] This includes dual messages that create dissonance across religious and sexual or gender identities for LGBTQIA+ Christians. Several of these dual messages are described at length in "At the Intersection of Church and Gay" by Eric Rodriguez, including the following:

- "God is love," while also enacting harsh and uncaring punitive judgment condemning LGBTQIA+ persons;
- "We are created in God's image," while also emphasizing that a piece of you that you did not choose is inherently unacceptable;
- "Jesus cares for the marginalized and vulnerable," while also experiencing greater hostility and exclusion from Christians than non-Christians.[75]

In studying the experiences of LGBTQIA+ persons within the church, psychologists have identified the ways in which attitudes from the surrounding community and the cognitive dissonance created by dual messages can become internalized. In particular, internalized homonegativity or internalized heterosexism are terms that refer to the negative feelings, such as shame, embarrassment, or anger, that one can hold regarding one's own sexual orientation or gender identity.[76] In addition, LGBTQIA+ Christians may experience identity conflict between their religious identity and their sexual orientation identity: distress and dissonance are experienced when these two aspects of their identity are viewed as being incompatible.[77] In contrast, identity integration occurs when LGBTQIA+ Christians have a positive view of both aspects of their identity—religious and sexual orientation—and do not view them as inherently incompatible. These responses, by themselves, don't determine whether a non-affirming or affirming theology is correct; however, they are important data to consider in conjunction with other theological arguments.

Negative Causes for Concern of Non-affirming Religious Spaces

Experiencing negative treatment within religious communities due to their sexual orientation has been linked with increased depression symptoms among

LGBTQIA+ adults.[78] In particular, experiencing discrimination in religious settings increased internalized heterosexism (negative views about their own gender or sexual identity), which then led to greater psychological distress and poorer well-being among LGBTQIA+ Christians.[79] Similarly, involvement in non-affirming religious communities has been linked with greater internalized homophobia, resulting in higher levels of depression.[80] This relationship has been replicated by Jeremy Gibbs and Jeremy Goldbach using the identity conflict framework with samples of young adults. [81] They found that young adults who had been raised in religious communities that viewed religious and LGBTQIA+ identities as inherently in conflict had elevated rates of internalized homophobia compared with those raised in religious settings in which religious and LGBTQIA+ identities were not presented as in conflict. In addition, parental anti-homosexual religious beliefs also increased rates of internalized homophobia. Ultimately, higher levels of internalized homophobia, internalized because of the church community and/or parent views, increased rates and severity of suicidal thinking among these young adults. Leaving these faith communities that endorsed identity conflict actually resulted in lowered internalized homophobia and better mental health.

In a separate study, Maurice Gattis et al. found that attending an affirming church that endorses same-sex marriage actually served as a buffer for LGBTQIA+ college students, resulting in lower levels of depression even when interpersonal discrimination in their daily lives was present.[82] Similar findings have been found when looking at other outcomes such as anxiety. Specifically, frequency of attendance at a church that either describes same-sex attraction as sinful and/or same-sex marriage as sinful increased anxiety among LGBTQIA+ participants as compared to frequency of attendance at accepting and affirming churches.[83]

Ultimately, this research suggests that religious settings that view either an LGBTQIA+ identity and/or same-sex relationships as the product of the Fall and inherently sinful lead to increased internalized homonegativity, which in turn worsens depression, suicidality, anxiety, and self-concept among LGBTQIA+ individuals. This can lead to fear of rejection, isolation, and grief over the loss of faith communities that LGBTQIA+ folks had been raised in.[84] As one participant in a qualitative study described,

> I wound up having to leave that church, that really was my central identity in terms of my faith and upbringing, and kind of who I understood myself to be, where I understood my call [to become a pastor] to have originated. That required also leaving all the people who had nurtured that call.[85]

Positive Impacts of Affirming Religious Spaces

Despite this significant potential for harm for LGBTQIA+ persons within the church, other studies suggest that an authentic, supportive, and affirming faith community that celebrates LGBTQIA+ identities and relationships can lead to positive outcomes. Suzanne Lease et al. measured affirming faith experiences, such as LGB acceptance and celebration of anniversaries of LGB couples within the church, and found that involvement in these communities was associated with lower internalized homonegativity and higher spirituality, which predicted better mental health outcomes.[86] Similar findings have been reported where there existed affirming religious experiences for social support, self-esteem,[87] and frequency of church involvement.[88]

Qualitative studies of LGBTQIA+ Christians reveal ways that they are seeking out or creating affirming religious spaces. As one participant who joined an affirming congregation stated,

> [This church] played a big part in me learning I can be out and loud and proud. You know, they were very accepting of me. You know … to have little old ladies accepting of me was … I know that sounds funny, but it was a different level of healing. I didn't know that there were little old ladies that would love me.[89]

Other participants reflected on ways they engaged in activism to work toward transformation of their religious community:

> I am staying in the church, in part because I now understand the church has to be ministered unto, it needs the ministry of gay/lesbian spirituality and life experiences and the gifts and the talents they bring. The church does not, in any way, shape, or form, understand the losses to itself, the damage and the losses of gifts, the time, the talents, professional skills, passion, service [with the exit of many LGBTQIA+ people]. It has no clue of what it has lost or what it is stifling when it wants the gifts of people and the people have to stifle or leave in order to be truly themselves. I stay in the church to

> fight for the voiceless or those who must leave the church in order to survive.[90]

However they access supportive faith communities, it is clear from this research that when churches are able to affirm and support their LGBTQIA+ members, this bears positive fruit in terms of mental health, well-being, self-concept, and deeper spirituality and church involvement. Integration of religious and sexual orientation identities allows LGBTQIA+ Christians to move away from internalized homonegativity and more fully participate in the life of the church. It also allows the church to more faithfully reflect the diversity that is present in the kingdom of God.

Conclusion

Scripture alerts us to some natural events or processes that we might, at first, attribute to the Fall. Nevertheless, they might be part of God's intention for creation: in some cases, things to be subdued or healed; in other cases, to be respectfully appreciated. This article summarizes three arguments which do not on their own prove, but together support, the idea that some congenital disabilities and gender nonconforming identities are part of God's intention for human diversity.

First, some congenital disabilities and some gender nonconforming identities occur as consequences of how natural laws have operated since creation.

Second, voices in disability theology and in theology of gender are making a case—from scripture and from their own lived experience of their relationship with God—that their disability or gender nonconforming identity is not something which must be changed in order for them to become the child of God that God wants them to be.

Third, when we attribute, to the Fall, various ways of being embodied, this provides the conceptual frame for how we think about *persons* who have these kinds of embodiment. There is scholarly research[91] and anecdotal evidence regarding harmful effects of this theology on persons with congenital disabilities. Likewise, there is both psychological data and anecdotal evidence for harmful effects on LGBTQIA+ church members of a theology which sees them as damaged.

In the relatively recent past, it was common to attribute racial diversity, in some theological circles, to the sin evidenced in the biblical story of the Tower of Babel. This made it all too easy for those in positions of power and privilege to think of, and ultimately treat, those of other races in ways that devalued them. This frame became part of the justification used by many Christians to defend chattel slavery and the oppression and death of millions of fellow humans who were equally created in the image of God.

The church has learned from several painful historical examples that when our theology is used to justify behaviors which systematically harm those with less power, then those theological justifications need examination. Perhaps the underlying assumption, that all congenital disabilities, intersex conditions, and other gender nonconforming identities are the result of the Fall, is in error. We welcome a broader discussion of these ideas with Christian scholars.

Notes

[1]The authors began interdisciplinary discussions on this topic and organized a seminar series at Calvin University in spring 2023. This article is an outgrowth of those discussions. We seek feedback and discussion of these ideas with a broader group of Christian scholars.

[2]Irenaeus of Lyons (c. AD 130–202), *Adversus haereses* 5.33; and Theophilus, bishop of Antioch (died c. AD 193), *Ad Autolycum* 2.17. The belief that animal death resulted from humanity's fall into sin is prevalent today among young earth creationists. For example, the Answers in Genesis organization maintains a webpage summarizing some of these arguments: https://answersingenesis.org/death-before-sin/death-not-good/.

[3]Basil of Caesarea (329–79), *Hexaemeron* 9.2; and Augustine of Hippo (354–430), *The City of God* 12.4, https://ccel.org/ccel/schaff/npnf102/npnf102.iv.XII.4.html. The belief that animal death was part of God's creational plan is prevalent today among old earth creationists. For example, the Reasons to Believe organization maintains a webpage summarizing some of those arguments: https://reasons.org/explore/publications/articles/animal-death-before-the-fall-what-does-the-bible-say, as does the BioLogos organization: https://biologos.org/common-questions/did-death-occur-before-the-fall.

[4]For a survey of studies see, for example, Robert L. Beschta and William J. Ripple, "Riparian Vegetation Recovery in Yellowstone: The First Two Decades after Wolf Reintroduction," *Biological Conservation* 198 (2016): 93–103, https://doi.org/10.1016/j.biocon.2016.03.031.

[5]Gen. 3:17b–18, NRSV:

> God says to Adam that because of sin, "Cursed is the ground because of you; in toil you shall eat of it all the days of your life; thorns and thistles it shall bring forth for you; and you shall eat the plants of the field."

[6]Rom. 8:20–21, NRSV:

> For the creation was subjected to frustration, not by its own choice, but by the will of the one who subjected it, in hope that the creation itself will be liberated from

its bondage to decay and brought into the freedom and glory of the children of God.

[7]This idea that the second law of thermodynamics started after humanity's fall into sin occurs mostly in casual conversation and is seldom put into print or on the web (although see, for example, https://earlychurchhistory.org/daily-life/gardens-and-the-2nd-law-of-thermodynamics/). Still, the idea is advanced frequently enough that you can find, with a little searching, several websites written by Christians trying to dissuade other Christians from this idea.

[8]For example, Num. 32:22; Josh. 18:1; 2 Sam. 8:11; 1 Chron. 22:18; 2 Chron. 28:10; Neh. 5:5; Esther 7:8; Jer. 34:11, 16; Mic. 7:19; and Zech. 9:15.

[9]Douglas Clement Spanner, *Biblical Creation and the Theory of Evolution* (Milton Keynes, UK: Paternoster, 1997), 62, https://www.creationandevolution.co.uk/Creation%20&%20Evolution%20-%20Prof.D.C.Spanner.pdf.

[10]In recent decades, we've learned that we need wisdom in how we subdue the earth. Forests and swamps can be dangerous places to live or travel, while cities and farms can promote human flourishing; however, we should not drain all the wetlands or cut down all the forests to make cities and farms. We must maintain some wilderness and promote healthy biodiversity. Eradicating smallpox was a great achievement; however, we have also learned that dangerous predator species, like lions and wolves, play important roles in ecosystems.

[11]See, for example, Junghyung Kim, "Naturalistic versus Eschatological Theologies of Evolution," *Perspectives on Science and Christian Faith* 63, no. 2 (2011): 95–108, https://www.asa3.org/ASA/PSCF/2011/PSCF6-11Kim.pdf; Keith B. Miller, "'And God Saw That It Was Good': Death and Pain in the Created Order," *Perspectives on Science and Christian Faith* 63, no. 2 (2011): 85–95, https://www.asa3.org/ASA/PSCF/2011/PSCF6-11Miller.pdf; Bethany Sollereder, "Evolution, Suffering, and the Creative Love of God," *Perspectives on Science and Christian Faith* 68, no. 2 (2016), https://www.asa3.org/ASA/PSCF/2016/PSCF6-16Sollereder.pdf; and Chris Barrigar, "God's *Agape*/Probability Design for the Universe," *Perspectives on Science and Christian Faith* 70, no. 3 (2018): 161–62, www.asa3.org/ASA/PSCF/2018/PSCF9-18Barrigar.pdf.

[12]Some individuals who initially appear to have an unambiguous biological sex, and who later identify as transgender, are then found to have a clear sex hormone-related genetic condition (e.g., some version of congenital adrenal hyperplasia). See, for example, William G. Reiner, "Gender Identity and Sex-of-Rearing in Children with Disorders of Sexual Differentiation," *Journal of Pediatric Endocrinology and Metabolism* 18, no. 6 (2005): 549–54, https://doi.org/10.1515%2FJPEM.2005.18.6.549. More generally, however, for many transgender individuals today, the genetic contributing factors are unknown. This is an ongoing area of research, including studies of genetics and brain anatomy. See, for example, J. Graham Theisen et al., "The Use of Whole Exome Sequencing in a Cohort of Transgender Individuals to Identify Rare Genetic Variants," *Scientific Reports* 9, no. 1 (2019): 1–11, https://doi.org/10.1038/s41598-019-53500-y; and Florian Kurth et al., "Brain Sex in Transgender Women Is Shifted towards Gender Identity," *Journal of Clinical Medicine* 11, no. 6 (2022): 1582, https://doi.org/10.3390/jcm11061582.

[13]Kevin Timpe, "Denying a Unified Concept of Disability," *The Journal of Medicine and Philosophy* 47, no. 5 (2022): 583–96, https://doi.org/10.1093/jmp/jhac021.

[14]Corey Mitchell, "In Flint, Schools Overwhelmed by Special Ed. Needs in Aftermath of Lead Crisis," *Education Week* (August 28, 2019), https://www.edweek.org/teaching-learning/in-flint-schools-overwhelmed-by-special-ed-needs-in-aftermath-of-lead-crisis/2019/08.

[15]Layla Chaaraoui, "What the Water Crisis in Flint Shows about Racism in Public Health," *Harvard Political Review* (2022), https://harvardpolitics.com/flint-crisis-racism/; The Michigan Civil Rights Commission, "The Flint Water Crisis: Systemic Racism through the Lens of Flint," February 17, 2017, https://www.michigan.gov/-/media/Project/Websites/mdcr/mcrc/reports/2017/flint-crisis-report-edited.pdf; and Anna Clark, *The Poisoned City: Flint's Water and the American Urban Tragedy* (New York: Metropolitan Books, 2018).

[16]There are, of course, some congenital disabilities whose causes, at least in part, can be traced to sinful acts by one or more persons; these, therefore, could be classified as being (indirectly) a result of the Fall. One example of this might be birth defects caused by prenatal exposure to toxic chemicals dumped into the environment. We believe there is a second category: congenital disabilities which result from the normal operation of the natural world (e.g., genetic mutations), which should not be classified as being a result of the Fall. Is there a third category? Are there some congenital disabilities which are a result of the normal operation of the natural world the way it works today, but which are nevertheless a result of the Fall because they result from *changes* which God imposed on the normal operation of the natural world as a result of humanity's fall into sin? Our tentative conclusion is that the weight of theological arguments presented in this article is against there being congenital disabilities in this third category.

[17]Sue Regan and Kate Stanley, "Work for Disabled People," *New Economy* 10, no. 1 (2003): 56–61; statistic from page 60, https://doi.org/10.1111/1468-0041.00290.

[18]John M. Hull, "A Spirituality of Disability: The Christian Heritage as Both Problem and Potential," *Studies in Christian Ethics* 16, no. 2 (2003): 27, http://dx.doi.org/10.1177/095394680301600202.

[19]Two examples of contemporary Christian scholarly treatments that at least seem to equate disabilities with natural evils that should be prevented or cured in this life, and eliminated in the life to come, include Richard Swinburne, *Providence and the Problem of Evil* (Oxford, UK: Oxford University Press, 1998); and Chad Meister and Paul K. Moser, "Introduction," in *The Cambridge Companion to the Problem of Evil*, ed. Chad Meister and Paul K. Moser (Cambridge, UK: Cambridge University Press, 2017), 2. For critical engagement, see Hilary Yancey and Kevin Timpe, "Disability and Suffering," in *T&T Clark Handbook of Suffering and the Problem of Evil*, ed. Matthias Grebe and Johannes Grössl (New York: T&T Clark, 2023), 524–37.

[20]James Baldwin, *The Fire Next Time* (Visalia, CA: Vintage, 2013), 40. While Baldwin was making a claim about racism, the authors in Ableism in Christian Theology, the next section of this article, argue that something similar is also often true of our theological imagination regarding disability.

[21]For discussions of the prevalence of ableism in the history of Christian theology, see Kevin Timpe, "Defiant

Afterlife—Disability and Uniting Ourselves to God," in *Voices from the Edge: Centring Marginalized Perspectives in Analytic Theology* (*Oxford Studies in Analytic Theology)*, ed. Michelle Panchuk and Michael Rea (Oxford, UK: Oxford University Press, 2020), 206–32; and Brian Brock and John Swinton, eds., *Disability in the Christian Tradition: A Reader* (Grand Rapids, MI: Wm. B. Eerdmans, 2012).

[22]Amy Kenny, *My Body Is Not a Prayer Request: Disability Justice in the Church* (Ada, MI: Brazos Press, 2022), 1. Maria Palocios, a founding member of Sins Invalid, a disability justice based performance group, has an excellent poem "Naming Ableism" which, like Kenny's book, shows how deeply rooted ableism is in our contemporary culture and institutions, including many Christians' attitudes and assumptions; see https://cripstory.wordpress.com/2017/04/01/naming-ableism.

[23]Talila A. Lewis, "Ableism 2020: An Updated Definition," https://www.talilalewis.com/blog/ableism-2020-an-updated-definition.

[24]Yancey and Timpe, "Disability and Suffering," in *T&T Clark Handbook of Suffering and the Problem of Evil*, ed. Grebe and Grössl.

[25]Richard Swinburne, *Revelation: From Metaphor to Analogy* (Oxford, UK: Oxford University Press, 2007), 304. For an argument against this view, see Yancey and Timpe, "Disability and Suffering."

[26]Augustine of Hippo, *Enchiridion* 87, trans. and ed. Albert C. Outler, https://www.tertullian.org/fathers/augustine_enchiridion_02_trans.htm.

[27]Nancy L. Eiesland, *The Disabled God: Toward a Liberatory Theology of Disability* (Nashville, TN: Abingdon Press, 1994), 74.

[28]Brock and Swinton, eds., *Disability in the Christian Tradition*; and Timpe, "Defiant Afterlife," in *Voices from the Edge,* ed. Panchuk and Rea.

[29]Joshua Cockayne, David Efird, and Jack Warman, "The Social Epistemology of Deconversion by Spiritually Violent Religious Trauma," in *Voices from the Edge,* ed. Panchuk and Rea, 119; Timpe, "Defiant Afterlife," in *Voices from the Edge,* ed. Panchuk and Rea; and Christina Van Dyke, *A Hidden Wisdom: Medieval Contemplatives on Self-Knowledge, Reason, Love, Persons, and Immortality* (Oxford, UK: Oxford University Press, 2022).

[30]See, for example, Florian Witzmann et al., "Rarity of Congenital Malformation and Deformity in the Fossil Record of Vertebrates–A Non-Human Perspective," *International Journal of Paleopathology* 33 (2021): 30–42, https://doi.org/10.1016/j.ijpp.2020.12.002; and Erik Trinkaus, "An Abundance of Developmental Anomalies and Abnormalities in Pleistocene People," *Proceedings of the National Academy of Sciences* 115, no. 47 (2018): 11941–46, https://doi.org/10.1073/pnas.1814989115.

