



Luke J. Janssen

## Article

# Are Global Disasters the Result of Original Sin or Part of Our Training as Co-regents?

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*Life on Earth has long been plagued by global calamities: pandemics, environmental disasters, climate change, and species extinctions. Humans have been witnesses and even victims of some of these; too often, we have contributed to the problem. Some people draw a direct causal link between those catastrophes and the third chapter of Genesis: our sinful nature and original sin. But perhaps we should also consider drawing another link coming from the first chapter of Genesis in which human beings are commanded to subdue and have dominion over a very good creation that had change, innovation, exploitation, and even death built into it. Humans were not yet up to that task: we were never omnipotent nor omniscient. But God wanted us to learn how to fill that role, and Jesus again redirected us into it when he inaugurated the arrival of the Kingdom of God on Earth.*

Keywords: original sin, natural evil, moral evil, creation, human origin, image of God/*imago Dei*, human technology, species extinction

When imagining or describing creation as it might have been seen on day eight—the day after it had been completed and God had rested—Christian believers of many theological and denominational stripes envision much the same thing: humans living in blissful harmony in a beautiful ecosystem in which there is no disease, suffering, or hardship. Many will add to this picture the fact that there was no death nor predation. Many will further add to this picture the idea that humans existed in some kind of state of perfection, although the parameters around that become less well defined: whether we were immortal; our inherent sinful state

or sinful nature; the extent of our ability to “subdue and have dominion” over the rest of creation. Most pertinent to the argument of this article, though, is that they will also add to this picture the idea that the status quo would not have changed—this blissful Garden of Eden existence would have continued unaltered—were it not for some kind of human decision and action that then spoiled the tableau and sent creation on a downward trajectory.

This worldview goes a long way to explaining many of the evils and tragedies that now plague our existence today. It is used to tie our sinful nature to even the largest issues which afflict on a global scale: global warming, species extinctions, all forms of pollution, and, for some, even COVID-19.<sup>1</sup> To be clear, I am not questioning whether humans play any role, even a major and/or causal role, in these problems. I am instead calling

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attention to the line that some draw between these problems and “the Fall in the garden” and our sinful nature.<sup>2</sup> In particular, I would like to look more closely at that line of causality: its origin and its target. Is our conception of the initial state accurate, or is it filtered through some kind of metaphorical theologically rose-colored glasses? Could the problem be also rooted in Genesis chapter one (the very *first* mandate given to humans) in addition to Genesis chapter three (our sinful nature)? And although our discussion is relevant to evils in the world generally, an emphasis will be put on the present global “evil” represented by COVID-19.

## Humans and Evil

There can be no dispute that there are many evils in this world. Theologians and philosophers have found it useful to distinguish between natural and moral evil.<sup>3</sup> Natural evils include tragedies which appear to be completely outside human causality (hurricanes, earthquakes, asteroid bombardments, a tree falling on a picnic party), while moral evils result from a choice or decision which goes against some moral code. However, these two overly simplistic delineations do not cover all the possibilities, in part because both are open to interpretation: they are very fuzzy. For example, defining something as a moral evil depends upon what moral code is said to have been contravened. Causing human death is condemned within the moral codes of many religions and societies. Nonetheless, both have learned that it becomes necessary to distinguish between intentional versus accidental killings (murder and manslaughter, respectively), killings sanctioned by the state (wars between countries, capital punishment of criminals, do-not-resuscitate orders), and even the definition of “human” (some see this as being at the heart of the debate over abortion, and might also become part of the discussion around euthanasia). Some even include within that calculation the possibility that someone did not actually do the killing but had it completely within their power to have prevented it: being fully aware of a potentially deadly situation (such as poison in a food, or a live electrical wire on the ground), and being fully able to inform the other person and/or to even intervene, but then choosing

to do absolutely nothing except watch the other’s demise. This then allows some to consider a natural disaster such as the 2004 Indian Ocean earthquake and tsunami—which struck on Boxing Day, resulting in the death of hundreds of thousands, countless injuries, and tremendous destruction across a quarter of the globe—and call it a moral evil for which God is responsible.<sup>4</sup> Similarly, questions like these come up when discussing the slaughter of Canaanite women and children attributed to God’s command: some dismiss any qualms on the grounds that “God’s orders are always just,” while others counter with the Euthyphro dilemma in which Socrates asks: “Is something right because God commands it, or does God command it because it is right?”<sup>5</sup>