[31]John F. Haught, *Making Sense of Evolution: Darwin, God, and the Drama of Life* (Westminster John Knox Press, 2010), 53.

[32]Ibid., 72.

[33]Amos Yong, *The Bible, Disability, and the Church: A New Vision of the People of God* (Grand Rapids, MI: Wm. B. Eerdmans, 2011); John M. Hull, *Disability: The Inclusive Church Resource* (London, UK: Darton, Longman & Todd Ltd., 2014); Shane Clifton, *Crippled Grace: Disability, Virtue Ethics, and the Good Life* (Waco, TX: Baylor University Press, 2018); Nancy L. Eiesland, *The Disabled God: Toward a Liberatory Theology of Disability* (Nashville, TN: Abingdon Press, 1994); Benjamin T. Conner, *Amplifying Our Witness: Giving Voice to Adolescents with Developmental Disabilities* (Grand Rapids, MI: Wm. B. Eerdmans, 2012); Courtney Wilder, *Disability, Faith, and the Church: Inclusion and Accommodation in Contemporary Congregations* (New York: ABC-CLIO, 2016); Hans S. Reinders, *Receiving the Gift of Friendship: Profound Disability, Theological Anthropology, and Ethics* (Grand Rapids, MI: Wm. B. Eerdmans, 2008); and John Swinton, "From Inclusion to Belonging: A Practical Theology of Community, Disability and Humanness," *Journal of Religion, Disability & Health* 16, no. 2 (2012): 172–90, http://dx.doi.org/10.1080/15228967.2012.676243.

[34]LGBTQIA = Lesbian, gay, bisexual, transgender, queer, intersex, and asexual identities. Many also include 2s (two-spirit).

[35]This article argues that many nonconforming gender identities are part of God's intention for creation and not a result of the Fall. These arguments are relevant to the question of whether or not the church should accept same-sex marriage, but they do not settle that problem; additional hermeneutical and theological matters that we do not engage here are also relevant.

[36]Some versions of gender theory put strong emphasis on the *social construction* of gender roles and identities. It is not our intention in this article to debate the relative weights or interplay of genetics which all humans share, individual genetic variation, and social factors in any individual's gender identity. The argument here is simply that there are sound reasons for concluding that some sorts of non-binary gender identities are part of God's intended creational diversity for humanity.

[37]See G. G. Bolich, *Crossdressing in Context: Transgender History and Geography* (https://openlibrary.org/publishers/Psyche%27s_Press: Psyche's Press/Open Library, 2007); Leslie Feinberg, *Transgender Warriors* (Boston, MA: Beacon Press, 1977); and Susan Stryker, "(De)subjugated Knowledges: An Introduction to Transgender Studies," in *The Transgender Studies Reader,* ed. Susan Stryker and Stephen Whittle (New York: Routledge, 2006), 1–17.

[38]Consider, for example, Sekhet (Ancient Egypt), Androgyne (Greco-Roman), Hermaphrodite (European), Hijras (Indian), Mudang (Korea), Shih-niang (China), Mudoko (Uganda), Khuntha and Mukhannathun (Islamic), Two-Spirit (Native American/First Nations), Chibados and Quimbanda (Angola), and more, too numerous to mention.

[39]*Scientific American* has published a helpful visual image outlining the numerous intersex conditions as identified in the scientific literature: https://blogs.scientificamerican.com/sa-visual/visualizing-sex-as-a-spectrum/.

[40]Office of the United Nations High Commissioner for Human Rights (OHCHR).

[41]Melanie Blackless et al., "How Sexually Dimorphic Are We? Review and Synthesis," *American Journal of Human Biology* 12, no. 2 (2000): 151–66, https://doi.org/10.1002/(sici)1520-6300(200003/04)12:2%3C151::aid-ajhb1%3E3.0.co;2-f; Valerie Arboleda, David Sandberg, and Eric Vilain, "DSDs: Genetics, Underlying Pathologies, and Psychosexual Differentiation," *Nature Reviews Endocrinology* 10, no. 10 (2014): 603–15, https://doi.org/10.1038/nrendo.2014.130; and Intersex Human Rights Australia, https://ihra.org.au/16601/intersex-numbers/. Estimates of intersex prevalence vary widely because most conditions are not identified at birth. Some may be identified at adolescence or later in life, when seeking help for infertility issues or later health anomalies.

And many may live with intersex conditions that are never identified. As a result of the activism of the intersex community (e.g., Interconnect, interAct, Intersex Australia), intersex conditions, initially labeled "Disorders of Sexual Development," or DSDs, are increasingly referred to in the literature as "Differences of Sexual Development."

[42]Intersex Society of North America, "How Common Is Intersex?," https://isna.org/faq/frequency/.

[43]Sven Mueller et al., "The Neuroanatomy of Transgender Identity: Mega-Analytic Findings from the ENIGMA Transgender Persons Working Group," *Journal of Sexual Medicine* 18, no. 6 (2021): 1122–29, https://doi.org/10.1016/j.jsxm.2021.03.079; and Ferdinand Boucher and Tudor Chinnah, "Gender Dysphoria: A Review Investigating the Relationship between Genetic Influences and Brain Development," *Adolescent Health, Medicine, and Therapeutics* 11 (2020): 89–99, https://doi.org/10.2147%2FAHMT.S259168; Jiska Ristori et al., "Brain Sex Differences Related to Gender Identity Development: Genes or Hormones?," *International Journal of Molecular Sciences* 21, no. 6 (2020): 2123, https://doi.org/10.3390/ijms21062123; and Janet Hyde et al., "The Future of Sex and Gender in Psychology: Five Challenges to the Gender Binary," *American Psychologist* 74, no. 2 (2019): 171–93, https://doi.org/10.1037/amp0000307.

[44]Jackson L. Turban et al., "4.10 Exposure to Conversion Therapy for Gender Identity Is Associated with Poor Adult Mental Health Outcomes among Transgender People in the US," *Journal of the American Academy of Child & Adolescent Psychiatry* 57, no. 10 (2018): S208, http://dx.doi.org/10.1016/j.jaac.2018.09.236; and American Academy of Child & Adolescent Psychiatry, Policy Statement on Conversion Therapy, 2018, https://www.aacap.org/AACAP/Policy_Statements/2018/Conversion_Therapy.aspx.

[45]UCLA Williams Institute, "How Many Adults and Youth Identify as Transgender in the United States?," 2022, https://williamsinstitute.law.ucla.edu/publications/trans-adults-united-states/.

[46]Pew Research Center, "About 5% of Young Adults in the U.S. Say Their Gender Is Different from Their Sex Assigned at Birth," 2022, https://www.pewresearch.org/short-reads/2022/06/07/about-5-of-young-adults-in-the-u-s-say-their-gender-is-different-from-their-sex-assigned-at-birth/ (TGNB: transgender and non-binary, defined as those whose "gender is different from their sex assigned at birth"; estimates of those over 30 are 0.6% trans and 1.6% non-binary.)

[47]See, for example, the "integrity" and "disability" views described in Tony Jelsma, "An Attempt to Understand the Biology of Gender and Gender Dysphoria: A Christian Approach," *Perspectives on Science and Christian Faith* 74, no. 3 (2022): 130–48, https://www.asa3.org/ASA/PSCF/2022/PSCF9-22Jelsma.pdf. See also Mark A. Yarhouse and Julia Sadusky, *Emerging Gender Identities: Understanding the Diverse Experiences of Today's Youth* (Grand Rapids, MI: Brazos Press, 2020); "Report of the Committee to Articulate a Foundation-Laying Biblical Theology of Human Sexuality," Christian Reformed Church of North America, 2022, https://www.crcna.org/sites/default/files/human_sexuality_report_2021.pdf; and Heather Looy and Hessel Bouma III in 2005 raise early questions regarding this perspective in "The Nature of Gender: Gender Identity in Persons Who Are Intersexed or Transgendered," *Journal of Psychology and Theology* 33, no. 3 (2005): 166–78, https://doi.org/10.1177/009164710503300302.

[48]Many highly educated people in Western culture know little about intersex. This erasure in Western culture has been facilitated by what gender historians refer to as the "medicalization of sex" in the twentieth century, which included medical intervention to assign a clearly male or female identity onto the intersex person. See Alice Dreger, *Hermaphroditism and the Medical Construction of Sex* (Boston, MA: Harvard University Press, 1998); and Anne Fausto-Sterling, *Sexing the Body: Gender Politics and the Construction of Sexuality* (New York: Basic Books, 2000).

[49]Megan DeFranza, *Sex Difference in Christian Theology: Male, Female, and Intersex in the Image of God* (Grand Rapids, MI: Eerdmans, 2015), and Susannah Cornwall, *Sex and Uncertainty in the Body of Christ: Intersex Conditions and Christian Theology* (London: Equinox, 2010).

[50]Intersex individuals' stories are now widely available online. See interAct, "Intersex Support and Advocacy Groups," https://interactadvocates.org/resources/intersex-organizations/.

[51]The violent crime rate against transgender persons is four times that of cisgender persons and is even higher for trans women of color: Andrew R. Flores et al., "Gender Identity Disparities in Criminal Victimization: National Crime Victimization Survey, 2017–2018," *American Journal of Public Health* 111, no. 4 (2021): 726–29, https://doi.org/10.2105/AJPH.2020.306099.

[52]Justin Tanis, *Trans-Gendered: Theology, Ministry, and Communities of Faith* (Cleveland, OH: Pilgrim Press, 2003); Virginia Mollenkott, *Omnigender: A Trans-Religious Approach* (Cleveland, OH: Pilgrim Press, 2001); Austen Hartke, *Transforming: The Bible and the Lives of Transgender Christians* (Louisville, KY: Westminster John Knox Press, 2018); Susannah Cornwall, "Telling Stories about Intersex and Christianity: Saying Too Much or Not Saying Enough?," *Theology* 117, no. 1 (2014): 24–33, https://doi.org/10.1177/0040571X13510228.

[53]Cornwall, "Telling Stories about Intersex and Christianity," 29.

[54]Ibid., 29.

[55]Matt. 25:40.

[56]While "eunuch" cannot be interpreted as a term describing LGBTQIA+ persons as we understand them today, it clearly referenced gender-nonconforming persons in a cultural context.

[57]Deut. 23:1; Lev. 21:20. Brittany Wilson explains that eunuchs, under Jewish law, were "ritually unclean because they mixed boundaries and their genitals did not meet the standards of bodily wholeness," in Brittany Wilson, "'Neither Male Nor Female': The Ethiopian Eunuch in Acts 8:26–40," *New Testament Studies* 60, no. 3 (2014): 410, https://doi.org/10.1017/S0028688514000083.

[58]Wilson, "'Neither Male Nor Female,'" 403–22. Some church scholars believe that "eunuchs" in the Jewish tradition may not have been intersex or castrated, but it is clear in the context of Matt. 19 that Jesus refers to a sexual minority.

[59]Ibid., 407. Note that in Isaiah 56:3 both foreigners and eunuchs are promised inclusion.

[60]Jesus moves from a discussion of married couples (the sexual majority) to eunuchs (sexual minorities) and then goes on to advocate for children: "let the children come to me" (Matt. 19:14). Thus, in these verses he covers the entire human family. No one is marginalized or erased.

[61]Isa. 56:3–5, NRSV. Isaiah 56 addresses injustice that will be corrected in the new age, including the exclusion of eunuchs, who were denied a family or legacy. Some scholars note the wordplay in no longer being "cut off" and the castration associated with eunuchs.
[62]Acts 8:36, NRSV.
[63]Acts 8:38–39, NRSV.
[64]Wilson, "'Neither Male nor Female,'" 411.
[65]Isa. 53:3–4, 8b, NRSV (emphasis added).
[66]Susannah Cornwall, "The *Kenosis* of Unambiguous Sex in the Body of Christ: Intersex, Theology and Existing for 'the Other,'" *Theology & Sexuality* 14, no. 2 (2008): 189, https://doi.org/10.1177/1355835807087061.
[67]A "non-affirming" stance typically includes both a teaching that same-sex attraction (or, more broadly, any gender nonconforming identity) is a result of the Fall, and opposition to same-sex marriage. An "affirming" stance typically includes both teaching that gender nonconforming identities are part of the diversity of creation, and acceptance of same-sex marriage. One study which used more than just these two categories to describe various religious stances is R. Nugent and J. Gramick, "Homosexuality: Protestant, Catholic, and Jewish Issues; A Fishbone Tale" in *Homosexuality and Religion,* ed. Richard Hasbany (New York: Harrington Park Press, 1989), 7–46. As mentioned in an earlier endnote, the studies cited here may contain relevant information for churches considering questions about same-sex marriage, but this article is primarily addressing the question of whether gender nonconforming identities are a result of the Fall.
[68]See, for example, Christopher C.H. Cook, "The Causes of Human Sexual Orientation," *Theology & Sexuality* 27, no. 1 (2021): 1–19, https://doi.org/10.1080/13558358.2020.1818541; Yan Wang, Haoda Wu, and Zhong Sheng Sun, "The Biological Basis of Sexual Orientation: How Hormonal, Genetic, and Environmental Factors Influence to Whom We Are Sexually Attracted," *Frontiers in Neuroendocrinology* 55 (2019): 100798, https://doi.org/10.1016/j.yfrne.2019.100798; and J. Michael Bailey et al., "Sexual Orientation, Controversy, and Science," *Psychological Science in the Public Interest* 17, no. 2 (2016): 45–101, https://doi.org/10.1177/1529100616637616.
[69]In between sexual *orientation* and sexual *behavior*, we could also discuss an individual's sexual *attitudes*, *desires*, and *habits of thought*. In these things, as with sexual behavior, individual choices and social environment matter deeply. They can be changed over time—in hetero-, bi-, or same-sex attracted individuals—in ways which are more sinful or less sinful. Delving into these complexities would take us beyond the scope of this article.
[70]Some Christians regard the existence of non-heterosexual orientations as a result of the Fall, but one for which the individuals themselves are not culpable, while other Christians regard an individual's non-heterosexual orientations as, itself, some kind of sinful action. For the purposes of this article, we do not make that distinction because the psychological studies we cite do not find differences in mental health outcomes between these two positions, for example, religious attendance in both "Rejecting – punitive" and "Rejecting – non-punitive" churches resulted in worse emotional well-being in LGBTQIA+ individuals. Rebecca Hamblin and Alan M. Gross, "Role of Religious Attendance and Identity Conflict in Psychological Well-Being," *Journal of Religion and Health* 52, no. 3 (2013): 817–27, https://doi.org/10.1007/s10943-011-9514-4.
[71]Pew Research Center, "Support for Same-Sex Marriage Grows, Even among Groups That Had Been Skeptical," June 26, 2017, https://www.pewresearch.org/politics/2017/06/26/support-for-same-sex-marriage-grows-even-among-groups-that-had-been-skeptical/.
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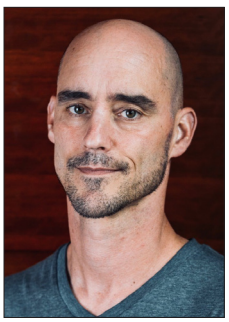

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Genesis 1:1–2:3 as an Example of an Ancient Near Eastern Dramatic Sevenfold Literary Pattern (*Not* a Temple Inauguration Text)

Ronald V. Huggins

In the literature of the ancient Near East, the number seven expresses the idea of fullness, completeness, consummation, and the carrying out of a matter to its fully sufficient or fitting length or extent. In connection with this idea, there arose an ancient Near Eastern sevenfold literary pattern that involved a building of dramatic tension over six units – often days – aided by repetitive language, a tension that is then resolved upon or immediately after the seventh unit. The use of this pattern is widely attested in Sumerian, Assyrian, Babylonian, and Ugaritic texts. This article argues that it is also attested in a Hebrew text, namely the creation account of Genesis 1:1–2:3, this time framed in terms of six days of labor giving way to a seventh day of rest (cf. Exod. 20:8–11). This view is contrasted at certain points with the "temple-text" reading of Genesis 1:1–2:3, as represented especially in John H. Walton's "cosmic temple inauguration" view.

Keywords: Genesis 1, creation accounts, sevens in the Bible, sevens in the ancient Near East, ancient Near Eastern literary patterns, science and the Bible, creation and creationism, harmonizing Genesis 1 with current science, "framework hypothesis," *Enuma Elish*, *Epic of Gilgamesh*, ancient Near Eastern temples, Baal's palace, Temple of Ninĝirsu (the Eninnu), Gudea of Lagash, biblical temples, ancient Near Eastern views of the underworld.

"The number seven is, as I said, commonly used to express the whole, or the completeness of anything."
Augustine (*City of God* 11.31)

This article makes the case that the creation account of Genesis 1:1–2:3 is framed according to an ancient sevenfold dramatic literary pattern commonly used throughout the ancient Near East (ANE). What this means is that whatever else ancient readers might have thought when encountering the biblical account of the creation, they would have been well aware it was being presented in a form that, so far as they likely knew, had always been used by storytellers to unfold descriptions of things and events. The unfolding occurred over a sequence of six units, during which dramatic tension builds, that then is relieved on, or immediately after, a seventh unit. This storytelling device was rooted, in turn, in the more basic ANE understanding that the number seven reflected the idea of fullness, completeness, consummation,

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and/or carrying something out to its fully sufficient or fitting length or extent.

This connection between the seven days of the biblical creation story and this familiar ANE sevenfold literary pattern has been almost entirely overlooked, due to scholars casting the net of their search for ANE parallels to the Genesis creation story, primarily on other ancient creation stories, especially since the discovery and publication of the *Enuma Elish* in 1876.[1] Some scholars, failing to find other creation accounts that featured seven days, have cast their nets out a little further in the ANE literature and observed that sevens also sometimes figured into ANE accounts of the building of temples. This led to the explicit argument that the use of seven in Genesis 1:1–2:3 intentionally equates the creation of the cosmos with the building of a temple by, for example, Moshe Weinfeld (1981), Jon Levenson (1984), and Victor Hurowitz (1992).[2] John Walton's version of the thesis, articulated in his 2001 Genesis commentary in the popular NIV Application Commentary series, was subsequently endorsed by G.K. Beale (2004), Peter Enns (2012), and N.T. Wright (2013).[3] In the meantime, J. Richard Middleton (2005), following Levenson and others, adopted the cosmic temple view independent of Walton.[4] Then William Brown (2010), building on the views of Middleton, and S. Dean McBride (2000) developed the view further,[5] though again without reference to Walton. Walton himself followed with a full-blown popular defense of the cosmic temple view in his 2009 *The Lost World of Genesis One* as well as an academic defense in his 2011 *Genesis 1 as Ancient Cosmology*.[6]

The limited focus of these investigations seems to have caused not only the connection between the seven-day literary pattern and Genesis 1:1–2:3 but also the existence of the pattern itself to be overlooked. This, as we shall see, becomes most obvious in these scholars' treatments of the Ugaritic story of the emergence of Baal's Palace from fire in seven days. Nevertheless, insofar as the present article interacts with claims made in defense of Genesis 1:1–2:3 as temple text, it will focus primarily on the arguments set forth by Walton. However, it must be stressed that this article is not offered as a wholesale refutation of Walton or of the temple-text reading as such. It is interested in only those points where the evidence appealed to by the defenders of that view overlaps with what *it* appeals to in support of Genesis 1:1–2:3 as an example of an ANE sevenfold literary pattern: in other words, only those points in which the evidence becomes, as it were, "disputed territory" at the boundaries of the two views. These consist primarily of two claims advanced by Walton and others, namely, (1) that the seven days in the passage point to an ANE temple-building project or inauguration,[7] and (2) that in the ANE "deity rests in a temple, and only in a temple."[8]

We encourage the reader to explore, for example, the question of whether the passage might represent *both* a temple text and an example of the ANE sevenfold literary pattern, or, more precisely, that the former is being expressed in the literary form of the latter. My own view, as expressed in parentheses in this article's title, is that such a double reading is implausible; the evidence will tend to support one or the other view rather than both. But, again, the primary focus is on defending and explicating Genesis 1 as an example of an ANE dramatic sevenfold pattern.

Walton's Two Temples (Genesis 1–3)

Walton puts forward various arguments for his view but singles out "rest on the seventh day [Gen. 1:1–2:3] and the Garden of Eden [Gen. 2–3]," as the primary connecting points between the biblical creation story and the ANE idea of temple.[9] Walton, in other words, is proposing two temple texts instead of just one. Yet, viewing *both* the creation and Eden stories as temple texts unnaturally forces the two accounts into conflict with one another, in that the former would be presenting the *entire cosmos* as a temple, and the latter only the garden of Eden, a particular location *within the cosmos* as a temple. Our first parents then, would be expelled out of the one temple and *into* the other. If one wishes to make an argument for either of the stories representing a temple text, Eden would clearly fit the ANE pattern better, in which temples, although sometimes closely related to the creation of the cosmos, are nevertheless still seen as places *within* the cosmos rather than *as* the cosmos itself.

The idea of seeing the garden as a kind of temple, on the other hand, was already foreshadowed in modern times, for example, by Hermann Gunkel, when he described Eden in 1901 as *Gottes Wohnung*, "God's dwelling or house."[10] We also find the idea in ancient works, such as the intertestamental *Book of Jubilees* in which Eve is said to have been brought into Eden several weeks after Adam because women were "not to touch any sacred thing nor enter the sanctuary" until their time of purification was complete. Only after that was she brought "into the Garden of Eden

because it is the holiest in the entire earth, and every tree that is planted in it is holy."[11]

Less defensible is Walton's claim that the cosmos itself, in Genesis 1:1–2:3, is being depicted as a temple. It scarcely follows from the fact that a temple might have been considered a *microcosm* of the cosmos in the ANE, that the cosmos could also be seen as a *macrocosm* of a temple! Walton himself recognizes this when he admits that "despite the intrinsic relationship that existed between cosmos and temple in the ancient world, the concept never seems to have been extended so far as to consider the entire cosmos a temple."[12] He is also willing to grant that it is "uncertain that Genesis contains this picture."[13]

Walton's First Temple (Genesis 1:1–2:3)

Walton's primary proof for a connection between Genesis 1:1–2:3 and an ANE temple, then, is "rest on the seventh day."[14] Thus his argument relies on two central pillars: (1) the seven days, and (2) God's rest. Concerning the first, Walton insists that "a reader from the ancient world would know immediately what was going on and recognize the role of day seven. Without hesitation the ancient reader would conclude that this [Gen. 1:1–2:3] is a temple text,"[15] and that "if Genesis 1 is a temple text, the seven days may be understood in relation to some aspect of temple inauguration."[16] Of his second pillar, Walton writes, "Deity rests in a temple, and only in a temple."[17] These two pillars, as we said, are the primary issues of disputed territory between temple-text reading and the one offered in this article.

To Walton's claim that the ANE gods rest only in temples, it is more accurate to say "yes, except when they do not!" Contra Walton, a conspicuous example stands right before us in Genesis 2:1–3, in which we find God taking his rest in a setting where, as Walton himself admits, "there is no *explicit* mention of a temple per se" (italics added).[18] The same is true of a passage Walton appeals to from the Egyptian "Memphite Theology" in which Ptah is said to rest after his acts of creation.[19] Again, contra Walton, there is no reference to a temple in that context either. In both cases, the term "rest" contrasts instead with the labor that preceded it. This is also true of the motivation behind the creation of humans in the *Enuma Elish*: "He [Marduk] imposed the work of the gods (on them [humans]) so that they [the gods] might rest."[20] Ironically, in their turn, humans rob the gods of their rest by making noise.[21] The same issue arises in the *Atra-hasis Epic;* the conflict between the gods and humans that ultimately leads to the flood was initially sparked by noisy humanity disturbing the god Enlil's sleep.[22] In the *Enuma Elish*, trouble also began when noise made by the younger gods disturbed the rest of their parents Apsu and Tiamat.[23]

In addition to rest being hindered by noise, we also encounter an incident in the Baal Cycle in which the term rest is used to refer to relief from anxiety when the god El, hearing that Baal was alive, declares: "(Now) I can again get some rest, my innermost being can get some rest."[24] In another work, *Erra and Ishum*, Erra rests in his bed enjoying the company of his consort the goddess Mami.[25] This may have occurred in a temple, but it does not fit the larger pattern Walton describes of gods resting after establishing order. In one Sumerian story, the goddess Inana even rests in a garden plot under a tree, resulting in someone sexually molesting her.[26] In none of these cases do temples enter into it.

The same issue attends Walton's claim that "no other divine rest occurs in the Hebrew Bible than the rest that is associated with his presence in his temple."[27] There are indeed references to God resting in the temple, as is seen in a parallelism in Isaiah 66:1: "What is the house that you would build for me, and what is the place of my rest?"[28] However, in scripture, the rest of God is something larger than the temple. The familiar labor / rest contrast established in Genesis 2:2–3, "he rested from all his work … from all the work of creating," is mirrored in the strict prohibition of labor on the Sabbath, the violation of which was punishable by death (e.g., Exod. 31:15; 35:2; Lev. 23:30). It is in this connection that Exodus 31:13 says: "Above all you shall keep *my* Sabbaths, for this is a sign between me and you." Notice that it is not simply the people's Sabbath (see, e.g., Lev. 23:42), or the Sabbath. Here and elsewhere God calls it "*my* Sabbath."[29] He did not merely institute it; he was the first to observe it, and then he invites (or rather commands) his people to observe it as well.

Another key passage dealing with divine rest that makes no reference to the temple is Psalm 95:11: "They shall not enter my rest." The rest in this verse is rest in the promised land as opposed to rest in the temple. The passage refers the reader back to the oath God swore concerning the generation that was not

permitted to enter the promised land (Num. 14:21–23, Deut. 2:14–15, and Josh. 5:6).

A final issue is the actual paucity of ANE evidence that Walton is able to muster in defense of his claim that the recognition that "deity rests in a temple, and only in a temple" provides the "interpretive key"[30] to the problem of understanding rest in Genesis 1:1–2:3. He provides only two extra-biblical ANE examples, neither of which involves a seven-day temple construction nor speaks of the temple's god entering into rest at the time of its completion.[31]

Sevens in the ANE

When one casts the net beyond creation accounts and temple texts to explore the use of sevens in the ANE texts more generally, the prominence and special use of the number becomes quickly obvious, as does the fact that their typical use is not *subject specific*, that is, not limited to particular settings, such as accounts of creation or of temple building, or to cultic and ritual texts as such. Rather, sevens appear functioning in more or less the same way everywhere, and, apart from their straightforward use for counting, sevens express the idea of completeness and full sufficiency. This can be seen, for example, when Jacob approaches his brother Esau and bows to the ground seven times (Gen. 33:3), an act that echoes the formulaic statements in the obsequious introductions of the governors of Syria-Palestine to the Pharaohs Amenophis III (1391–1353 BCE) and Amenophis IV (1353–1335 BCE): "At the feet of the king [lord, etc.] … seven times, seven times I fall."[32] Similar epistolary introductions were also used at Ugarit, as is seen, for example, in the letter of Talmiyānu to the Queen: "At the feet of my lady seven times and seven times (from) afar do I fall."[33] These sevenfold actions/statements expressed the desire on the part of the ones making them to place themselves fully and entirely at the disposal of the persons they were approaching. We might say, using a current number-based idiom expressing a similar idea, that they *went the whole nine yards* in expressing their obsequia.

In the ANE, the fullness of trouble also comes in sevens. In the Gospels, there are seven demons cast out of Mary Magdalene (Mark 16:9; Luke 8:2) and the demon who, once expelled, returns with "seven other spirits more evil than itself" (Matt. 12:45). The vengeance threatened against any who might kill the wandering Cain is sevenfold (Gen. 4:15), a sevenfold discipline is promised the Israelites (Lev. 26:18, 21, 24), and there is also the request for a sevenfold return of taunts to those who taunt the Lord (Ps. 79:12). Also fitting this theme of sevenfold trouble were two seven-year famines that were predicted: the first in Egypt by Joseph's interpretation of Pharaoh's dream (Gen. 41), and the second in Israel by Elisha (2 Kgs. 8:1). There is also the seven-year period during which Nebuchadnezzar II was driven out and given the mind of an ox after boasting of his own greatness (Dan. 4:28–33).

This same idea is shared with the literature of the ANE in general. As Wiggermann points out, "early demons … usually operate in vaguely defined groups of seven."[34] The seven Mesopotamian Utukki are featured in the expulsive spells and rituals of the series Utukki Limnûti (The Evil Spirits).[35] The Utukki are associated, individually or collectively, with evil and destructive winds.[36] The sevenfold groupings of personified trouble also go beyond contexts in which specific groups of known individuals are being referenced, as in the mention of the "machinations of the seven witches" in Abusch and Schwemer's collection of anti-witchcraft rituals,[37] or the "seven evil and envious neighbors," in the early Syriac incantation against the Evil Eye.[38] Sevens also figure quite prominently in rituals and incantations for warding off sickness and evil.[39]

The Jewish/Christian *Testament of Reuben* provides a sort of proto-edition of the traditional Seven Deadly Sins, when it speaks of "seven spirits of deceit … appointed against man," which serve as "leaders in the works of youth," namely, (1) fornication (*porneia*), (2) insatiableness (*aplēstia*), (3) fighting (*machē*), (4) obsequiousness/chicanery (*areskeia/magganeia*), (5) pride (*hyperēphania*), (6) lying (*pseudos*), and (7) injustice (*adikia*) (*T Reu* 3:1–6).

Despite the number of these examples of the use of sevens in connection with fullness of trouble, one should not imagine that there is any unique connection between the number seven and trouble. I merely offer these as examples of the use of seven in a particular way because they parallel passages in the Bible that feature the same. When one provides only a narrow portion of the evidence, one can easily get a false impression of the whole. It may be worth noting, however, that there is a great deal more evidence for a connection between sevens and trouble than has so far been put forward for its connection with temple building and inauguration texts.

And so, we might go on with examples of the broader use of sevens to indicate fullness. Wisdom built her house on an abundantly sound foundation of seven pillars (Prov. 9:1). Naaman was healed of his leprosy after dipping himself in the Jordan seven times (2 Kgs. 5:14). Balaam ordered Balak King of Moab to sacrifice seven bulls and seven rams on seven altars three times (Num. 23:1–2, 14, 29–30), and God ordered Job's three friends to offer the same numbers of the same animals but only once (Job 42:8). In the Ugaritic Baal Cycle, Anat sacrifices seventy buffalo, oxen, sheep, deer, mountain goats, and asses after burying Baal (*KTU* 1.6.1, ll.18–29). Uta-napishti, after the flood in the *Gilgamesh Epic*, sets up "seven flasks and seven," underneath which he piled "reed, cedar and myrtle," an offering that attracts the gods.[40]

Seven Days in the ANE

Seven days are spoken of in scripture as an appropriate time for mourning the dead, as is seen in the seven-day period observed prior to the burial of Jacob (Gen. 50:10), the fast following the death of Saul and his sons (1 Sam. 31:13; 1 Chron. 10:12), and the mourning of Archelaus for his father Herod the Great, as reported by Josephus (*J.W.* 2.1.1). There is also the proverb "Mourning for the dead, seven days—but for the wicked fool, a whole lifetime" (Sir. 22:12). In the apocryphal *Life of Adam and Eve*, our first parents are said to have mourned seven days after being expelled from the Garden.[41] When Job's three friends approach, weeping and crying out, rending their clothes, and sprinkling dust on their heads, they then sit "with him on the ground seven days and seven nights," without speaking a word to him (Job 2:12–13). Each of their actions communicated to Job their comprehension of the seriousness of the misfortune that had befallen him. Their seven-day silence was as crucial a factor in communicating this as were their other actions.

We also read of the seven-day wedding celebrations of Samson (Judg. 14:8–20) and of Tobiah (Tob. 11:18). Then there is the seven-day feast that the Persian King Ahasuerus gave at the conclusion of a more extensive one (Esther 1:5). Thus, seven days were deemed the fully appropriate length both for feasting and mourning, and not just for festivals associated with temples.

Mark Smith, who inclines toward endorsing the idea that the Genesis creation account with its seven days is a temple text, nevertheless cautions that "it might be questioned whether the motif of the seven-day period is too common."[42] This is precisely what is being argued here. It is not at all surprising to find sevenfold celebrations occurring in ANE religious contexts of all types. We may think, for example, of the seven-day ritual from Larsa published by Edwin Kingsbury, with each day featuring a different god,[43] the seven-day *zukru* ritual from Emar in Syria, which was a new-year ritual held every seven years in which the gods are taken outside the city to a shrine of standing stones, anointed and brought back in procession,[44] the *Bît rimki* (house of ablutions) cycle, which was a cleansing ritual in which seven "houses" were built through which a person passed in the course of being purified and protected from malevolent powers,[45] and a "seven day offering cycle in some late Babylonian texts," featuring sacrifices held on the 7th, 14th, 21st, and 28th days of the month.[46] There is also the *Akîtu* Festival, a twelve-day event that involved seven gods,[47] on the fourth day of which the *Enuma Elish* was read, [48] although, in this case, it is unclear how this might be connected with a sevenfold motif.

Walton appeals to most of the above texts in making his argument for his "cosmic temple inauguration" view,[49] and he wants to count them all as evidence for the special significance of sevens in temple inauguration texts. But what those texts actually show is that the use of sevens appears in a variety of festal and cultic contexts, and not just in temple inauguration texts nor, for that matter, in temple texts as such. This being the case, their collective witness to ANE practices actually works against Walton's thesis, not for it. So, for example, we should understand the *Bît rimki* cycle, which Walton wants to count as a temple text, as more properly categorized with the previously mentioned exorcism rituals connected with the idea that the fullness of trouble comes in sevens.

Walton claims that "without hesitation the ancient reader would conclude that this [Gen. 1:1–2:3] is a temple text."[50] But in order for that to be the case, sevens would need to be used consistently enough *and* exclusively enough in connection with temple texts that when ancient readers saw the seven days of the creation account, they would say to themselves, "Aha! the author has framed the creation account around the number seven, therefore he/she must be alluding to temples!" But that really is not the case.

Certainly, ancient readers would have recognized the significance of seven, but there is no reason to

suppose that they would have regarded it, in any sense, as exclusively attached to temple texts in particular. The mere mention of seven in Genesis 1:1–2:3 would not have been remarkable enough to cause the ancient Israelite to immediately think of the temple. It is far more likely that it would have called to mind the Sabbath. Sacred time itself was marked off in sevens: the seventh day for creatures to rest (Exod. 20:8–11), the seventh year for the land to rest (Exod. 23:11; Lev. 25:20) and for the freeing of Hebrew slaves (Exod. 21:2; Deut. 15:12), and the year of Jubilee, which began in the seventh month of the seventh year of the seventh week of years (Lev. 25:8–10). The three major feasts in which every male Israelite was required to appear before the Lord (Exod. 23:17) each featured significant sevens: Unleavened Bread and Tabernacles were both seven-day feasts (Exod. 12; Lev. 23); and the Feast of Weeks gets its name from the seven weeks that separate it from the time the sickle was first put to the standing grain (Deut. 16:9).[51]

To be sure, sevens figure into *some* temple texts, but not in the uniform way one might expect from reading Walton. There is the seven-day ordination of Aaron, his sons, and their priestly successors (Exod. 8:33–35; 29:30), and the seven-day consecration of the altar in Ezekiel's temple vision (Ezek. 43:26). Josephus (first century) reports that the tabernacle along with its furnishings took seven months to build (*Ant*. 3.8.4 [III. 201]). In the account of Solomon's temple, the Old Testament text Walton features in his argument, the temple took seven years to build (1 Kgs. 6:38) with its dedication taking place in the seventh month (1 Kgs. 8:2), which involved a seven-day altar dedication followed by a seven-day feast that concluded with a solemn assembly on an eighth day (2 Chron. 7:8–9, cf. 1 Kgs. 8:65–66).[52]

Gudea's Eninnu

The primary extra-biblical ANE text Walton puts forth as a parallel to Solomon's temple is the Sumerian account of the building of the temple of Ninĝirsu (the Eninnu) by Gudea of Lagash (c. 2125 BCE), which concluded with a single seven-day feast.[53] Given the prominence of sevens in various feasts and rituals, it is not surprising to find two examples of temple texts that end with a seven-day feast. One might even have expected more.[54] And, as is also predictable given the ubiquity of sevens in all sorts of texts in all sorts of connections, the Solomon and Gudea accounts both involve *other* significant sevens unique to themselves.

Hurowitz writes of the seven years it took to build Solomon's temple:

> To the best of my knowledge, there are no attempts in Mesopotamian building stories to cast an entire building project into a seven-year, seven-month or seven-day mold, although certain individual events, such as the dedication of the Eninnu by Gudea, lasted seven days.[55]

For its part, the Gudea text includes sevens that are quite different from the Solomon account, such as the seven stones set up around the temple in seven days (Cyl. A. xxiii 4, cf. xxix 1) that are "there to take counsel with its owner" (Cyl. A. xxix 2), a seven-headed mace (Cyl. B. vii 12, xiii 21), and a seven-headed serpent (Cyl. A. xxv 28).