Questions like these complicate many discussions of “natural evil.” Our encounter with COVID-19 has spawned considerable discussion over theological and philosophical aspects of creation gone awry. One frequently asked question essentially boils down to the age-old problem of theodicy: “how could a good God allow this evil into the world?” A few different answers are often given for this. One approach is to shift the blame from God to us humans. The point is made that God made everything good—in fact, “very good”—and left humans in charge, but we rebelled against God and spoiled all of creation. As a result, death, disease, predation, and COVID-19 are all seen ultimately as products of our own free will choice and not God’s original plan.<sup>6</sup> That explanation is sometimes given to explain certain disasters which others deem to be completely outside human causality. For example, several high-profile Christian leaders have publicly linked natural disasters such as Hurricane Katrina in 2005 and HIV-AIDS to societal positions on abortion or homosexuality.<sup>7</sup>

The blame for these problems and many others is attributed too quickly and easily to humans, whereas the possible causal role(s) for other factors outside our control are too often downplayed or even excused (interestingly, even nonbelievers will pile on here, although without invoking theological concepts such as “original sin”). For example, we humans have indeed been responsible for species extinctions as we expanded across the continents and ate certain

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species to death, made the ecosystems of others completely nonviable, introduced other invasive species, and in many other ways made it impossible for them to live. We have also contributed to global warming: through the burning of fossil fuels, clear-cutting and burning of forests and jungles, and overemphasizing methane-producing animals in our diet.<sup>8</sup> In fact, some have suggested the naming of a novel geological period—"the Anthropocene epoch"—the period in Earth's history when humans changed everything.<sup>9</sup> But our planet has been going through warming and cooling cycles for millennia, long before we appeared on the scene.<sup>10</sup> The peaks and troughs in Earth's pre-human climate have also caused massive extinctions of species and remodeling of whole land masses.<sup>11</sup> Asteroid bombardments of Earth<sup>12</sup> and massive volcanic eruptions<sup>13</sup> have also disrupted Earth's climate and caused utter upheaval of the biosphere, including species extinctions and total ecological turnover on a global scale.<sup>14</sup> Nevertheless, some would place the extinctions and geological/climate changes that we see today squarely on the shoulders of humans.

Let's consider a second example. We are not the first species to have completely altered the composition of Earth's atmosphere. Free oxygen was almost absent until certain bacteria and *Archaea* acquired the ability 3.5 billion years ago to photosynthesize, freeing them to exploit a natural resource for their own benefit and producing oxygen as a waste product.<sup>15</sup> This "pollution" was a detriment for anaerobic organisms, which had to either evolve protective and compensatory antioxidant mechanisms or go extinct.

The invasion of plants onto barren land masses in the Precambrian period, roughly 850 million years ago, is a third example. Plants eventually led to massive remodeling of the land and the climate.<sup>16</sup> The composition of the surface layers was forever altered: certain areas experienced greater erosion (when roots split rocks apart and acidification of ground water dissolved vulnerable rock layers), while other areas had less erosion and became bogs; vast regions became cooler because of the altered albedo.<sup>17</sup> Algae are now recognized to be accelerating the melting of glaciers by also decreasing the albedo of those ice masses.<sup>18</sup> These naturally caused geological changes are considered to be beautiful; but, to whatever

extent similar changes can be attributed to humans, the latter are seen as detrimental and destructive.

Fourth, some hypothesize that asteroids could have contributed to the seeding of life on Earth. Irrespective of whether one sees this as an atheistic explanation for the origin of life on Earth or as a mechanism that God could have used to introduce that life,<sup>19</sup> both groups would see this as a "good" thing—but would see humans accidentally or intentionally introducing microbes onto foreign planets as completely anathema and "wrong."