The seven-headed serpent takes us in a different direction by reminding us of other ANE seven-headed monsters,[56] including the seven-headed serpent Ninurta defeats in the Sumerian *Ninurta's Return to Nibru* (ll. 40 & 63) and *The Exploits of Ninurta* (l. 133).[57] There is as well Lotan (Shalyat [šlyt] of the seven heads) in the Baal Epic from Ugarit (*KTU* 1.5.i.1–8, cf. 1.3.iii.38–46).[58] We also find ANE pictorial depictions of seven-headed monsters battling gods.[59] Thus the seven-headed serpent in the Gudea text is of less interest to Genesis 1:1–2:3 than it is to Psalm 74:13–14: "You [the Lord] divided the sea by your might; you broke the heads of the sea monsters on the waters. You crushed the heads of Leviathan."[60] In this case, the number seven is not used, but Leviathan is said to have heads" (plural). There is also the seven-headed dragon of the Apocalypse (12:3) and the seven-headed demon who appeared to R. Aha bar Ya'akov in *b. Kiddushin* 29b.[61]

Baal's Palace

The other extra-biblical ANE example Walton offers in support of his "cosmic temple inauguration" argument is the Baal Cycle's story of the seven-day fiery formation of Baal's palace. The Baal Cycle is a fourteenth-century BCE Western Semitic text from ancient Ugarit, a Canaanite city in northwest Syria. Unlike the Solomon and Gudea texts, this passage is not an account of the building of a temple followed by one or more seven-day inauguration feasts. It is a mythical tale of Baal's (Ba'lu's) palace being formed in flames over six days, and furnished on the sev-

enth. As Solomon's temple was completed in seven years, Baal's mythical house took only seven days:[62]

> [Hurriedly] they build his house …
> Fire is placed in the house,
> flames in the palace,
> For a day, two (days),
> the fire consumes (fuel) in the house,
> the flames (consumed fuel) in the palace;
> For a third, a fourth day,
> the fire consumes (fuel) in the house,
> the flames (consumed fuel) in the palace;
> For a fifth, a sixth day,
> the fire consumes (fuel) in the house,
> the flames (consumed fuel) in the palace;
> Then on the seventh day,
> the fire is removed from the house,
> the flames from the palace.
> (Voila!) the silver had turned into plaques,
> the gold is turned into bricks.
> (This) brings joy to Mighty Ba'lu:
> You have built my house of silver,
> my palace of gold.
> (Then) Ba'lu completes the furnishing of [his] house,
> Haddu completes the furnishing of his palace.

Walton comments here that "seven days is an appropriate period of time for temple building."[63] Indeed, seven days is an appropriate period for many things, but, if Hurowitz is correct, this is the *only* ANE example of anything resembling a temple being built in seven days.[64] What we are actually looking at here is the story of the origin of Baal's temple being told, using a form of the very common ANE sevenfold literary pattern of which, as we shall argue, Genesis 1:1–2:3 is also an example—although a more expansive one. This widely used literary pattern has received scant attention, but was already noticed and briefly discussed more than a half century ago by Umberto Cassuto:

> [E]xamples … from Akkadian and Ugaritic literature … prove that a series of *seven consecutive days* was considered a perfect *period* [unit of time] in which to develop an important work, the action lasting six days and reaching its conclusion and outcome on the seventh day.[65]

There is, however, more to the sevenfold literary pattern than Cassuto implies. Its use was more general in application: from the literary point of view, it involved a building of dramatic tension over six days, aided by repetitive phrases, that is resolved, sometimes quite dramatically, on or immediately after the seventh. There is often not only a conclusion of action but also a reversal or marked shift of the narrative in a new direction. In the Baal text, the first six days are doubled and, except for the numbering of days, the language for the three pairs of days is identical. Several other examples of this same pattern can be found in texts having nothing to do with temples or temple inaugurations. The well-known eleventh tablet of the *Gilgamesh Epic*, which contains the famous flood narrative, uses it to describe the running aground of the flood hero Uta-napishti's boat on Mount Nimush:[66]

> 142 On the mountain of Nimush the boat ran aground,
> 143 Mount Nimush held the boat fast, allowed it no motion.
> 144 One day and a second, Mount Nimush held the boat fast, allowed it no motion,
> 145 a third day and a fourth, Mount Nimush held the boat fast, allowed it no motion,
> 146 a fifth day and a sixth, Mount Nimush held the boat fast, allowed it no motion.
> 147 The seventh day when it came,
> 148 I brought out a dove, I let it loose …

As in the Baal Cycle, the first six days are doubled and, apart from the succession of numbers, the language is identical for each two-day unit. When the seventh day comes, there is a shift in the narrative *away from* the single event featured in the first six, namely, the running to ground of Uta-napishti's boat, *to* his sending out the dove.

The same pattern is used in the Babylonian version of *Nergal and Ereshkigal* to describe the passionate coupling of those two Mesopotamian deities:[67]

> The two embraced each other
> And went passionately to bed.
> They lay there, queen Ereshkigal and Erra, for a first day and a second day,
> They lay there, queen Ereshkigal and Erra, for a third day and a fourth day,
> They lay there, queen Ereshkigal and Erra, for a fifth day and a sixth day,
> When the seventh day arrived,
> Nergal, without […]
> Took away after him. […].

Two more examples are found in the Ugaritic story of Aqht (table 1).[68]

This same pattern is sometimes abbreviated even further, as in this passage from the Ugaritic *Kirta Epic*:[69]

> Then for a day, a second,
> a third day, a fourth day,
> a fifth day, a sixth day,
> <They did not shoot their arrows at the city,
> Their sling-stones at the towers.>
> Then at sundown on the seventh (day)
> Pabil the king (of that city could) not sleep …

In addition to the examples already given, the Ugaritic story of Aqht uses a very abbreviated sevenfold literary pattern to describe the seven years of mourning after the murder of Dānī'ilu's son, Aqht:[70]

> The wailing women entered <his house >,
> the mourning women his palace, …
> For days, for months,
> for months, for years,
> even for seven years
> Did they (all) weep for valiant ʾAqhatu …
> [Then] after seven years
> [Dānī'ilu man of] Rapaʾu spoke up,
> The valiant [Hamamite] man responded.
> He cried aloud:
> Leave [my house], wailing women, my palace,
> mourning women …

The story of the emergence of Baal's temple from fire is framed using the *very same* literary pattern as the running aground of Uta-napishti's boat on Mount Nimush, Dānī'ilu's plea for a son, the lingering of the Kôṯarātu in Dānī'ilu's house, and the delay of the attack on a city. This suggests that the reason we find the seven in the Baal story is that it is employing the same sevenfold literary pattern as these other texts, and not, as Walton argues, because of its being a temple text. This is particularly significant because the Baal text is one of the two key extra-biblical temple texts regularly appealed to in support of Walton's view.

Yet, so far as I am aware, none of the authors who appeal to it make mention of the use of the widely attested ANE sevenfold literary pattern in framing it. This lack of clarity leads to a bias in the lens through which the passage is viewed. Brown, for example, hints that Baal's palace, "not coincidentally, takes seven days to complete (cf. Gen. 1:1–2:3)."[71] While we agree that the appearance of the seven days in both

Aqht 1 i 3–17 (*CTA* 17)	*Aqht* 2 ii 30–40 (*CTA* 17)
[Thereupon, as for Dānī'ilu the man of Rapa'u] …	A bull he slaughtered for the Kôṯarātu,
Girded, he gave the gods food,	he fed the Kôṯarātu,
[girded, he gave] the Holy Ones [drink].	provided the daughters of brightness, the pure
He cast down [his cloak, went up], and lay down,	ones, with drink.
cast down [his girded garment] so as to pass the	
night (there).	
A day [even two,	A day, even two,
girded,] Dānī'ilu (gave) the gods (food).	he fed the Kôṯarātu,
[girded,] he gave [the gods] food,	provided the daughters of brightness, the pure
girded, [he gave] the Holy Ones [drink].	ones, with drink.
A third, even a fourth day,	A third, even a fourth day,
[girded] Dānī'ilu (gave) the gods (food),	he fed the Kôṯarātu,
girded he gave [the gods] food	provided the daughters of brightness, the pure
girded he gave the [Holy] Ones drink.	ones, with drink.
A fifth, even a sixth day,	A fifth, even a sixth day,
girded, Dānī'ilu (gave) [the gods] (food),	he fed the Kôṯarātu,
girded, he gave the gods food,	provided the daughters of brightness, the pure
[girded,] he gave the Holy Ones drink.	ones, with drink.
Dānī'ilu cast down his cloak, went up, and lay	
down	
[cast down] his girded garment so as to pass the	
night (there).	
Then on the seventh day,	Then, on the seventh day,
Bal'u approached, having had mercy on	the Kôṯarātu left the house,
The lamenting of Dānī'ilu the man of Rapa'u.	(as did) the daughters of brightness, the pure ones.

Table 1. The left column tells of an appeal by a figure named Dānī'ilu for the boon of a son; the right column, of his entertaining the Kôṯarātu goddesses.

the Baal passage and the biblical creation story is not coincidental, we do so for a very different reason. The meaning of the passage becomes more blurred, when Middleton speaks of "references to temple dedication ceremonies that took seven days, including Baal's temple in the Ugaritic myth."[72] But the seven days of the Baal passage had to do with the *building* of Baal's palace, not its *dedication ceremonies* afterward. Middleton had stated the matter more accurately in an earlier work.[73]

Another consequence of not recognizing the Baal passage's use of the ANE sevenfold literary pattern is the employment of overly ingenious explanations to account for its meaning. The best example I know is provided by Levenson:

> The extinction of the flames on the seventh day of casting Baal's temple is strangely reminiscent of the biblical prohibitions against kindling a fire, baking, or boiling on the Sabbath. It is possible, but far from demonstrable, that this Ugaritic passage witnesses to a Sabbath of sorts among the Canaanite antecedents of Israel.[74]

Once one becomes aware of the Baal passage's formation using the very same sevenfold literary pattern as the running aground of Uta-napishti's boat on Mount Nimush, Dānī'ilu's plea for a son, and other similarly structured passages, then the suggested meaning Levenson offers seems strangely beside the point.

Seven Days but No Rest in the Gudea and Baal Texts

Earlier we noted how the two sources Walton featured as examples of deity *resting* in temples did not involve significant *sevens*. So now we also see that, in the extra-biblical ANE examples he features as examples of *sevens* in temple texts, the deities—Ninĝirsu on the one hand and Baal on the other—are not said to enter *rest!* In the Baal Cycle, there is simply no mention of it. In the Gudea text, a nonspecific resting *place* is mentioned as one of the items in the temple (Cyl. B. xiv 19–25). But when Ninĝirsu arrives action is taken, not to establish him in a state of rest, but to wake him up:

> Nin-dub caused the sanctuary to be full of clatter and noise (?) and with fresh bread and hind´s milk available day and night, he woke from sleep the noble one, the beloved son of Enlil, the warrior Nin-jirsu [=Ninĝirsu]. Nin-jirsu raised his head with all the great powers, and ... rituals, ... for (?) the sanctuary E-ninnu. (Cyl. B. vi 3–9, cf. vii 7–8).[75]

The pattern of seven days followed by the god's rest simply is not there in either case. Nor indeed can it be shown to be a clearly identifiable "pattern" in ANE temple texts at all.

Further Examples of the ANE Sevenfold Literary Pattern

Many other examples of this sevenfold literary pattern may be cited, some abbreviated as in the ones above, and others considerably longer. Neither the doubling of the first six units, nor their identification as days, are essential elements in this ANE sevenfold literary pattern. There are examples using the same pattern of repetitive phrases for the first six days treated individually, and examples where the sevenfold units used to frame the literary pattern are something other than days. A text featuring the latter that also illustrates well the idea of the seventh representing a shift and reversal of action after the initial six can be seen in the Sumerian *Gilgamesh and Huwawa*:[76]

> He [Gilgamesh] crossed the first mountain range,
> he did not find the cedar he wanted,
> he crossed the [second] mountain range,
> [he did not find] the cedar he [wanted,]
> he crossed the third mountain range,
> [he did not find] the cedar he wanted,
> he crossed the fourth mountain range,
> [he did not find] the cedar he wanted,
> he crossed the fifth mountain range,
> he did not [find] the cedar he wanted,
> he crossed the sixth mountain range,
> he did not find the cedar he wanted,
> but crossing the seventh mountain range,
> he found the cedar he wanted.

There is also an example of this in the account of the building of Gudea's temple of Ninĝirsu (the Eninnu) that Walton does not mention. In this case it involves the setting out of seven squares:[77]

> He [Gudea] laid the foundation,
> set the walls on the ground.
> He marked out a square,
> aligned the bricks with a string.
> He marked out a second square
> on the site of the temple, saying,
> "It is the line-mark for a topped-off jar of
> 1 *ban* capacity (?)."
> He marked out a third square
> on the site of the temple, saying,
> "It is the Anzud bird enveloping its fledgling
> with its wings."

He marked out a fourth square
on the site of the temple, saying,
"It is a panther embracing a fierce lion."
He marked out a fifth square
on the site of the temple, saying,
"It is the blue sky in all its splendour."
He marked out a sixth square
on the site of the temple, saying,
"It is the day of supply, full of luxuriance."
He marked out a seventh square
on the site of the temple, saying,
"It is the E-ninnu bathing the Land
with moonlight at dawn."
They inserted the wooden door frames,
which were like a crown worn in the blue sky.
As Gudea sat down at a wooden door frame,
from there it was like a huge house
embracing heaven.

The conclusion here represents a less dramatic shift, but it is the identification of the seventh square as the Eninnu, the temple of Ninĝirsu itself, that appears to be the point to which the first six items are building.

The Seven Gates of the Underworld

In many ANE texts the underworld is understood to have seven gates. This made accounts of journeys there a natural occasion for treating the gates as units in the sevenfold literary pattern. There are several examples of this, but here we shall present only two. The first is a very abbreviated one from the standard Babylonian version of *Nergal and Ereshkigal* (7th century BCE), where Anu the sky god sends his messenger Kakka to Ereshkigal, goddess of the underworld:[78]

He let the god Kakka in through the first gate
He let the god Kakka in through the second gate
He let the god Kakka in through the third gate
He let the god Kakka in through the fourth gate
He let the god Kakka in through the fifth gate
He let the god Kakka in through the sixth gate
He let the god Kakka in through the seventh gate
He entered into her [Ereshkigal's] spacious courtyard,
He knelt down and kissed the ground in front of her.
He straightened up and addressed her …

For the modern reader such repetitiveness seems tedious. Why not just say Kakka passed through the seven gates and entered Ereshkigal's presence? The reason is that repetition is a common feature in most ANE texts, partly because of the use of numbers.

Inana's Descent into the Nether World

Two of the longest extra-biblical examples of the sevenfold literary pattern also involve journeys to the Underworld: the Sumerian *Inana's Descent into the Nether World* and the Akkadian *Descent of Ishtar to the Underworld*.[79] The two works are related but the latter is not simply a translation or paraphrase of the former. We present here the earlier Sumerian version. In this work, the goddess Inana fortifies herself for the journey with the "seven divine powers,"[80] which seem to consist of items worn on her person. A sevenfold pattern is then used to describe how each of these is taken away from her as she passes through the underworld's seven gates:[81]

He [Neti, the doorman of the underworld] said
to holy Inana:
"Come on, Inana, and enter."

And when Inana entered, (*1 ms. adds 2 lines:*
the lapis-lazuli measuring rod and measuring line were removed from her hand,
when she entered the first gate,)
the turban, headgear for the open country,
was removed from her head.
"What is this?"
"Be satisfied, Inana, a divine power of the underworld has been fulfilled.
Inana, you must not open your mouth against the rites of the underworld."

When she entered the second gate,
the small lapis-lazuli beads were removed from her neck.
"What is this?"
"Be satisfied, Inana, a divine power of the underworld has been fulfilled.
Inana, you must not open your mouth against the rites of the underworld."

When she entered the third gate,
the twin egg-shaped beads were removed from her breast.
"What is this?"
"Be satisfied, Inana, a divine power of the underworld has been fulfilled.
Inana, you must not open your mouth against the rites of the underworld."

When she entered the fourth gate,
the "Come, man, come" pectoral was removed from her breast.
"What is this?"
"Be satisfied, Inana, a divine power of the underworld has been fulfilled.
Inana, you must not open your mouth against the rites of the underworld."

When she entered the fifth gate,
the golden ring was removed from her hand.
"What is this?"
"Be satisfied, Inana, a divine power of the underworld has been fulfilled.
Inana, you must not open your mouth against the rites of the underworld."

When she entered the sixth gate,
the lapis-lazuli measuring rod and measuring line were removed from her hand.
"What is this?"
"Be satisfied, Inana, a divine power of the underworld has been fulfilled.
Inana, you must not open your mouth against the rites of the underworld."

When she entered the seventh gate,
the *pala* dress, the garment of ladyship, was removed from her body.
"What is this?"
"Be satisfied, Inana, a divine power of the underworld has been fulfilled.
Inana, you must not open your mouth against the rites of the underworld."

Inana then crouches naked and powerless before her sister Erec-ki-gala's [=Ereshkigal's] throne. The Ananu (the seven judges) decide against her, and she is turned into a corpse and hung on a hook as her clothes are carried away.[82]

Longer versions of the seven-day patterns such as this one, allow for more variation on the days, but verbatim repetitive lines still provide the basic structure of the pattern. The additional details here increase the dramatic tension building as Inana passes through the first six gates, which then comes to a very dramatic climax following her passage through the seventh.

Genesis 1:1–2:3 As an Example of the Widely Used ANE Sevenfold Literary Pattern

Examples of this sevenfold literary pattern appear in texts over a long period and throughout the ANE, in Sumerian, Assyrian, Babylonian, and Ugaritic texts. From these extra-biblical examples, we turn to the sevenfold literary pattern in Hebrew with which the Bible opens: Genesis 1:1–2:3. As we begin, we discover at once that the structure of the passage as an ANE literary pattern is somewhat obscured by the way the text is laid out in both the Hebrew manuscripts and modern editions and translations. In the ANE texts, the parallel repetitive lines that made up the sevenfold patterns tended to be laid out on the tablets themselves in such a way as to support and emphasize the repetitive literary structure. To see

Genesis 1:11	Genesis 1:12
And God said, **"Let the earth bring forth vegetation,** **plants yielding seed,** **and fruit trees bearing fruit** **each according to its kind,** **in which is their seed, on the earth."** **And it was so.**	**The earth brought forth vegetation,** **plants yielding seed** **according to their own kinds,** **and trees bearing fruit** **in which is their seed,** **each according to its kind.** **And God saw that it was good.**
תדשא הארץ דשא עשב מזריע זרע עץ פרי עשה פרי למינו אשר זרעו בו על הארץ ויהי כן	ויאמר אלה ותוצא הארץ דשא עשב מזריע זרע למינהו ועץ עשה פרי אשר זרעו בו למינהו וירא אלהים כי טוב

Table 2. Verses 11–12 from day three side by side, underlining verbatim language in the Hebrew.

this, we refer the reader to the sevenfold pattern telling of Uta-napishti's boat being grounded on Mount Nimush (see above, p. 213) for which sequential line numbers are used for the first three pairs of days and for the seventh day.

Once we have the sevenfold literary pattern in mind, it is not hard to rearrange the biblical creation account along the lines of the other ANE examples surveyed above. To illustrate this in a way that allows us to see the less obvious, finer grain of the original repetitive structure, we can set verses 11–12 from day three side by side, underlining verbatim language in the Hebrew (table 2).

Having said this, the current formatting of Genesis 1:1–2:3 *does* highlight the most conspicuous repetitive features underpinning the seven-day literary structure. These include the beginning of each creation day with "and God said" + a divine fiat,[83] and its conclusion with "And there was evening and there was morning, the ___ day." This is true as well of the phrases "and it was so" (with variation),[84] and "God saw that it was good" (with variation), the latter appearing on every day except the second.[85] Days three and six each have two creation innovations rather than one as on the other days, each of which is likewise introduced with "and God said" + fiat. Thus, although the author had in mind including eight acts of creation, they are presented in six creation days, which is consistent with the intentional employment of the sevenfold literary pattern.[86] Furthermore, as has long been recognized, days one–three are clearly intended to stand in parallel to days four–six (explained below).