So, humans are not solely responsible for global changes that have resulted in species extinctions, ecological disruption, and remodeling of the planet. The oxygenation of Earth's atmosphere by bacteria and *Archaea*, the modifications caused by plants invading land masses, and the chaotic changes caused by asteroid impacts are all welcomed as good things because they led to the life forms that we value, not the least of which includes the human species. Yet, comparable changes caused by humans are often seen by Christians to be a result of our sinful nature and therefore evil,<sup>20</sup> and by nonbelievers as wrong and spoiling nature, even if the original intent of those anthropogenic changes was beneficent or at the very least relatively benign.<sup>21</sup> Why the double standard?

Again, some will say that this bias is owed to the fact that we humans are unique in that we have free will and can make choices that have moral impact. Nonliving things like asteroids do not choose. Nonhuman species do not seem to have a morality. And it is true that our sinful nature does certainly contribute to many moral evils in the world. It has contributed to certain species extinctions (for example, the indiscriminate slaughter of passenger pigeons and the dodo) and near extinction of many others (for example, bison, not only out of a sadistic pleasure of killing but also as a means to solve the "problem" of indigenous peoples).<sup>22</sup> Our sinful nature has also contributed to certain environmental disasters: we carelessly discard toxic chemicals into waterways or trash onto the sidewalk, simply because it is too expensive or takes too much effort to dispose of these responsibly.

However, our sinful nature is not always at the heart of the “evils” in our world. There is another important consideration, one which is missed when the line of causality is drawn only from Genesis chapter three. I would advocate another perspective, one drawn from the *first* chapter of Genesis. One that still examines human history in the light of the creation story in the book of Genesis, but is also flexible enough to accommodate a broader view of time and process that science brings to this matter. I would therefore invite the reader to reconsider assumptions that may have been made, albeit subconsciously, about the unchanging nature of nature. What is meant by a “good” creation? And most importantly, what does the first chapter of Genesis tell us about how humans should interact with that good creation?

### Redefining a “Good” Creation

Death, even on a massive scale, has always been endemic to our existence on Earth. This is what science tells us. We have fossil evidence of predation, starvation, disease, and carnivorous acts going back millions of years,<sup>23</sup> and even what looks like evidence of a murder going back to the middle Pleistocene era.<sup>24</sup> While young earth creationists might see those outcomes and that fossilized evidence as aberrant distortions of the original creation brought on by the Fall,<sup>25</sup> they may not appreciate that certain forms of death are normal processes in the miracle of life. The entirety of our diet—irrespective of whether one is strictly vegan, vegetarian, or enjoys animal products of all kinds—entails death; attempting to side-step this by redefining what constitutes “life” or “living,” or by drawing a bold line between plant and animal,<sup>26</sup> is playing with semantics.<sup>27</sup>

The entire process of reproduction—from the generation of gametes, and the premature abortion of incorrectly fertilized and developing embryos, to the full and proper development of the fetus— involves countless millions of cells being designated to die, sometimes after playing certain critical roles, through a carefully orchestrated sequence known as apoptosis, or preprogrammed cell death.<sup>28</sup> Similar mechanisms are involved in repair of injured tissue. Many species must release an overabundance

of seeds or hatchlings—hundreds or even thousands from a given reproducing pair—in order for just a few progeny to survive to maturity and spawn the next generation. The vast majority of the rest of the progeny are killed by disease, starvation (as they compete with each other for limited resources), predators, and natural accidents. Even the idea that humans were innately immortal and never intended to die (which idea does not appear in the opening chapters of Genesis where a tree of life was needed to extend life) does not seem to adequately anticipate the unsustainable population boom that would result, given that they had been commanded to be fruitful and multiply.

In these ways and many more, death has always been necessary, and even “good.” A perfect example of this has been documented in Yellowstone National Park.<sup>29</sup> For over a century, wolves had been exterminated in order to benefit farmers and hikers. But the absence of predation led to the elk population skyrocketing and becoming increasingly unhealthy; that in turn led to the groves of aspen, willow, and poplar being nibbled to the ground (since greater numbers of elk were leaving the safety of high ground); that in turn removed nesting places for songbirds and a food source for beavers. The rivers flowed faster, riverbanks eroded, and marsh-life was disappearing. Reintroduction of wolves, against much public opposition, saw the reversal of *all* the changes mentioned above. The exact same sequence of events was noted in Zion National Park (Utah), Wind Cave National Park (South Dakota), Yosemite National Park (California), Olympic National Park (Washington), and Jasper National Park (Alberta) when the top predators (wolf, cougar, lynx) were decimated or eliminated, and then reintroduced.<sup>30</sup>

Also, in contrast to an unchanging status quo that some envision after God pronounced creation to be “very good,” change and innovation have always been ingredients for the “good” of life on Earth. A major driver of biological evolution is genetic mutation and reorganization. Natural selection then sifts through those changes for increased reproductive success. At one time in our history, “dinosaurs ruled the world,” a diverse and beautiful ecosystem that

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blossomed for millions of years. This monarchy was overthrown and a new and entirely different ecosystem, with its own stunning beauty, took over. Two hundred and eighty million years ago, the Antarctic was a vast leafy forest,<sup>31</sup> but now it has an entirely different beauty—the hues and lines of that icescape are stunning—and the story of the emperor penguins raising their brood through the southern winter is one of the most powerful and compelling I have heard. Who knows what creation might look like one hundred thousand or a million years from now if the evolutionary process continues (and what reason do we have to think that it will not, given that we are already many billion years into our journey)? Who knows what “humans” will look like? Will we still have strong reason to think that we are the pinnacle species?

A third key ingredient for the “good” of life has been exploitation: living organisms have a tremendously long history in taking advantage of every new natural resource they encounter. For example, certain bacteria have recently acquired the ability to metabolize plastic (a man-made substance which did not exist a few decades ago),<sup>32</sup> and bacteria and fungi colonize the darkened interior of aluminum fuel tanks of modern jets.<sup>33</sup> Sometimes this exploitation involves organisms adapting their environment to their own interests at the expense of other species (aerobic bacteria during the Precambrian era, beavers building dams), or expanding to unsustainable population levels leading to catastrophic crashes (the reciprocal cycles of fox and lemming populations in the high Arctic<sup>34</sup>).

### Refocusing the Creation Account

In that first book of the Bible, God is presented as creating the *cosmos* and all life on our planet. Others have pointed out how the days of creation are arranged in two panels: one panel depicting God creating spaces for living things during the first three days, and the other panel showing God filling those spaces with living things. But what is sometimes missed in depictions like these is the element of causality: the causal agent(s) and causal processes are quite different between those two panels.

Yes, ultimately God is the Creator: the Prime Mover. And God is indeed the sole causal agent in the first panel. The causal act itself has a somewhat *passive* tone here (I am not using that descriptor in a purely grammatical sense). God simply speaks them into existence: “Let *there be*,” and then “*it was so*.” The other panel, though—the filling of those spaces—sounds more like an *active* process, and the acting agent is creation itself. God says: “Let the *earth put forth* vegetation”; “Let the *waters bring forth* swarms of living creatures”; “Let the *earth bring forth* living creatures according to their kinds.”<sup>35</sup> God is using the things that he had already created as starting materials and active agents in the creative process. He commands preexisting materials to bring forth—transform into?—newer and more complex things, rather than “passively” speaking these life forms into existence. This sounds like a great way for an ancient Semitic author to understand and describe chemical and biological evolution.<sup>36</sup>

The creation of humans is different ... and yet similar. God takes a special interest in fashioning humans with his own hands—“Let us make humanity in our image”—and breathes into them the same breath of life that he gave to all the other animals. But once again he does this using preexisting material: dust from the ground. The same ground that had first put forth vegetation, later brought forth animals. This too sounds like an ancient paraphrasing of chemical and biological evolution.