Additional Biblical Examples

Other biblical examples relevant to our study include a very abbreviated one of Moses's going up the mountain in Exodus 24:15–16:

> Then Moses went up on the mountain, and the cloud covered the mountain. The glory of the LORD dwelt on Mount Sinai, and the cloud covered it six days. And on the seventh day he called to Moses out of the midst of the cloud.

Also, the fall of Jericho in Joshua 6 which, if not recounted using the sevenfold literary pattern, was nevertheless choreographed in a way very similar to it. There are arguably also Greek examples among the unfolding sevens of the last book of the Bible,[87] including especially Revelation 1:4–3:22. As Inana was first endowed with seven items which were then removed as she passed through the seven gates to the underworld, the individual items mentioned in the vision of Jesus in Revelation 1 become the basis for how Jesus identifies himself in the introductions of the seven letters of Revelation 2–3,[88] with Jesus in the seventh letter calling himself also "the Amen." Each of the seven letters opens with the identical formula in Greek: *Tō angelo tēs en _____ ekklēsias grapson* / "To the angel of the church in _____ write," (Rev. 2:1, 8, 12, 18; 3:1, 7, 14) and concludes with the identical phrase *Ho echōn ous akousatō ti to pneuma legei tais ekklesiais* / "Whoever has an ear, let him hear what the Spirit says to the churches," followed or preceded by a promise to *ho nikrōn* / "whoever overcomes" (Rev. 2:7, 11, 17, 26, 29; 3:5–6, 12–13, 21–22).

Fitting Genesis as a Sevenfold Literary Pattern into the Larger Picture

Finally, as mentioned earlier, the ANE sevenfold literary pattern dovetails with a familiar observation regarding the composition of Genesis 1:1–2:3, namely that it has been intelligently designed to make creation days 1 and 4, 2 and 5, and 3 and 6 mirror one another: Light is made on the first day, the sun and moon on the fourth. Sky and the sea are separated by the introduction of the firmament on the second day, and the two are filled with birds and sea creatures on the fifth. The land is separated from the water with food provided in the form of reproducing trees and plants on the third day, and land animals and humans are introduced on the sixth. This mirroring is usually associated with, or even identified as, the "framework hypothesis."[89] But it is not, in itself, a separate hypothesis, but simply an observation about the structuring of the six days of Genesis 1 that has been noticed and endorsed by the advocates of several different hypotheses.[90]

The observation, though currently well known, is not new. It is often traced to the eighteenth–nineteenth-century German Romanticist Johann Gottfried Herder.[91] But it is already found in Thomas Aquinas (d. 1274), who wrote that the work of creation (*opus creationis*) in Genesis 1:1 was followed by the work of separation (*opus distinctionis*) in days 1–3 and by the work of adornment (*opus ornatus*) in days 4–6,[92] and a little later in the work of Nicholas of Lyra (d. 1349), who used the same terminology as Thomas.[93] This division was also clearly recognized by some in the nineteenth century, including Arnold Guyot, who called days 1–3 the "era of matter," and 4–6 the "era of life."[94] During the later twentieth century,

especially following the mid-1980s, the structural feature became widely accepted by interpreters of Genesis 1. This is exemplified, for example, in the rapid dissemination in more recent decades of a chart that sets days 1–3 and 4–6 in parallel columns.[95]

Notable exceptions to its acceptance include young-earth creationists such as E. J. Young, who insisted that the pattern "is not actually present" in Genesis 1,[96] and Todd S. Beall, who speaks of it as "the so-called pattern," which "does not hold up well under scrutiny."[97] Yet, ironically, it is precisely the failure to recognize this very intentional literary structuring that has caused Christian interpreters so much consternation and "enlightened" opponents of Christianity so much glee. The mirrored literary structure itself, when unrecognized, provokes questions such as how the sun, moon, and stars could take only one day to create, while making and fitting out our little planet took six?[98] And what about the sun and moon only appearing on the fourth day, after three "days" had already passed?

Already in the third century, Christian writer Origen of Alexandria wrote:

> What man of intelligence will believe that the first and second and the third day, and the evening and morning, existed without the sun and moon and stars? And that the first day … was even without a heaven?[99]

Indeed, even before Origen, Celsus, the second-century opponent of Christianity, had already raised the point:

> By far the most silly thing [in Genesis 1] is the distribution of the creation of the world over certain days, before days existed: for, as the heaven was not yet created, nor the foundation of the earth yet laid, nor the sun yet revolving, how could there be days?[100]

Thomas Paine likewise featured this objection in the eighteenth century as proof that the "Bible-makers," in writing the passage, "have demonstrated nothing but their ignorance,"[101] and Voltaire offered it up as proof that ancient people did not believe the sun was a source of light but that it only pushed light along ahead of itself.[102] It was criticisms like these that the Romanticist Herder sought to rebut when explaining the mirroring of the days in 1774. The cranky complaints of the Enlightenment rationalists, Herder argued, had simply missed the point due to their approaching the text with a clumsy intellectual apparatus that blinded them to its conspicuous and delightful compositional features.[103]

It is also this same mirrored literary arrangement that renders implausible some of the attempts at harmonizing Genesis 1:1–2:3 with the history of the cosmos. How can the gap theory work, for example, when there was no sky during the earliest ages, or the day-age theory with trees and plants growing for a vast age before the creation of the sun?[104] Unlike these approaches, the recognition of the mirroring of days arises from observing the actual structure of the text of Genesis 1 itself, rather than from an attempt to harmonize the biblical creation account with concerns that lie outside of the text.

What a familiarity with the ANE sevenfold literary pattern brings to the table in this connection is quite interesting. It provides not only further support for the mirroring of days 1–3 and 4–6, but also a larger context for understanding the *reason* the author of Genesis framed the passage as he did in the first place. The mirroring that has puzzled interpreters is now seen to have actually provided a partial glimpse into the bigger picture that we now observe when looking at Genesis 1:1–2:3 as an example of the ANE sevenfold literary pattern.

As mysterious as the choice of the author of Genesis to make the two halves of the chapter mirror one another might appear as a stand-alone phenomenon, it now reveals itself as yet another example of the verbatim and near-verbatim repetition that is typical for Genesis 1:1–2:3 as an example of an ANE sevenfold literary pattern. Here too is the explanation of the mirroring and repetitive language in each of the six days, as well as within the individual days in the mirroring of the commands and their fulfillments. From the perspective of the ANE sevenfold literary pattern, then, the mirroring of days is just the sort of compositional move one might expect the author of the biblical creation account to make.[105]

Notes

[1]George Smith, *The Chaldean Account of Genesis* (New York: Scribner, Armstrong, 1876).

[2]Moshe Weinfeld, "Sabbath, Temple and the Enthronement of the Lord: The Problem of the *Sitz im Leben* of Genesis 1:1–2:3," in *Mélanges bibliques et orientaux en l'honneur de M. Henri Cazelles,* ed. Mathias Delcor and André Caquot (Neukirchen-Vluyn, Germany: Neukirchener Verlag, 1981), 512; Jon Levenson, "The Temple and the World," *Journal of Religion* 64, no. 3 (1984): 288–89, http://www.jstor.org/stable/1202664. Levenson's view would become more widely known through his *Creation and the Persistence of Evil: The Jewish Drama of Divine Omnipotence* (Princeton, NJ: Princeton University Press, 1988), 66–100. See also his notes on Genesis in *The Jewish Study Bible,* 2nd edition, ed.

Adele Berlin and Marc Zvi Brettler (New York: Oxford University Press, 2014), 11; and Victor Hurowitz, *I Have Built You an Exalted House* (Sheffield, UK: JSOT Press, 1992), 260–61, 275–76.

[3]Peter Enns, *The Evolution of Adam: What the Bible Does and Doesn't Say about Human Origins* (Grand Rapids, MI: Brazos, 2012), 39, 70–72, 154, n. 4; and N.T. Wright, *Paul and the Faithfulness of God* (Minneapolis, MN: Fortress, 2013), 102–3.

[4]J. Richard Middleton, *The Liberating Image: The* Imago Dei *in Genesis 1* (Grand Rapids, MI: Brazos, 2005), 83–84, see esp. 84, n. 104 for his list of sources. Middleton was not aware of Walton's work when he initially wrote the material for this section in the early 1990s (Middleton to the author, May 19, 2024).

[5]William P. Brown, *The Seven Pillars of Creation: The Bible, Science, and the Ecology of Wonder* (Oxford, UK: Oxford University Press, 2010), 37–42. Brown (p. 254, n. 35) mentions his debt to, e.g., Middleton, *The Liberating Image*, 74–76; and S. Dean McBride Jr., "Divine Protocol: Genesis 1:1–2:3 as Prologue to the Pentateuch," in *God Who Creates: Essays in Honor of W. Sibley Towner,* ed. William P. Brown and S. Dean McBride Jr. (Grand Rapids, MI: Eerdmans, 2000), 12–15.

[6]John H. Walton, *The Lost World of Genesis One* (Downers Grove, IL: IVP Academic, 2009); and John H. Walton, *Genesis 1 as Ancient Cosmology* (Winona Lake, IN: Eisenbrauns, 2011).

[7]As Walton writes: "Without hesitation the ancient reader would conclude that this [Gen.1:1–2:3] is a temple text," *Lost World*, 71.

[8]Ibid.

[9]Walton, *Genesis 1*, 179.

[10]Hermann Gunkel, *Die Sagen der Genesis* (Göttingen, Germany: Vandenhoeck and Ruprecht, 1901), 6.

[11]*Jubilees* 2:10–12. English translation (ET): James C. VanderKam, *Jubilees: The Hermeneia Translation* (Minneapolis, MN: Fortress Press, 2020), 17.

[12]Walton, *Genesis 1*, 196. Walton still believes that the cosmos "can be viewed as a temple," citing Isaiah 66:1–2 as his "clearest text" (*Lost World*, 84). Similarly, Peter Enns states: "Even though Genesis 1 recounts the creation of the cosmos, at least one biblical writer suggests that the created world is God's temple" in *The Evolution of Adam,* 10th anniversary ed. (Grand Rapids, MI: Brazos, 2021), 104.

[13]Walton, *Genesis 1*, 196.

[14]Ibid., 179.

[15]Walton, *Lost World*, 71.

[16]Ibid., 86.

[17]Ibid., 71.

[18]Walton, *Genesis 1,* 179.

[19]Ibid., 113–14.

[20]*Enuma Elish* VI 131; also VI 12, 34–36; and VII 29. The same motive for the creation of humans also appears, e.g., in *Erra and Ishum* I 83; *Atra-hasis Epic* 1 191–97; (K6634 [V] obverse), I 240–41; in a work Heidel called "Another Account of the Creation of Man" (obverse, ll. 26–27); and Alexander Heidel, *The Babylonian Genesis* (Chicago, IL: University of Chicago Press, 1942), 57.

[21]*Erra and Ishum* I 83; and *Atra-hasis Epic* 1 191–97/K6634 (V) obverse, here and after the numbering given in W.G. Lambert and A.R. Millard, *Atra-hasis: The Babylonian Story of the Flood, with M. Civil, the Sumerian Story of the Flood* (Oxford, UK: Clarendon, 1969).

[22]*Atra-hasis Epic* 1 358–59; 2 i 7–8.

[23]*Enuma Elish* I 38, 40, 50.

[24]Baal Cycle 6 iii 18–20; and *The Context of Scripture,* 3 vols., ed. William W. Hallo and K. Lawson Younger (Leiden, Netherlands; Boston, MA: Brill, 2003), 1:271 (ET: Dennis Pardee: Literally, "my gullet can rest in my chest," n. 261).

[25]*Erra and Ishum* I. 20.

[26]*Inana and Šu-kale-tuda,* 112–25, esp. 122–24. I am using the spelling "Inana" here and after that is used by the Electronic Text Corpus of Sumerian Literature rather than the familiar spelling "Inanna."

[27]Walton, *Genesis 1*, 180.

[28]The reference to the temple as God's resting place in Psalm 132 is problematic as a typical example of divine rest in temples, because the reference has to do with establishing a permanent resting place for the ark of the covenant after moving around from place to place in a portable shrine since the time of the Exodus; cf. 1 Chron. 6:41 (Walton, *Genesis 1*, 179; and Walton, *Lost World*, 72–73).

[29]Further examples: Lev. 19:3, 30; 26:2; Isa. 56:4; Ezek. 20:12, 13, 16, 20, 24; 22:8, 26; 23:38; and 44:24). See also "the Lord's Sabbaths" (Lev. 23:38).

[30]Walton, *Lost World*, 77.

[31]Walton, *Lost World*, 74–75. Walton's first example is the very ancient Sumerian *Temple Hymn of Keš*, which speaks only of the temple being a "reposeful dwelling" for its divine residents. The other example is the *Enuma Elish*, in which other gods are said to desire shines as resting places. However, the *Enuma Elish* says nothing of Marduk—whose temple it is—entering into rest there.

[32]EA, Nos. 234, 244, 245, 250, 254, 270, 271, 280, 286, 287, 288, 289, 290, 292, 297, 298, 320; RA, xix, 97, 106 in *Ancient Near Eastern Texts* (*ANET) Relating to the Old Testament,* 3rd edition with supplements, ed. James B. Pritchard (Princeton, NJ: Princeton University Press, 1969), 483–90 and in Hallo and Younger, eds., *Context of Scripture*, 2:237–42.

[33]RS 9.497A, ll. 6–11 in Hallo and Younger, eds., *Context of Scripture,* 89–90 (3.45B). See also RS 18.040, RS 18.113A+B, RS 94.2391, RS 20.199, RS 19.102, RS 29.093, RS 92.2012 in Hallo and Younger, eds., *Context of Scripture* 3:104–12.

[34]As F.A.M. Wiggermann, "Lamaštu Daughter of Anu: A Profile," in M. Stol, *Birth in Babylonia and the Bible: Its Mediterranean Setting*. Cuneiform Monograph 14 (Groningen: Styx, 2000), 226. This persists throughout the New Testament period and beyond as is seen, for example, in Hermann Gollancz, editor and translator, *The Book of Protection: Being a Collection of Syriac Charms* (1912; reprint, Amsterdam, Netherlands: APA-Philo Press, 1976), in which we find curses against the "seven accursed brothers, sons of the evil and accursed man" (A.39, p. xlviii / Syriac, pp. 38–39, cf. B.10, p. lxxi) / Syriac, pp. 38–39) and the "Evil and Envious Eye, and Eye of seven evil neighbors" (A.23, p. xi / Syriac, p. 16).

[35]See, especially, Utukki Limnûti V iii 10–25 and XVI 1–30, in *Devils and Evil Spirits of Babylonia,* trans. R. Campbell Thompson, Luzac's Semitic Texts & Translation Series 14–15; 2 vols. (London, UK: Luzac, 1903–1904), 1:62–65, 88–91. See also the discussion in Thompson's introduction of the seven demonic figures and their persistence (1:xlii–xlvii); and Thompson, *Semitic Magic: Its Origins and Development* (1908, reprint; New York: Ktav, 1971), 47–53.

[36]See, e.g., Utukki Limnûti V ii 65–iii 25 and XVI 35–45 (collectively), and XVI 25, where the seventh is referred to as an "evil wind."

[37]Tzvi Abusch and Daniel Schwemer, *Corpus of Mesopotamian Anti-Witchcraft Rituals,* vol. 1 (Leiden, Netherlands; Boston, MA: Brill, 2010), 185 (l. 25).

[38]Charm Codex C.19, "On the Evil Eye," in Gollancz, *Book of Protection*, lxxxii and 86–87; cf. Charm Codex 1.23, "The Anathema of the Angel Gabriel, Which Is of Avail for the Evil Eye," in ibid., xl and 16–17.

[39]E.g., as in the sevenfold, or twice sevenfold, knotting of strands accompanied by the sevenfold repetition of an incantation., See, e.g., the examples from the ušburruda texts in Abusch and Schwemer, *Corpus*, 185 (l. 13), 186 (l. 13), 187 (l. 32), 188 (l. 57), 189 (l. 34), 192 (l. 26). For a variation, see 188 (l. 43), RS 25.129 + 25.456B (reverse 1. 5, cf. obverse 1. 10) and RS 25.418 (obverse 1. 4/reverse 1. 5) from the House of Lamashtu tablets, in Ignacio Márquez Rowe, "The Babylonian Incantation Texts from Ugarit," in Georgio del Olmo Lete, *Incantations and Anti-Witchcraft Texts from Ugarit* (Berlin, Germany; Boston, MA: De Gruyter, 2014), 66, 72. Cf. also Series Ṭi'i IX (ii) 75–80 in Thompson, *Devils and Evil Spirits,* 2.71. Various other sevens play into rituals and incantations, such as the making of sets of seven figurines—among other numbers—of clay or dough or wax (Abusch and Schwemer, *Corpus,* 1. 346), and the seven and seven times pouring out of libation of water (ibid., 140, 185, 186). See, further, the possible amulet with seven lines, each consisting of "one sign repeated seven times," in James Buchanan Nies and Clarence E. Keiser, *Babylonian Inscriptions in the Collection of J. B. Nies,* vol. 2 (New Haven, CT: Yale University Press, 1920), 22, no. 16, plate 8.

[40]*Epic of Gilgamesh* XI, ll. 159–60. ET: Andrew George, *The Epic of Gilgamesh: The Babylonian Epic Poem and Other Texts from Akkadian and Sumerian* (London, UK: Penguin, 1999), 94.

[41]*Life of Adam and Eve* 1:1.

[42]Mark Smith, *The Ugaritic Baal Cycle, Vol. 1: Introduction with Text, Translation and Commentary of KTU 1.1–1.2* (Leiden, Netherlands: Brill, 1994), 78; referring to Hurowitz, *I Have Built You an Exalted House*, 242.

[43]Edwin C. Kingsbury, "A Seven Day Ritual in the Old Babylonian Cult at Larsa," *Hebrew Union College Annual* 34 (1963): 1–34, http://www.jstor.org/stable/23506552.

[44]Daniel E. Fleming, "Emar: On the Road from Hurran to Hebron," in *Mesopotamia and the Bible: Comparative Explorations,* ed. Mark W. Chavalas and K. Lawson Younger Jr. (Grand Rapids, MI: Baker Academic, 2002), 222–50, esp. 232–34.

[45]Michaël Guichard and Lionel Marti, "Purity in Ancient Mesopotamia: The Paleo-Babylonian and Neo-Assyrian Periods," in *Purity and the Forming of Religious Traditions in the Ancient Mediterranean World and Ancient Judaism,* ed. Christian Freval and Christophe Nihan (Leiden, Netherlands; Boston, MA: Brill, 2013), 102. We should understand the *Bît rimki* cycle, e.g., as connected not with temple texts but with the previously mentioned exorcism rituals associated with the idea that the fullness of trouble comes in sevens.

[46]Albert T. Clay, "The Babylonian Sabbath," in *Miscellaneous Inscriptions in the Yale Babylonian Collection* (New Haven, CT: Yale University, 2018), Nos. 46–51 (pp. 75–81).

[47]See Walton, *Genesis 1*, 119, n. 356 and 181, n. 163.