Countless books have been written on the subject of what is meant by our being created in the image of God. It is beyond the scope of this article to fully unpack that theological concept; several others have already done so.<sup>37</sup> However, I think there is merit in dividing this discussion into two quite different camps. One camp interprets this concept from a Greek philosophical point of view: that the *imago Dei* pertains to cognitive abilities which distinguish us from all other living species.<sup>38</sup> Those abilities include reason, emotion, will, creativity, planning, and many others which we attribute to our more highly developed brains (or so we would have ourselves believe). The other camp interprets this more from an ancient Semitic (Hebrew) worldview, which

would presumably be the one held by the original human authors of Genesis.<sup>39</sup> In that ancient world, societies would build a temple and then install a statue in it to represent their god, or a statue representing the king who, in turn, represented that god to the people. That image represented the rule and authority of that god or king. So, this second camp of theologians sees the creation accounts in Genesis chapter one as referring to YHWH building a temple and then installing humans into that temple as his image—living images: his representatives or ambassadors—to extend his dominion over creation.

Their role was not just a passive one as nonliving statues, but a very active one: they were given the mandate to subdue the earth and have dominion over all creation. There are widely varying views on what is meant by that mandate, and a full hermeneutic of that too is beyond the scope of this article.<sup>40</sup> But many concur that it implies that creation was not yet finished—that it needed to be fully realized, developed, and even tamed—and that YHWH was inviting humans to participate in that process. Kristin Johnston Largen has warned against the danger of overemphasizing the distinctiveness of humans and “instrumentaliz[ing] the rest of creation, as though nonhuman animals and the natural world only have value insofar as they support the flourishing of humankind.”<sup>41</sup> Instead, she writes about a “deep incarnation”: Christ taking on material form in order to enter into creation and unite it with God, and inviting humans to share in that process (below, I will link this invitation to Christ’s prediction of what his followers will later do in his name). Others emphasize the distinctiveness and rule of humans over the rest of creation, even in an authoritarian sense. Beisner, for example, sharply contrasts YHWH’s command to “the human” in the second chapter of Genesis to “cultivate and keep” the garden against the command given to humans collectively in the first chapter of Genesis to “subdue and rule” the earth.<sup>42</sup> Within this wide spectrum of views, though, there is general agreement that the author(s) of Genesis are telling us that God uniquely distinguished humans collectively as his representatives. I will refer to this as our role as co-regents with God, extending his dominion over creation.<sup>43</sup>

However, it is crucial to point out here that nothing in the text of Genesis indicates that we humans were perfectly able to subdue the earth, nor ready to have dominion over all creation. I am not referring to our later act of rebellion described in the third chapter of Genesis; that is indeed a fundamentally important aspect of Christian theology, but not the primary focus of this article. Instead, in the first chapter of Genesis, God left us humans with a very great task, but nothing in the text indicates that we were omniscient or omnipotent: our knowledge and abilities were both *quite* limited. This is indeed a characteristic of our limited and frail human nature, but that does not mean that we have to wrap it up together in a *sinful* nature, nor does it have to be linked to a *fallen* nature (the Fall had not yet happened). It is at this point that the traditional reading of the Genesis account has too often limited our imagination. It has been too easy to take from this account an image of a small group of humans, even a primal pair, quietly tending a small area of land, living in harmony with nature and blissfully in control of it, or at least of the small swath that we were tending.<sup>44</sup>

But the broader view of time and process given to us by science paints a very different picture. Humans have *always* been overwhelmed by creation: “thorns and thistles” have *always* been subverting our efforts.<sup>45</sup> We have *for millennia* been dwarfed by the powers of nature, and have *always* struggled even to survive. This is what science tells us. But we also have scientific evidence that humans have been on a trajectory of learning that stretches back hundreds of millions of years, developing tools and technologies which would distinguish us from the rest of creation and enable us to have dominion over it.<sup>46</sup>

If we overlay the views given to us from the ancient book of Genesis and from modern science, we get a more stereoscopic picture. Both sources tell us that humans arose from preexisting materials through a process that overlaps that which brought forth the animals. God was ultimately behind that, but used nature to do his bidding. God also recognized (foresaw?) great potential in our species: the capacities for love, compassion, appreciation for beauty, creativity, foresight, wisdom, understanding, technology,

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and so many other qualities that he delights in. And he chose to work through us, and with us, to build something even bigger and better. A wise and compassionate parent handing over the family business to their children starts them off with smaller responsibilities, lets them practice their skills and develop confidence, and gives them valuable experience before handing it over to them completely. That parent fully recognizes and accepts that the process takes time and that the children will make mistakes, but the parent also trusts that those errors will prove to be learning experiences.