[48]Jon D. Levenson, *Creation and the Persistence of Evil: The Jewish Drama of Divine Omnipotence* (Princeton, NJ: Princeton University Press, 1988), 69.

[49]On the name, see Walton, *Lost World*, 162. The only one he does not mention is the seven-day *zukru* ritual from Emar.

[50]Walton, *Lost World*, 71.

[51]The seventh month features three feasts: Trumpets on the first day, the Day of Atonement on the tenth, and Tabernacles beginning on the fifteenth and lasting seven days (Exod. 23:33–36, 42).

[52]The Hebrew text of both passages says that there were *two* seven-day feasts, but the Greek Septuagint in each case reports only *one*.

[53]Gudea Cylinder B xvii 18–19. For an account of the history of the Eninnu, including the recent 2016–2022 British Museum excavations of the building, see Sébastien Rey, *The Temple of Ningirsu: The Culture of the Sacred in Mesopotamia* (University Park, PA: Eisenbrauns, 2024).

[54]Walton gives the impression that there are more examples than there actually are. He writes: "Hurowitz lists other temple dedications, and the number seven is prevalent, though there are variations … His appendix … provides the entire list of more than 40 dedications." However, Hurowitz's appendix is simply a generic list of "Sources for Mesopotamian Dedication Ceremonies" without reference to numbers. My sampling of the texts listed, based on those available to me, did not turn up any sevens other than the handful Walton himself mentions: Walton, *Genesis 1*, 117, n. 348, see also *Lost World*, 181–82, n. 1. Cf. Hurowitz, *I Have Built You an Exalted House*, 280–83.

[55]Hurowitz, *I Have Built You an Exalted House,* 227.

[56]See the comparative monster lists in Graham Cunningham, *Deliver Me from Evil: Mesopotamian Incantations, 2500–1500 BC,* Studia Pohl: Series Maior 17 (Rome, Italy: Pontifico Istituto Biblico, 2007), 92.

[57]The Electronic Text Corpus of Sumerian Literature, ll. 562–90, https://etcsl.orinst.ox.ac.uk.

[58]See Wayne T. Pitard, "Voices from the Dust: The Tablets from Ugarit to the Bible," in *Mesopotamia and the Bible: Comparative Explorations,* ed. Chavalas and Younger Jr., 260–63.

[59]See, for example, the two depictions of gods battling seven-headed monsters, one on a shell plaque of unknown provenance in the Borowski collection with one of the seven heads hanging dead in *The Ancient Near East in Pictures Relating to the Old Testament,* ed. J. B. Pritchard (Princeton, NJ: Princeton University Press, 1954), 218, 329, no. 671, and another from Tell Asmar with four of the seven heads hanging dead (ibid., 221, 332, no. 691). On the latter see, Henri Frankfort, "Gods and Myths on Sargonid Seals," *Iraq* 1.1 (Apr. 1934), Plate I*a* (following p. 8).

[60]But compare Isa. 27:1.

[61]For more references to seven-headed monsters, see, e.g., Odes of Solomon 22:5, https://earlychristianwritings.com/text/odes2.html#google_vignette; Pistis Sophia 2:136, 147, 156–57, 321, http://gnosis.org/library/pistis-sophia/index.htm; cf. *Secret Book of John 11:30–31* in Michael Waldstein and Frederik Wisse, translators, *The Apocryphon of John: Synopsis of Nag Hammadi Codices II,1–III,1; and IV,1 with BG 8502,2,* ed. Lance Owens (Leiden, Netherlands: Brill Academic, 1995).

[62]ET: Pardee, *Context of Scripture,* 1:86, p. 261 / Baal Cycle 4 vi 22–35.

[63]Walton, *Genesis 1*, 117. Dennis Pardee comes closer to the truth when he writes in a note to his translation of the passage: "The seven-day sequence is a common literary motif in Ug[arit] for expressing extended processes" (*Context of Scripture* 1:86, p. 261, n. 175).

[64]Hurowitz, *I Have Built You an Exalted House,* 227.

[65]Umberto Cassuto, *A Commentary on the Book of Genesis. Part 1: From Adam to Noah: Genesis I–VI,* vol. 8, trans. Israel Abrahams (Jerusalem: Magnes Press, Hebrew University, 1961), 13. Cassuto presented the evidence for this in his "Biblical and Canaanite Literature," *Tarbiz* 13 (1942): 206–7, nn. 31–32. See further, Samuel E. Loewenstamm, "The Seven-Day-Unit in Ugaritic Literature,"in *Comparative Studies in Biblical and Ancient Oriental Literatures* (Neukirchen-Vluyn, Germany: Neukirchener Verlag, 1980), 192. M.L. West points out that the ANE "recurrent motif that something goes on for six days and on the seventh there is a new development" even extends to Homer's *Odyssey*, which includes four instances of it: *The East Face of Helicon: West Asiatic Elements in Greek Poetry and Myth* (Oxford, UK: Clarendon, 1997), 175.

[66]*Gilgamesh Epic,* Tablet XI, ll. 142–48. ET: George, *The Epic of Gilgamesh*, 93. Line numbers given in George's critical edition, *The Babylonian Gilgamesh Epic,* 2 vols. (Oxford, UK: Oxford University Press, 2003), 1:713.

[67]ET: Stephanie Dalley, *Context of Scripture* 1:109, p. 386 (seventh century BCE).

[68]ET: Pardee, *Context of Scripture* 1:103, 343–45. Given the confusion caused by differing systems for referencing Ugaritic texts, I have adopted the following method throughout when discussing titled works: the name of the work followed by the tablet, column, and line numbers as presented in *Stories from Ancient Canaan,* 2nd edition, ed. and trans. Michael D. Coogan and Mark S. Smith (Louisville, KY: Westminster John Knox, 2012). So, e.g., *Aqht* 1 i 3–17 = *Aqht* (name of work), 1 (tablet number), i (column number), and 3–17 (line numbers).

[69]*Kirta* 1 iii 10–16 (*CTA* 14), ET: Pardee, *Context of Scripture* 1.102, p. 336. See also, *Kirta* 1 v 3–8, ET: Pardee, *Context of Scripture* 1.102, pp. 334–35.

[70]*Story of Aqht* 3 iv 10–22 (*CTA* 19), ET: Pardee, *Context of Scripture* 1.103, p. 354.

[71]Brown, *Seven Pillars*, 28, cf. 255, n. 42.

[72]J. Richard Middleton, "The Genesis Creation Accounts," in *T&T Clark Handbook of Christian Theology and the Modern Sciences,* ed. John P. Slattery (New York: Bloomsbury, 2020), 20.

[73]Middleton, *Liberating Image*, 84.

[74]Levenson, *Creation and the Persistence of Evil*, 79.

[75]Though not giving an account of the Ninĝirsu entering into his rest in the temple, the text does include mention of rest in what is perhaps a description of the dispositions of the various images of the deities:

> Its owner, warrior Nin-jirsu, stood like Utu in his most fascinating blue chariot. Its throne, standing in the *guena* hall, was An´s holy seat which is sat upon joyfully. Its bed, standing in the bedroom, was a young cow kneeling down in its sleeping place. On its quilt (?), strewn with fresh herbs, mother Bau was resting comfortably with lord Nin-jirsu. (Cyl. B. xvi 15–xvii 3)

[76]Version B, *Gilgamesh and Huwawa*, ll. 60–67. ET: George, *The Epic of Gilgamesh*, 153. See also version A, *Gilgamesh and Huwawa*, ll. 61–64.

[77]Cyl. A. xx 27–xxi 14. "The Building of Ninĝirsu's Temple," ET: The Electronic Text Corpus of Sumerian Literature.

[78]Lines 20–29. ET: Stephanie Dalley, *Context of Scripture* 1:109, pp. 384–85.

[79]For the latter, see *Ancient Near Eastern Texts*, 108–9.

[80]*Inana's Descent*, l. 14.

[81]*Inana's Descent*, ll. 127–63.

[82]*Inana's Descent*, ll. 164–72.

[83]Gen. 1:3, 6, 9, 11, 14, 24, 26.

[84]So, "and there was light," Gen. 1:3; or "and it was so," 1:7 (day 2), 1:9, 11 (day 3), 1:15 (day 4), 1:24, 30 (day 6).

[85]Gen. 1:4 (day 1), 1:10, 12 (day 3), 1:18 (day 4), 1:21 (day 5), 1:25, 31 (day 6).

[86]There are other repetitive items that are not repeated throughout. So, for example, God names things in the first triad but not in the second (3x) and blesses things in the second triad but not in the first. God names the darkness and light (Gen. 1:5, day 1), the expanse (1:8, day 2), the dry land and the lower waters (1:10, day 3). God blesses the birds and sea creatures (1:22, day 5) and humans (1:28, day 6). Curiously, God does not bless the land creatures.

[87]Namely, the seals (Rev. 6:1–17), trumpets (8:2–11:19), and bowls (16:1–21).

[88]Ephesus (Rev. 2:1 = Gen. 1:13, 16); Smyrna (Rev. 2:8 = Gen. 1:17–18); Pergamum (Rev. 2:12 = Gen. 1:16); Thyatira (Rev. 2:18 = Gen. 1:14–15); Sardis (Rev. 3:1 = Gen. 1:4, 16, 20); Philadelphia (Rev. 3:7 = Gen. 1:18); and Laodicea (Rev. 3:14 = Gen. 1:5).

[89]A view introduced to the evangelical community by Meredith G. Kline. See his "Because It Had Not Rained," *Westminster Journal of Theology* 20 (1958): 146–57, https://meredithkline.com/klines-works/articles-and-essays/because-it-had-not-rained/; and Lee Irons and Meredith Kline, "The Framework Hypothesis," in *The Genesis Debate: Three Views on the Days of Creation,* ed. David G. Hagopian, (Mission Viejo, CA: Crux Press, 2001), 227–30.

[90]Examples among older commentators include the vision hypothesist Franz Hummelauer, *Commentarius in Genesim* (Paris, France: P. Lethielleux, 1895), 71; the day-age hypothesist Arnold Guyot, *Creation; or the Biblical Cosmology in the Light of Modern Science* (New York: Charles Scribner's Sons, 1884), 12; the gap-hypothesist Andrew Jukes, *The Six Days: Or, The Various Stages of the Work of God, Being Notes on Genesis I* (London, UK: William Yap, 1855), 5; the explanation hypothesist Hugh Capron, *The Conflict of Truth* (London, UK: Hodder & Stoughton, 1902), 193; and the six evenings of conversation with God hypothesist P. J. Wiseman, *Creation Revealed in Six Days: The Evidence of Scripture Confirmed by Archaeology* (London/Edinburgh, UK: Marshall, Morgan & Scott, 1948), 16.

[91]See J. G. Herder's *Älteste Urkunde des Menschengeschlechts,* 2 vols. (Riga: Johann Friedrich Hartknoch, 1774, 1776), 1:128–31.

[92]Thomas Aquinas, *Summa Theologiae* 1, Q. 65, and especially 1, Q. 70. Others have suggested the observation goes back to Augustine, citing *City of God* 11.6. See, e.g., Victor Hamilton, *The Book of Genesis: Chapters 1–17* (Grand Rapids, MI: Eerdmans, 1990), 55. The chapter in question, however, makes no mention of this. In the following chapter (11.7), Augustine does mention the issue of light being made on the first day and the sun and moon only on the fourth day. But that had already been noted in the second century by Celsus (quoted in Origen, *Against Celsus* 6.60) and in the third by Origen (*On First Principles* 4.3.1), and it does not amount to a recognition of the mirroring of days 1–3 and 4–6.

[93]Nicholas of Lyra, *Biblia Sacra cum Glossa Ordinaria I* (London, UK: n.p., 1545), 23. Eugene H. Maly still used the terminology in his section on Genesis in *The Jerome Biblical Commentary,* ed. Raymond E. Brown, S.S.; Joseph A. Fitzmyer, S.J.; and Roland E. Murphy, O.Carm. (Englewood Cliffs, NJ: Prentice-Hall, 1968), 11.

[94]Arnold Guyot, *Creation,* 12. Others who noted this include James Dwight Dana, "Creation; Or, the Biblical Cosmology in the Light of Modern Science," *Bibliotheca Sacra* 42, no. 166 (Apr. 1885): 207–8; and Franz Hummelauer, *Commentarius in Genesim* (Paris, France: P. Lethielleux, 1895), 71.

[95]As illustrated by the appearance of the charts in a number of study Bibles, including the *NIV Study Bible* (1985), the *Jewish Study Bible* (2004), the *Reformation Study Bible* (2005), the *ESV Study Bible* (2008), and the Roman Catholic *New American Bible,* which added it for the first time to its revised edition (2008). Numerous other examples could be cited from books and commentaries since 1980, but relatively few that I have seen before that. Exceptions would include the soft day-age theorist Derek Kidner, who includes the chart in *Genesis: An Introduction and Commentary* (Downers Grove, IL: InterVarsity, 1967), 46. Kidner had gotten it from Anglican evangelical W. H. Griffith Thomas, *Genesis: A Devotional Commentary I-XXV.10,* 3rd edition (London, UK: Religious Tract Society, 1909), 21. There is also the third edition of the popular evangelical *New Bible Commentary* (1970), which presents the idea though not the chart. In that case, however, the section on Genesis was authored by Meredith G. Kline, a key figure in introducing the "framework hypothesis" to the evangelical community.

[96]E. J. Young, "The Days of Genesis," *Westminster Theological Journal* 25 (1962–1963): 27, https://reformed.org/wp-content/uploads/2019/04/EdwardJYoungDaysGenesisPart1.pdf.

[97]Todd S. Beall, "Response to Richard E. Averbeck," in *Reading Genesis 1–3: An Evangelical Conversation,* ed. J. Daryl Charles (Peabody, MA: Hendrickson, 2013), 133.

[98]See, e.g., E. F. K. Rosenmüller, *Scholia in Vetus Testamentum in compendium redacta,* vol. 1 (Leipzig, Germany: Johann Ambrosius Barth, 1828), 26. Rosenmüller provides a typical list of such objections in this same place, as does, e.g., Dana, "Creation," 203.

[99]*On First Principles* 4.3.1 (ET: G. W. Butterworth).

[100]Quoted by Origen, *Against Celsus* 6.60 (ET: Frederick Crombie). The objection is also mentioned in Thomas Aquinas, *Summa Theologiae* I, Q. 70, Art. 1, Obj. 2.

[101]Thomas Paine, *The Age of Reason, Part II* (1795) in *The Theological Works of Thomas Paine* (London: R. Carlisle, 1818), 89, n.

[102]Voltaire, *La Bible enfin expliquée,* vol. 1, 3rd edition (London, UK: n.p., 1777), 2: "*Toute l'antiquité a cru que le soleil ne produit pas la luminière, qu'il ne sert qu'a la pousser, & qu'elle est répandue dans l'espace.*"

[103]Herder's *Älteste Urkunde des Menschengeschlechts*, 1.131: "Und wo bleiben jetzt die Spöttereien über die Mißproportionen der Tagwerke? was ist nicht überlegte Proportion im Stücke? kann eine vollere zusammenstimmendere Leyer erdacht werden? Und was sind nun die zerstückten Verse unseres Bibeltextes?"

[104]Granting that such difficulties might be treated in more-nuanced ways by defenders of these views. In any case, the problem was already noted by Aquinas, *Summa Theologiae* Q. 70, Art. 1, Obj. 4.

[105]Special thanks are due to the editor, Stephen Contakes, and to the anonymous reviewers for a number of valuable suggestions that have significantly strengthened this article.

Bioethics

DOI: https://doi.org/10.56315/PSCF12-24Jones

AT THE MARGINS: A Life in Biomedical Science, Faith, and Ethical Dilemmas by D. Gareth Jones. Eugene, OR: Resource Publications, 2022. 168 pages. Paperback; $22.30. ISBN: 9781666744712.

Picture this: a close friend tells you they are deeply struggling with a medical issue—for example, the use of *in vitro* fertilization, pre-implantation genetic diagnosis (PGD), vaccination, or medical treatments that may be based on using embryonic stem cells. They ask *your* advice and insight on the topic, specifically because you are a Christian. Should they use this treatment? Is it acceptable as a Christian to use it? How, then, do you respond? Would you be able to help them understand the benefits, challenges, and questions of these procedures? Would you be able to help them process the dilemma they face, both spiritually and medically?

At the Margins is a humble walk with a Christian who is also a scientist, who has served on ethical advisory committees, and who has walked through these biomedical discussions with fellow Christians. These discussions have involved and affected him personally, spiritually, and professionally. It is this integration that makes the book and its dialogue so valuable. Jones's life provides an example of how we can integrate spiritual direction and scientific knowledge as we navigate the ethical decisions within our own lives.

Jones begins his discussion by giving his testimony and faith journey. He grew up in England in a church-attending family, but his spiritual awakening occurred in college, over several years of searching. He learned early to engage in dialogue with those who think and believe very differently than he does, a skill which has become invaluable in his journey with biomedical ethics. As a young person, his spiritual journey developed alongside his fascination with science and the ability to ask questions. Two Bible verses have guided him spiritually. One is Luke 18:17: "Anyone who does not receive the kingdom of God as a little child will never enter it." For Jones, this verse encourages the pursuit of "openness, honesty, truthfulness, and uncomplicated inquisitiveness" (p. 8), which are also important traits for a scientist. The second verse is 1 Cor. 13:12: "For now we see in a mirror, dimly, but then we will see face-to-face. Now I know only in part; then I will know fully, even as I have been fully known." This verse encourages humility, because anything we know now, both scientifically and theologically, is limited in its scope—only eventually will we have a more full and complete explanation.

The author's journey in ethics began within his own profession of anatomy. Early in his career, he realized that some of the bodies used in the dissection lab were from unidentified, or unclaimed bodies. These individuals did not know their body would be used in this way, nor did they intentionally donate their bodies for the anatomy lab. To Jones this seemed an unethical use of these individuals' bodies since there was no consent given. His discussion on this topic includes the role of Christians to protect the vulnerable, the dispossessed, those without a voice. His objection to the use of unclaimed bodies for the anatomy lab was not initially greeted with enthusiasm, as it reduced the number of bodies available for dissection (the primary method of teaching anatomy at that time). Over time, however, adjustments in attitudes and cadaver procurement were made. For the author, such discussions are not merely academic topics; they influence his life and the way in which he interacts with others.

In chapters 3 and 4, he reflects on his personal experience with the Covid-19 pandemic. He talks about how to see God's presence in such a tragedy, and he explores the role of God's lament for people when disaster strikes. For Jones, exploring nature through the scientific method is one way "to be guided by Christ's overriding commandment to love God with all our being—heart, soul, mind, and strength—and to love our neighbor as ourselves" (Mark 12:29–30), and the pandemic provided opportunities to do both.

Jones sees medical science as one way to explore God's creation, to seek God's glory, and to help heal a broken world. He observes that our responses to pandemics, and to the risks and benefits of vaccines, are complex. He does not preach or advocate a specific position, yet he does talk about the necessity for science to educate our faith, and for our faith to guide our use of science. If love for neighbor supports only the use of donated bodies in the anatomy lab, then it may also include protecting from a pandemic those who are vulnerable, such as those with health problems, especially who are immunocompromised. Thus, God's provision of spiritual gifts could include the ability to heal others through the development of a vaccine that can help to heal those in need. He also gives a historical perspective on the use of vaccines and the fears, concerns, and objections of many to receiving them. From a historical perspective, it could be said that nothing we experienced in the Covid-19 pandemic was really new.

The use of technology in the development of biomedical tools to address disease continues in chapters 5, 6, and 7 as he discusses cystic fibrosis and the use of embryonic stem cells. Jones has a family connection to cystic fibrosis, so for him this is not an academic discussion from a distance. Knowing that this is personal gives added value to his discussion of new treatments that have greatly extended the lifespan of those affected. The spiritual and ethical bases of respect for life and when life begins, are also discussed, and the answers aren't always clear. One observation he makes is that if embryos and fetuses are considered untouchable (meaning that nothing may be permitted to be done that potentially risks their livelihood), then neither are we able to learn more to medically help them. Here Jones is not advocating the use of embryonic or fetal tissue in research—he is simply acknowledging that we may not be able to help if we are not able to study.

In chapter 8, Jones discusses the science and ethics of gender issues. He gives a sensitive overview of the science

behind sexual identity and sexual attraction and summarizes which traits seem to be genetically based, or inherent, and which traits are currently evidenced as being socially influenced. His overview is honest, that science may not be unbiased in its assessment or agenda, and it is part of our role to think carefully about the information we hear. Although not a theologian, he gives a gentle discussion of several interpretations of biblical themes including traditionalist and revisionist interpretations. The role of church community is also described, with both positive and negative examples.

In closing, Jones again revisits the spiritual and scientific themes that have guided his life. His focus is not on a specific theological interpretation, or any specific philosophy. In fact, he created a bioethics center at his university to further bioethical discussions with participation by those with broad backgrounds and perspectives. In many of his chapters, he presents multiple perspectives to emphasize that these are not simple topics with simple answers, yet within this complexity his goal is to help people develop a "compass" and "a set of guardrails" (p. 165) as they navigate ethical topics and decisions.

Jones ends the book with a discussion of those who are sidelined or marginalized by expressing their views, especially when they are not considered mainstream. If we cannot speak with each other on topics in which we disagree, it is easy to push people out of conversations, push them to the margins. He talks about how people with contradictory views are pushed out of jobs or positions, whether in churches, corporations, businesses, or governments. It is important to continue discussions, to learn to listen to each other, even when we disagree. He closes with his two favorite verses again (cited above—Luke 18:17 and 1 Cor. 13:2), which nurture in us the humility to remember that we know only a little, and remind us of the limitations of our knowledge.

This book is a thoughtful read, and helpful for the reader who wants to think more clearly about, and better articulate, one's stances on bioethical issues. It does not give easy answers, because there aren't any, for, in many cases, there are competing ethical challenges. Indeed, the reader may leave the book with more questions than answers. Yet, it is hopeful—that we can grow in our faith while listening to and supporting others in the midst of such complex issues.

Reviewed by Kathleen Tallman, Associate Professor of Biological Sciences, Yavapai College.

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AS GODS: A Moral History of the Genetic Age by Matthew Cobb. New York: Basic Books, 2022. 442 pages. Hardcover; $35.00. ISBN: 9781541602854.

It can sometimes be difficult to tell where science fiction ends and science begins when discussing developments in genetic engineering. Consider genetic manipulation of human embryos leading to heritable genetic changes in children, gene-drive-based disruption of whole ecosystems, and the creation of positive mutations in dangerous human pathogens. These are all experiments that have already been conducted. The children are born. The gene drives have been released. More virulent strains of deadly pathogens have been created.

In the introduction to *As Gods*, Matthew Cobb explains:

> My motivation in writing this book has been to explore my own fears about these three areas. Each of them worries me in different ways, but I recognize that many of my concerns are similar to those expressed by people faced with previous applications of genetic engineering, most of which turned out to be either exaggerated, or at least to be controllable by careful regulation and strict safety procedures. (p. 3)

As Gods recounts the major developments in the history of molecular biology, including the discovery of molecular tools (restriction enzymes, reverse transcriptase, etc.), the first recombination of bacterial and viral DNA, and the Asilomar Conference held to discuss the safety of recombinant DNA technologies.

Much of the first eleven chapters of the book covers the history of genetic engineering from the 1960s through the Covid pandemic. Attention is given in these chapters to the patenting and privatization of genetic products, the development of genetically modified foods, and attempts at gene therapy. In the second half of the book, Cobb dedicates space to the three concerns introduced at the start of this review. He offers two chapters (12 and 13) to the "botched experiment that mutated three healthy embryos" (p. 2) conducted by Dr. He Jiankui and one chapter each to the topics of "Ecocide" (chap. 14) via gene drives and "Weapons" (chap. 15) that result from mutating pathogens.

Throughout the book, Cobb recounts this history with a combination of keen historical investigation, personal narrative, and social commentary. Cobb has written other books of history (*Eleven Days in August* and *The Resistance: The French Fight Against the Nazis*) and other books on the history of science (*The Idea of the Brain: A History* and *The Egg and Sperm Race: The Seventeenth-Century Scientists Who Unravelled the Secrets of Sex, Life and Growth*). He is a skilled storyteller who has rigorously pursued the primary sources in order craft a narrative with characters, tension, and resolution.

But Cobb was himself present for some of these meetings and conferences. Entering the discipline in the late 1970s, he has been part of the community making these moral decisions and conducting the experiments. His own biological research involves a genetic investigation of the sense of smell in fruit flies. When he describes historical events to which he was not a personal witness, he often supplements the printed record with interviews of firsthand participants.

Throughout the book, Cobb continuously contextualizes the history he narrates within the broader culture that was shaping it. For example, in chapter 5, Cobb describes how popular culture directly affected the practice of science.

Harvard was considering plans to build a new genetic engineering lab. He writes,

> At the end of May 1976, there was a university-wide meeting to discuss the plans. This was attended by a Cambridge councilor, Barbara Ackermann, who just happened to have watched *The Andromeda Strain* on television the night before. *The Andromeda Strain* film she watched was based on the 1969 book by Michael Crichton that depicts a deadly outbreak of a novel pathogen. Alarmed by what she heard at Harvard, Ackermann raised the issue with fellow councilors. (p. 92)

The resulting delays to the building plans were so extensive that "by the time the building work was completed [the scientists were] able to do the experiments in ordinary laboratory space" (p. 97).

The author is not a passive narrator of the story. He has a clear perspective and is unafraid to share it. For example, in chapter 13, "Aftermath," when discussing people who support human embryo modification, Cobb writes,

> There is one gang of fantasists who mix cryptocurrency funding and transhumanist nonsense in a toxic, nauseating nightmare, claiming that they will use CRISPR germline editing to produce babies who will live to be "super-centenarians." (p. 274)

Throughout the book, Cobb's genuine concerns about advancements in genetic engineering are rooted in the same fear that has stalked the discipline since its inception: safety. Four times in this discipline, scientists have voluntarily paused their work and embraced a moratorium in order to develop means to conduct the research safely.

While the subtitle of the text describes the book as a "moral history," it offers more of a history of insufficient moral consideration regarding important moments in molecular biology. The field has been willing to consider how to progress safely, but there has been surprisingly little consideration of what experiments should not be done. As a book of history, it is not Cobb's responsibility to offer his readers a robust moral framework for evaluating advances in gene editing. Instead, the history he recounts illuminates the need for such a framework.

The striking title of the book comes from an essay by Steward Brand who said, "We are as gods and might as well get good at it" (p. 338). Cobb agrees, and adds, "In genetic terms at least, being a god is relatively straightforward these days; getting good at it is another matter" (p. 338). In recounting the moral history of this field, Cobb encourages us, the next generation of scientists taking up the discipline, to remember to consider why we do our experiments, not just how they are done. In the closing chapter, he implores us to remember that in genetic engineering, "we have a choice whether to employ it or not, whether to permit its development or not. Just because we *can* do something does not mean that we *should* [emphasis original]" (p. 362).

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Evolutionary Theory

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HIDDEN DEPTHS: The Origins of Human Connection by Penny Spikins. York, UK: White Rose University Press, 2022. xiii + 456 pages. Paperback; £29.15. ISBN: 9781912482320. Electronic: Free under Creative Commons Attribution + Noncommercial 4.0 license, https://doi.org/10.22599/HiddenDepths.

In *Hidden Depths*, Penny Spikins explores the evolution of the positive emotional aspects of our humanity in the context of our relational connectedness with others. As an archaeologist, she documents the evolution of humans from the physical evidence found at archaeological sites, which she then relates to our modern behavior, to the behavior of hunter-gatherer cultures, and to past humanoids such as Neanderthals, as well as to the evolution of animals, of other primates, and of other social mammals such as dogs. By focusing on the evolution of positive emotions, for example, generosity, empathy, tolerance, and altruism, she gives the lie to Tennyson's description of nature as red in tooth and claw.

The book's layout is unusual: each chapter has its own abstract, summary, and reference list, somewhat like a series of journal articles put together into a volume; however the overarching work is coherent—the book builds its case in a logical and informative manner—and the issues are addressed well. The nine chapters are laid out in three parts: the first deals with the positive emotions within groups; the second addresses the benefits and costs of these positive emotions beyond immediate groups; and the last explores other potential human evolutionary pathways.

In Part 1, chapter 1, Spikins discusses the neurobiological basis for compassion and empathy, along with their evolutionary basis and advantage. Developing empathy in close-knit family groups leads to generosity and caring behavior. Human empathy is compared to empathic expression in primates, and to convergent evolution in other social species. Next, Spikins provides the archaeological evidence that human ancestors cared for their wounded and ill (as documented in the bones uncovered today). I found this second chapter provided essential insight into humanity's deep history with ideas I have not seen elsewhere. Then, in the third chapter, the impact of human interdependence on these positive emotions is reviewed, leading to a discussion of the importance of trust. These three chapters are based on early hominoid evidence, when we started diverging from other primates. The first part of the book thus covers our history from about two million to 300,000 years ago, when modern humans began to emerge.

Part 2 discusses the importance of positive human emotions in interactions with larger communities and how we moved from seeing others as a threat to seeing others as an opportunity for benefit, leading to increases in tolerance. Chapter 4 discusses the physiological changes that led to fewer avoidance behaviors and more approach behaviors.

As an example, the physical evidence that artifacts were traded across large distances is fascinating, implying that local groups had interactions with many distant people; such interactions first require approach behaviors. In chapter 5, Spikins argues that along with approach behaviors comes an increase in tolerance, also called "self-domestication." While largely beneficial, self-domestication also has a cost, in that it causes vulnerabilities such as specific emotional disorders when our needs for affiliation are not met. These unmet needs can lead to attachment to physical artifacts that possess no obvious function, but such attachment serves as a compensatory process (a modern example being teddy bears). These nonfunctional objects started to appear in the archaeological record about 45,000 years ago. In the next chapter, the parallel development of positive relationships with dogs (descended from wild wolves) suggests that dogs have undergone similar changes in attachment behaviors, becoming more tolerant and caring toward humans. For humans, forming bonds to dogs provides another way for us to address our emotional vulnerabilities.

In Part 3, Spikins lays out the argument that humanity's evolutionary history took one of several possible alternate pathways. She supports this point by comparing the emotional and social differences between chimpanzees and bonobos, as well as between wolves and dogs. In the last chapter, Neanderthals are discussed, and proposed as one of those alternate pathways; however, among Neanderthals, their emotional and social interactions were limited to small, closely related groups and so did not extend to larger communities. The author suggests that the more limited, close-knit community relationships in Neanderthals ultimately proved less successful than the broader social and emotional relationships of our direct ancestors.

The integration of biological evidence from other species, primates, and wolves, along with the neurobiology of our emotions and the integration of the hard evidence from archaeology, makes this book a worthy companion for other books that have explored our evolutionary history. Its emphasis on the benefits and costs of positive emotions such as empathy, compassion, and tolerance stands in helpful contrast to similar books that pay more attention to aggression and testosterone.

Like many books that cover related material (such as Frans de Waal's *Mama's Last Hug* and Robert M. Sapolsky's *Behave: The Biology of Humans at Our Best and Worst*), this volume was written without any mention of the Christian faith or even religion. Individuals looking for threads of how our faith fits into our evolutionary history will need to look elsewhere (such as in Chris Barrigar's essay book review in the March 2024 issue of this journal).

While I found this volume an enlightening and valuable read, the book raised some issues for my Christian faith. One common motif in Christianity is that we are the crown of creation—a view which is challenged by the evolutionary story described in this book. For instance, human history is a sequence of adaptations and changes that often appear randomly. As well, our relations with other humanoids, and the discovery that some of our genes come from Neanderthals, suggest that we are a complex branch in the tree of life, as indicated by Darwin. An evolutionary account is also consistent with flaws in our design, such as lower back problems that many of us deal with! Each of these raises a challenge to the motif that humanity is the crown of creation.

This is an excellent up-to-date review of the archaeological evidence of how human evolution developed the connections that underlie our behavior. While unfortunate in its lack of attention to influences of religion, this book makes a valuable addition to our evolutionary history. Particularly important is the integration of the hard evidence from archeological findings with the soft evidence relevant to the emergence of positive emotions, including discussion of emotions in the wider animal world. This volume provides much important material that needs to be considered when integrating faith with science.

Reviewed by Roelof Eikelboom, Emeritus Professor of Psychology, Wilfrid Laurier University, Waterloo, ON.

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ON THE (DIVINE) ORIGIN OF OUR SPECIES by Darrel R. Falk. Eugene, OR: Cascade, 2023. 263 pages. Paperback; $36.00. ISBN: 9781666757019.

Did the evolution of *Homo sapiens* depend causally on divine activity? This is the daring question (!) which seasoned biologist, former president of BioLogos, and influential Christian scholar Darrel R. Falk explores in his most recent book. Arguing in favor of divine activity, Falk is careful to avoid both crudely interventionist and passively deistic frameworks. Instead, Falk seeks to honor and maintain the integrity and consistency of the created order (the regularity of its laws and processes) as well as a traditional Christian view of God's providence in which God is personally present and active within the cosmos, intimately related to his creatures and promoting their flourishing.

Falk's proposal focuses specifically on the unique quality of the social nature of human beings. Grounded biologically and emerging from a complex evolutionary history, which Falk narrates in fascinating detail, this unique relational nature enables human awareness of other minds (i.e., they can recognize, envision, and empathize with the consciousness, thoughts, intentions, and motivations of others) and grants them unparalleled capacities for communication and cooperation toward common goals. It also enables the kind of spiritual awareness that makes possible a relationship with the divine Spirit.

Falk continually draws his scientific narrative into creative dialogue with the Christian story, pointing out deep resonances and specific points of connection along the way. Christian scripture and tradition bear witness to a God whose fundamental nature is Love. This God lovingly and non-coercively draws and encourages his human creatures toward the qualities and dispositions of the divine

Spirit (e.g., love, joy, peace, patience, goodness, kindness, faithfulness, gentleness, self-control). God has been doing this from the beginning, before early hominins had any conscious awareness of spiritual things. Such qualities and dispositions would have had a beneficial effect on the flourishing of human communities and the survival success of their offspring (at least amongst those individuals and communities responding to the divine initiative; Falk concedes that many would not respond to the divine). In turn, offspring formed in this way would receive encouragement from their communities to seek the divine. It is then in this nuanced sense that human evolution unfolded within the broader context of a divine-human partnership.

It's important to note that Falk's love-response narrative offers theological perspective and meaning particularly to one central feature of human evolution: the emergence of the cooperative (and relational) human mindset. It is not centrally focused on questions related to theodicy or to the evil that pervades human history. Aggression and violence within creation are assumed; what Falk finds interesting is how and why human beings can rise above evil and embrace love and virtue. This said, Falk devotes much of chapter 6 to questions related to theodicy and to human evil and suffering.

At first glance, it might be tempting to charge Falk with identifying a gap in scientific knowledge (i.e., of human consciousness, relationality, agency, and love) and then smuggling God into that gap. But Falk is not seeking to present God as a substitute for scientific explanation; rather, he offers sustained theological reflection on the findings of mainstream science (i.e., paleoanthropology, archaeology, genetics, biology, and psychology/social psychology), thus providing an additional, compatible yet also more comprehensive level of description. As he puts it, "The task of Christian scholars is to build a bridge from what science has discovered so that those findings can be placed within the context of the broader reality revealed through the life, death, and resurrection of Jesus" (p. 121).

Chapter 1 puts forth a basic theoretical framework for the interdisciplinary discussion that follows, treating topics such as the nature and limits of science (including a critique of *scientism*), the philosophical coherence and rationality of theism, and the reasonableness of central Christian beliefs. Falk leans on leading biblical, historical, and philosophical scholars to discuss the soundness of "the God hypothesis" (Keith Ward), the resurrection (N.T. Wright) and divine identity of Jesus (Larry Hurtado), and the reliability of the gospels (Richard Baukham).

Chapter 2 focuses on the evolution of the genus *Homo*, from the first known appearance of hominins (fossils date to 6 million years ago) to the appearance (2.8 mya) and then predominance (1.9 mya) of *Homo*. A crucial part of this story is how a duplicated copy of what Falk calls "Gene3" (ARHGAP11a), taking place 5.2 mya, enabled larger brain sizes and increased sensitivity to the minds of others. (Falk notes that all humans and Neanderthals, but not the great apes, possessed this duplicated gene.)

Chapter 3 outlines the evolution of our species *Homo sapiens*, with particular attention given to recent studies identifying specific qualities that enabled *sapiens* to outlive and replace all other *Homo* species, namely friendliness, joint intentionality, and a cooperative mindset and behavior. Theologically, Falk notes that such beings would be increasingly equipped to interact with a divine Being whose nature is Love. He suggests a helpful analogy: just as child development is linked with an increasing awareness of the minds and needs of others, as well as an emerging capacity for spiritual awareness, so our species likely developed in parallel fashion as it evolved and matured. Falk then speculates that an emerging spiritual consciousness within early human communities (specifically of the triune God who is Love, though not necessarily known by name) would likely have had a favorable result, by encouraging (selecting) the aforementioned qualities. Given the phenomenon known as the "Baldwin effect," in which learned behavior and culture (e.g., use of tools, technology, etc.) can have evolutionary effects, Falk writes,

> If the cohesiveness of a well-functioning community was tightened because members were responding more sensitively to God's presence urging them towards goodness and love, it seems reasonable that such increased cohesiveness would alter the dynamic of the evolutionary process. (p. 90)

Chapter 4 wrestles with the negative psychological implications of the emerging theory of mind amongst early *Homo sapiens*. While this enabled an empathic and cooperative mindset, it would also bring about an acute self-awareness of mortality and suffering. Contrary to Varki and Brower's suggestion that this awareness gave rise to a propensity for what they call "reality denial" (i.e., spirituality and religion), Falk offers the theological suggestion that "humans were able to thrive as they developed a full theory of mind despite becoming aware of their own mortality, … [because] they were also becoming cognizant of the existence of the eternal" (p. 120). Neither interpretive option is simply a deduction from "the facts"; each makes inferences in light of prior philosophical presuppositions held on other grounds.