### Growing Pains

We humans have been about the business of subduing and taking dominion of creation for hundreds of thousands of years, but only in the past few thousand years—arguably only the last few hundred years—have we reached a point in our evolutionary journey at which our efforts have global impact. The Industrial Revolution is said to have inaugurated our role in global warming of the planet.<sup>47</sup> In fact, we are beginning to have a harmful effect beyond the atmosphere of our planet. The plethora of satellites and “space-junk” orbiting our planet is creating the potential for collisions and debris raining down on the planet. There is a growing concern that our probes sent to other moons and planets in our own solar system may introduce Earth-life to those pristine celestial bodies, raising the possibility of competition and even displacement of any life forms that may already be there.

We have been trying out new things, learning from mistakes, and enjoying successes. Recall the “perfect example” I shared above in which we learned about the crucial role played by carnivores within ecosystems, and the superior outcome of controlling (“subduing”?) rather than eliminating those keystone predatory species. In the same way, we are learning from our mistakes made with fossil fuels and from the solutions offered by green energy: as battery technology and electrical infrastructure increase, electric mobility will out-compete its internal combustion engine counterparts. The destructive aftermath of introducing foreign invasive species into

ecosystems has opened our eyes to the greater value in expending tremendous energy to control those.<sup>48</sup> Likewise, the mistakes of using pesticides and herbicides have pointed us to the potential of using more ecologically friendly approaches which favor more controlled outcomes, or even more acutely targeted, genetically based approaches such as releasing sterilized mosquitos to control malaria and other diseases. DDT (dichloro-diphenyl-trichloroethane) was developed in the 1940s to combat malaria, typhus, and the other insect-borne human diseases with no awareness whatsoever of its potent carcinogenic and teratogenic effects, leading to horrible birth defects.<sup>49</sup> That experience taught us to explore a wide range of biochemical and physiological effects of new molecules being developed; this is why clinical studies now take so long, are so multistaged, and so expensive. It is also, in part, why all chemicals are now sold with extensive data safety sheets, and advertisements often feature an intimidating list of side-effects (albeit often in very small print at the bottom, or voiced in the background at very high speed). And it also taught us to explore other avenues, such as using biological approaches to control the mosquito vector (as already commented upon above).

Yes, humans will make mistakes. We will inevitably create yet other problems with our new technologies and projects. Again, we are not omniscient and omnipotent. But we are learning; we are growing into our role as co-regents with the One who is. And we can turn our technology toward the greater good. Like the beaver, we will build dams to benefit us; but we will also learn how to mitigate the damage done by the water that pools behind the dams, how to rescue the species which are threatened by the rising waters, and how to create a new ecosystem. We are learning how to use our technologies to care for natural problems which are not evidently of our own doing. For example, novel anticancer therapies, based on approaches developed for use in humans, have been adapted to treat Tasmanian devils for an aggressive tumor disease which otherwise threatened the extinction of that species.<sup>50</sup> In addition, reproductive technologies and wildlife management practices are being used to bring various species back from the brink of extinction.

## COVID-19

We have indeed had many pandemics in the past, and we have also made many mistakes in dealing with them.<sup>51</sup> Through those experiences, we have learned a great deal about our biology, how to deal with the causative agents (viruses, bacteria), and how to manage afflicted individuals and vulnerable populations. Now we are repeating that learning process as we deal with this latest pandemic. In the space of one year, we moved from declaring a pandemic<sup>52</sup> to developing several vaccines with very high efficacy against it. Events like COVID-19 are part of our tutoring and apprenticeship. I am not claiming COVID-19 was sent or divinely directed for that purpose, any more than that the wise parent, whom I referred to above, might actively orchestrate disasters and upheavals in the family business simply “to teach the kids a lesson.” Instead, I am saying that God created a world full of organisms taking advantage of available resources and possessing the capacity for change, which can be good, productive, and beautiful while, at the same time, carry with it the risk of sometimes leading to imbalances, extinctions, and other such problems. In the March 2021 issue of *Perspectives on Science and Christian Faith*, Christopher Southgate referred to this “package deal” understanding of the natural world.<sup>53</sup> Into this changing and adapting creation, God has called us into co-regency and dominion to develop the abilities and capacities needed to subdue that creation. In that sense, these are learning opportunities, and it is wise to take full advantage of them.

There is debate as to whether humans are, at least in part, responsible for COVID-19. I am not referring to baseless claims that the virus was intentionally engineered but, instead, to the possibility that inadequate management of natural resources brought humans into contact with the bats that carried the virus, and that selfish interests (resistance to social distancing and mask-wearing, vaccine hesitancy) won out over the recommendations of physicians and scientists, resulting in accelerated and more-prolonged spread of the disease. We have learned much from this pandemic: the value of contact-tracing and social-distancing, entirely novel approaches to the control and treatment of viral diseases (the

latter may even revolutionize medicine, including the treatment of cancer<sup>54</sup>), and the value of caring for our neighbor—sharing the vaccine with poorer and technology-deficient countries—not only for reasons of morality, compassion, and expression of religious faith, but also out of motivation for self-preservation.

## Human Technology Is Part of Our First Mandate

Theologians have identified within the Hebrew scriptures numerous iterations of order being created from disorder: in the first creation of the cosmos, in the story of Noah’s Flood, in the establishing of the nation of Israel, and in the building of the first and second Jewish temples. Throughout those writings, there is the promise of a final state—the kingdom of God—being finally established on Earth. That kingdom is characterized by peace and harmony, the absence of suffering, the desert blossoming like a crocus (Isa. 35:1), and the lame walking and the blind seeing (Isa. 35:1; Isa. 35:6). This theme is picked up again in the New Testament, when Jesus announces the imminent arrival of that kingdom (Luke 4:17–30). Once again, humans are left in charge to found the Christian church and fully unpack what that kingdom will look like (Mark 16:15). It is interesting here that Jesus sends them out to “preach the gospel to the whole creation” (some translations have here “to every creature”): the gospel is intended not only for humans to hear! Within this handover, he pointed to the works that he did as evidence that it was the Father working through him and said: “Whoever believes in me will do the works I have been doing, and they will do even greater things than these” (John 14:12).

In the overly literalist phase of my spiritual journey decades ago, when I read biblical passages too superficially, I naïvely recalled the miraculous things that Jesus was doing—raising people from the dead, walking on water, commanding storms to stop and mountains to throw themselves into the sea—and pictured us doing even bigger things than that. To my disillusionment, practical reality and history always seemed to pale in comparison to those theological expectations. Recently, I have considered the



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possibility that Jesus meant “greater things” in the sense of our finally beginning to fulfill God’s first command to us, to be his representatives toward all creation, and in the sense of our enabling the full arrival of the kingdom of God by bringing healing, food, water, housing, education, peace-keeping, and liberation to those in need.

Jesus modeled these actions in a few small parts of first-century Palestine, and changed the lives of thousands of people in his era. In the twenty-first century, his followers do the same things on a global scale, in every part of the world, and they improve the lives of billions of people. They may not turn water to wine, but they can use technology to bring clean water to villages which previously had only dirty water teeming with bacteria and parasites, or even no water at all; or his followers may turn food waste into jet fuel to dramatically lower greenhouse gas emissions.<sup>55</sup> They too turn small individual contributions into enough loaves of bread to feed thousands of hungry people. They may not calm the storm on the raging sea, but they bring peace and comfort to communities overwhelmed by floods, hurricanes, and earthquakes. They seed the skies with silver iodide particles to bring rain to drought-ravaged lands.<sup>56</sup> They also resuscitate the dead,<sup>57</sup> heal people of all forms of deadly illnesses, free others from the unclean spirits of mental illness, and restore broken relationships through modern medicine and compassion. They also bring freedom to oppressed peoples. These things are being done, on a global scale, by people wanting to make change(s) for the better, and often doing so in his name.