Chapter 5 further explores the cooperative mindset, likening its emergence to what we know about the domestication of animals from experimental research. Falk draws parallels between the various physical, cognitive, and psychological changes that occur in animal domestication, and similar changes that occurred in human evolution. While he admits that the parallels are not perfect, the comparison is nevertheless suggestive: "What *is* clear is that the *sapiens* genetic makeup has undergone a dramatic set of changes [similar to domestication] that have led to vastly improved communication skills and cooperation," as well as to decreased aggressive and destructive traits and behaviors (p. 152).

In the final two chapters, Falk turns his attention more fully to theological concerns, addressing questions and challenges related to divine providence in chapter 6 (including

questions related to theodicy and to the pervasiveness of human evil and suffering throughout history) and sketching out a biblical-theological narrative of creation to eschaton in chapter 7. Falk's theological reflections in these chapters are compelling and thought provoking. A minor point of criticism is that Falk's comments on the need for an original community of goodness and harmony (see pp. 226–32) are less compelling and seem to be based more on theological assumptions (i.e., a historical creation-fall-redemption paradigm) than the kind of robust evidence supporting the rest of the book's scientific and theological claims. The Old Testament (OT) itself does not draw the inferences and conclusions that later theological thinkers made about "creation and fall." Such theologizing traces back (indirectly, via Augustine and other patristic writers) to the Apostle Paul. In turn, Paul reads the Genesis creation texts, not simply directly, but rather through the interpretive concerns, questions, and assumptions of Second Temple Writings (such as 2 Baruch and 4 Ezra, which, unlike the OT, *do* draw creative theological conclusions from the Adam and Eve story in Genesis)—writings which Paul engages selectively. This complicates attempts to align modern scientific accounts of human origins with a historical reading of the Genesis creation narratives.

Overall, Falk's proposal is fascinating and illuminating, both scientifically and theologically. His thesis is convincing and important: it is fair and balanced, engages reliable scholarship, demonstrates nuanced interdisciplinary integration, and paints a compelling and even beautiful picture of the origins and emergence of the wondrous beings God created in his image. The book is well researched and deeply learned, valuable to students in both science and theology, yet accessible to a wider, thoughtful readership. I commend it enthusiastically and hope it stimulates much reflection and discussion.

Reviewed by Patrick S. Franklin, Associate Professor of Theology at Tyndale Seminary, Toronto, ON.

Psychology

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HOW DO WE KNOW OURSELVES? Curiosities and Marvels of the Human Mind by David G. Myers. New York: Farrar, Straus, and Giroux, 2022. 272 pages. Hardcover; $15.59. ISBN: 9780374601959.

David G. Myers is the author of numerous textbooks in the field of social psychology; his bibliography also includes several books which combine psychological perspectives and religious belief. Further, Myers has authored several books intended for a more general audience. *How Do We Know Ourselves?* would fall into this latter category.

Divided into three parts: Who Am I?, Who Are We?, and What in the World?, Myers's book is a compendium of forty short essay reflections on the human condition from a social psychology perspective. In Part I, chapters one through twelve introduce the reader to a vast array of psychological insight pertaining to the self. These reflections build a repertoire of concepts which draw upon research in the discipline. Myers's introduction and use of data and findings are adeptly incorporated into the narrative, and the many examples used in this section and throughout the book illustrate the points raised succinctly and with significant effect. It is in this first section that the book's subtitle is most clearly applicable, *Curiosities and Marvels of the Human Mind.* Myers takes us on a journey of self-discovery as he engages us to consider such concepts as implicit egotism (chap. 1), blindsight and implicit memory (chap. 5), intuition (chap. 7), hindsight bias (chap. 9), and self-esteem (chap. 12), to name but a few.

In Part II, chapters thirteen through twenty-seven, the focus shifts from the psychology of the "self" to that of our relationships. The opening chapter of Part II, "The Science of Humility" (chap. 13), is cleverly book-ended with its closing chapter essay, "Narcissism: The Grandiose Self" (chap. 27). Between humility and narcissism, we are treated to reflections on psychological research concerning birth order (chap. 14), how the mind processes traumatic events (chap. 16), group polarization (chap. 18), the social facilitation phenomenon (chap. 24), and the psychology of friendships (chaps. 25 and 26). Again, to name just a few.

For the last section Part III, chapters twenty-eight through forty, Myers broadens the focus of his social psychological scope to consider a wider social context. Starting with the perennial question of "How Nature and Nurture Form Us" (chap. 28), he leads us through discussion on the fear of dying (chap. 32), immigration and intergroup contact (chap. 33), a chapter titled "How Politics Changes Politicians" (chap. 35), confirmation bias (chap. 36), and "phubbing," which was a term I had never heard before, but have certainly experienced; it means that our personal interactions are distracted by a constant need to check our smartphone devices (chap. 37). Myers concludes in the last chapter, "Do Replication Failures Discredit Psychological Science?" (chap. 40), with a defense of scientific inquiry and a word of caution to an overindulged skepticism which can lead to out-and-out cynicism.

At the point of purchasing this book to review, I allowed myself a cursory glance at some of the reviews submitted by other customers. I noticed, to my initial surprise, several comments alluding negatively to Myers's occasional inclusion and social psychological analysis of current issues in the political arena. Upon reading the book, I certainly could identify those essays which, for some, may have been a cause of irritation, but this observation highlights a critical point and speaks to the relevance of this book. The science of psychology has much to contribute to our understanding of contemporary issues in the modern world. For application to current events and in his use of contemporary real-life examples, Myers has an embarrassment of riches to draw on. The collective experience of the COVID epidemic, social media use, and indeed, the US political landscape are all grist for the mill; these are necessary social issues that warrant social scientific scrutiny. *How Do We Know*

Ourselves? Curiosities and Marvels of the Human Mind provides this. In Myers's open, honest, and self-effacing style, he is able to illuminate hard data and scientific inquiry; he allows us to consider questions of real human and social significance from a disciplinary perspective.

The text is thoughtfully crafted and has an easy, accessible narrative flow, which introduces the reader to significant social psychological research, concepts, and theory. The style is conversational, and the author has chosen not to include exhaustive citations in the body of the text; there is, however, an extremely useful Notes section at the back of the book which provides detailed reference information to all sources used. This inclusion is particularly welcome given the short length of each of the separate chapters that manage, nonetheless, to introduce many pertinent sources that call for further exploration after piquing one's interest. Although *How Do We Know Ourselves?* is accessible and conversational, one would be mistaken to think that it lacks a certain depth. David G. Myers offers in this book the culmination of five decades of working in the field of social psychology; it is insightful, apposite, at times moving, and profound.

For people of faith, there is much to appreciate and reflect upon in *How Do We Know Ourselves?* Myers's own religious frame of reference is evident in subtle ways throughout the text. He seamlessly introduces, for example, the theological insights of such figures as C.S. Lewis (chaps. 13, 19, 21, 35), Reinhold Niebuhr (chap. 12), Pope Francis (chap. 26), and Saint Paul the Apostle (chap. 36). Myers does this, not in a didactic or preachy manner, but in ways that gently elevate the significance of faith for human flourishing and ethical mindfulness in our relationships.

How Do We Know Ourselves? Curiosities and Marvels of the Human Mind will appeal to a wide audience. For the casual reader interested in gaining social psychological insight on a range of pertinent subjects, this book will serve as a useful primer and steppingstone to the discipline. For educators wanting to add a text to an existing reading list which would serve to provide compelling examples of how course material could be applied, this book would be a useful addition. Lastly, Myers's work could serve as a guide to one's own self-reflection; on our own understanding of ourselves as we navigate the world.

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TECHNOLOGY

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SEX, TECH, AND FAITH: Ethics for a Digital Age by Kate Ott. Grand Rapids, MI: Eerdmans, 2022. 207 pages. Paperback; $22.99. ISBN: 9780802878465.

I have to admit that I approached the task of reviewing Kate Ott's latest book *Sex, Tech, and Faith: Ethics for a Digital Age* with a certain amount of trepidation. As an engineer by training and a faculty member at a Christian university by experience, I have some confidence in my ability to evaluate technology developments from a Christian perspective. However, I can claim very little expertise in the scientific analysis or ethical evaluation of human sexual behavior (beyond my own personal experience of being married for almost 35 years). As the product of a traditional Christian upbringing in which sex was rarely discussed openly, I admit a certain amount of squeamishness (although I hope not prudishness) in addressing the subject in the public sphere. The controversies in the church surrounding issues of human sexuality add additional complexity to this topic.

Ultimately, the courage to overcome these concerns stems from agreement with the author about the value of bringing these topics out into the open, as well as from the author's candid invitation to open dialogue. Ott's book-cover promise of "a values-based, shame-free, pleasure-positive discussion of Christian sexual ethics in response to a range of pressing issues in the digital age" is compelling. I suspect some Christians might be unaware of what's out there in the digital realm that could nourish or pervert our sexual desires. On the other hand, it's clear from the research presented in this book that many readers might be engaging with some of the digital topics and technologies uncritically, and in ways that are antithetical to Christian commitments.

The introduction sets the stage by noting the need for better understanding in two areas which might in the past have been viewed as non-overlapping: sexuality and digital literacy. Ott is aiming for a more nuanced understanding and integration of both. The approach to sexual ethics promoted in the book recognizes that, although Christians have traditionally focused their attention on sexual behaviors, relationships and values should also be centered as inputs in sexual decision making. Ott presents a list of values that attempt to capture the holistic aspects of human sexuality and provide guidance toward sexual flourishing (as opposed to focusing on boundaries). The goal to live out the call to love our neighbors and ourselves in the sexual realm is captured in the concept of "erotic attunement," which consists of an attentiveness to our sexual desires, the capabilities of our bodies, and the needs of others to cultivate healthy intimate relationships. With respect to digital literacy, the author emphasizes that experiences online and in the virtual world are still embodied experiences. This is a helpful corrective to the common assumption that interactions with software involve only our minds.

The book includes five chapters, each of which focuses on a particular sex-related digital technology topic. In each of these chapters, readers will find examples of available apps and products, along with analyses of some of the benefits and dangers associated with adoption of these technologies at the personal and societal level. Ott also provides some concrete case studies that help to illuminate the questions and assumptions surrounding sex-tech use.

Chapter 1 focuses on digital pornography. Two key effects of digital technology advances related to online

viewing of sexual activity are highlighted: (1) the availability of increasingly realistic and explicit depictions, and (2) the increasing ease of anonymous viewing. While some Christians might argue that depictions of nudity or eroticism can express appreciation of the beauty of God's creation, the digital experience tends to promote consumption, rather than appreciation. Despite reporting results from research studies that clearly identify the tendency of online pornography use to contribute to compulsivity and sexual dysfunction, Ott concludes that "online pornography use can have positive and negative effects on our sexual embodiment" (p. 34). She includes as a positive the potential for pornography viewers to educate themselves about sexuality and promote creativity (part of the pursuit of erotic attunement). While the author emphasizes here and in other sections of the book the potential for use of digital technology to shape us in ways that are not always easy to discern, I'm not certain that she takes this potential seriously enough in making recommendations. As an engineer who has been trained to identify and manage risks, I wonder if the value of avoiding harm (to individuals and society) has been weighted appropriately in the overall evaluation.

The second chapter considers the world of online matchmaking apps. Although many believers already use these tools to find partners and might view them as innocuous, the author points out the problems with the criteria and algorithms used to sort and match people. The standards of beauty and status markers that are promoted by online dating sites may be biased against minorities. Here, Ott describes the goal of forming a lifetime marriage partnership as a "myth" that is generally not in alignment with the values that contribute to erotic attunement. She also points out that using these apps for casual "hookups" is unlikely to promote erotic attunement.

Chapter 3 lays out the dangers of digital technologies that enable individuals to threaten others and invade their privacy. Ott is correct to point out in this chapter the ways that some aspects of Christian theology and practice have been used in the past to justify intimate violence and relationship abuse. Believers should be encouraged to increase their awareness of the potential for abuse of power in the digital realm and commit to promoting privacy protections and advocating for victims of online bullying and stalking.

The fourth chapter explores sex in the virtual world. The author describes examples of online universes and suggests that our avatars in these digital domains might be ethically used for exploration of sexual identity as long as the values of love and honesty are prioritized in these interactions. She can foresee a time when virtual reality will allow humans to interact in ever more "realistic" ways with others and with artificially intelligent entities in these constructed worlds.

In chapter 5, the analysis of technologically mediated sexual activities is extended to human interactions with robots. Ott sees robot companionship as potentially having positive influences on sexual health for some people. I would propose that the extent to which we might consider robots as participants in human sexual activities depends on whether we categorize them as tools (just more-sophisticated sex toys) or as potentially sentient persons. Either way, believers who situate sexual activity within a normative framework that directs it toward a lifelong committed relationship between two consenting human beings will be far less accepting than Ott is in this chapter. It seems inevitable that sex robots will be designed and made available to the public, and while Ott argues that this technology could be designed to encourage the development of Christian virtues in its users, I suspect most Christians will remain unconvinced.

In the end, reaction to the author's perspectives on sex-tech will depend strongly on the reader's prior personal experience and understanding of biblical norms for sex and marriage. Those who have struggled with gender identity and stereotypes, same sex attraction, and involuntary singleness, as well as those for whom the effort of trying to conform to overly constrictive expectations around sexual activity has been damaging to their mental health, will certainly be open to the progressive values championed in the book. On the other hand, those who hold that sex is intended only in the context of a lifelong covenantal marriage will be resistant to many ideas in this book. I did not find the tone of the book to be particularly conducive for convincing "traditional" Christians to be more open. Although Ott's stated goal is to avoid shaming and to honor a range of perspectives, she applies that goal unequally. She seems to assume that any Christian understanding of sexual ethics that attempts to set boundaries must be directly opposed to erotic attunement and be motivated by the desire to control the behavior of others.

Read this book to expand your horizons and stimulate reflection—both on the place of sexuality in our Christian walk and on the risks and opportunities for integrating technology into that sphere of human flourishing. But keep in mind that, ultimately, the only way to banish shame, particularly around our tech-enabled sexual behaviors, is not to banish all boundaries, but to discern God's will for this area of life and to be reminded that our Savior Jesus Christ died so that we all might be considered blameless for the things we get wrong.

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THEOLOGY

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THE BEGINNING AND END OF ALL THINGS: A Biblical Theology of Creation and New Creation by Edward W. Klink III. Downers Grove, IL: IVP Academic, 2023. 208 pages, including discussion questions and indices. Paperback; $24.00. ISBN: 9780830855223.

Whereas many people tend to associate the doctrine of creation with the origins of the world, Edward Klink is con-

cerned to form a theology of creation that envelops all of scripture. Klink is senior pastor of Hope Church, Roscoe, IL, and formerly on the faculty of Talbot School of Theology, Biola University.

Throughout the introduction and ten chapters of the book, Klink presents an insightful biblical theology of creation with suggestions to engage nature, culture, and life. In the introduction, he emphasizes that he does not want to dwell on the debates about the first six days of creation; instead, he wants to show that the whole Bible tells the story of creation and that this story is at the core of the gospel itself.

In chapter 1, "Creation's Covenant," Klink emphasizes Genesis 1–2 as the foundation of the rest of the biblical story and its message. Creation is designed to be the temple of God, and God has made a covenantal claim on his creation, with humanity assigned to be the prophets, priests, and kings of creation.

"Creation's Curse," the second chapter, discusses the theological meaning of Genesis 3. It reveals the cause and fact of the human fallen condition as well as God's gracious provision of the sacrifice of animals for clothing in Genesis 3:21.

Chapter 3, "Creation's Confusion," begins with St. Augustine's *The City of God*, from which Klink points to Abraham as the founder of the city of God and to Cain as the founder of the city of humanity. Humanity loved themselves and not the Creator, and so placed its trust in human achievement and effort, rather than in God. Surprisingly, in this chapter Klink did not comment on the significance of Noah's Flood.

New Creation is especially emphasized in chapter 4, "Creation's Country." God begins the new creation in one person, Abraham, to whom God says, "In you shall all the families of the earth be blessed." Klink designates Abraham as the second Adam because the redemptive new work was through Abraham, and his descendants are the new humanity (p. 73). Klink's interpretation of Abraham as the second Adam does not preempt the way in which Jesus serves as the second Adam according to the Apostle Paul.

In chapter 5, "Creation's Cry," Klink once again employs the Adam motif, this time identifying the Jewish people as an interim Adam. They served as God's prophets, priests, and kings in the Old Testament (OT) period (p. 84), but they failed the assignment, as indicated in Isaiah 43. Then at the end of the OT period, the prophets cried out to the Lord for a new work of God. Abraham and the Jewish people are an interim Adam in the sense that their Adam-derived roles of prophets, priests, and kings were replaced by Jesus and the church.

The next chapter, "Creation's Christ," has two main sections: Jesus, the revelation of God, is the purpose for creation; he is the Gardener (so Mary Magdalen thought) in "the second garden" (John 19:41, at his resurrection). Klink says the plotline of God's creation can be stated as the story of three gardens: the first garden at Eden, the second garden at Easter, and the third garden in Revelation 21–22. Following his commentary on the Gospel of John, Klink identifies Jesus as the cosmic temple of God and the revealer of the physical design of creation.

Chapter 7, "Creation's Cross," explains that Jesus is the inauguration of the new creation, and the new life in the Pauline second Adam (Jesus) is God's provision. Then follows, chapter 8, on the church—"Creation's Congregation." Klink describes the church as the true Adamic humanity and descendants of the second Adam. She is also the temple of God in Christ.

Chapter 9, "Creation's Commission," contends that for humans to bear the image of God, and to be fully human, they must be Christ-centered. In an interesting perspective, the Great Commission of Mathew 28 is interpreted as being given for the cultivation of creation. The tenth chapter, "Creation's Consummation," concludes with the new creation, which is the re-creation of all things. In particular, the last two chapters of Revelation reveal the glorious consummation of God's creation project.

In the Conclusion, Klink offers pastoral reflections. He intends the book to correct the truncated and deficient views of the doctrine of creation that are commonly found today, and to emphasize that the end of all things is a new creation. In Klink's view, the concept of a new creation has wide implications, and should influence our spiritual life, the Christian life, our view of the earth, and culture.

Each chapter ends with pastoral insight, practical application, and biblical encouragement for readers to live as God's people of the new creation. The author's ability to develop new connections of theological significance is fully displayed in this volume, particularly through his commentary on the Gospel of John. On the other hand, Klink's interpretations of the biblical events sometimes appear puzzling, such as interpreting Abraham as the second Adam, and the Jewish people as the interim Adam. This kind of unusual interpretation is not new with Klink, however, as it appears part of a recent trend of interpreting many OT persons and events as types of Christ (see, e.g., James Hamilton Jr., *Typology: Understanding the Bible's Promise-Shaped Patterns*). In his grand narrative, Klink does not comment on Noah's Flood, nor the final cosmic cataclysm (2 Peter 3:10; Mark 13:24–25; Rev. 6:12–14). In tracing the theme of creation and new creation throughout the Bible, the book fulfills the purpose of the Essential Studies in Biblical Theology series, which is to describe the grand storyline of the Bible. This volume can serve well the needs of beginning students of theology, church leaders, pastors, and laypeople.

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