### Conclusion

Some readers may not appreciate the rosy view of humans and human technology that they see me presenting here; they may even think it is somehow unscriptural. But the first chapter of Genesis tells us that we *were* commanded to subdue creation and have dominion over it, and technology is one way in which we do just that. In fact, I would argue that it is impossible for humans to subdue creation without technology. It is not our salvation, but it is an essential tool in fulfilling our first mandate. Sometimes technology itself creates problems. Are those mistakes

due only to our sinful nature (Genesis chapter 3) or also to the fact that we are only co-regents-in-training (Genesis chapter 1) who are still just honing our skills and learning our trade? In addition, technology is not always well applied. It can be misused in the same way that scripture, authority, and love can be, and have been, misused. *Those mistakes are* due to our sinful nature.

What do we humans now do, in light of all the considerations presented above? We should tread lightly in fulfilling our divine mandate to subdue the earth and take dominion over creation, and we should apply lessons learned from making mistakes. Also, we should be more careful and thoughtful in our theology and in how we read scripture; there can be more room for science and philosophy to inform our interpretation of it. Southgate quoted certain theologians who pin the blame for COVID-19 on either God or evil, and biologists who shrug and say that this is just a fact of nature (the “package deal”): the former see it as a consequence of living in a world ruled by Satan, whereas the latter see a world ruled by natural laws and physics.<sup>58</sup> We need to open up the dialogue, and welcome salient points from all quarters, rather than become siloed in our echo chambers. We should look to God for wisdom and direction. 

### Notes

<sup>1</sup>This is one of several arguments explored by Christopher Southgate in his article, “Explorations of God and COVID-19,” *Perspectives on Science and Christian Faith* 73, no. 1 (2021): 23–32, <https://www.asa3.org/ASA/PSCF/2021/PSCF3-21Southgate.pdf>.

<sup>2</sup>Daryl R. Climenhaga, “Towards a Theology of the Environment,” *Didaskalia* 20 (2009): 79–96; Francis A. Schaeffer and Udo W. Middelman, *Pollution and the Death of Man* (Wheaton, IL: Tyndale House, 1970), 82ff; Miriam Pepper and Rosemary Leonard, “Climate Change, Politics and Religion: Australian Churchgoers’ Beliefs about Climate Change,” *Religions* 7, no. 5 (2016): 47; Wylie Allen Carr et al., “The Faithful Skeptics: Evangelical Religious Beliefs and Perceptions of Climate Change,” *Journal for the Study of Religion, Nature and Culture* 6, no. 3 (2012): 276–99; Kristin Johnson Largent, “Un/natural Death and Extinction,” *Dialog* 57, no. 4 (2018): 279–86; Ted Peters, “Extinction, Natural Evil, and the Cosmic Cross,” *Zygon* 53, no. 3 (2018): 691–710; Terry Mortenson, “Young-Earth Creationist View Summarized and Defended,” February 16, 2011, <https://answersingenesis.org/creationism/young-earth/young-earth-creationist-view-summarized-and-defended/>; and E. Calvin Beisner, “Environmentalism: A Biblical Perspective,” in *The New Answers Book 4*, ed. Ken Ham (Hebron, KY: Answers in Genesis, 2011), chap. 20, <https://>

answersingenesis.org/environmental-science/climate-change/what-about-environmentalism/.

- <sup>3</sup>This concept has recently been discussed in greater detail within this journal: Richard F. Carlson and Jason N. Hine, "Two Interlocking Stories: Job and Natural Evil and Modern Science and Randomness," *Perspectives on Science and Christian Faith* 66, no. 1 (2014): 23–34, <https://www.asa3.org/ASA/PSCF/2014/PSCF3-14Carlson.pdf>; Denis O. Lamoureux, "Beyond the Cosmic Fall and Natural Evil," *Perspectives on Science and Christian Faith* 68, no. 1 (2016): 44–59, <https://www.asa3.org/ASA/PSCF/2016/PSCF3-16Lamoureux.pdf>; George L. Murphy, "Necessary Natural Evil and Inevitable Moral Evil," *Perspectives on Science and Christian Faith* 68, no. 2 (2016): 111–18, <https://www.asa3.org/ASA/PSCF/2016/PSCF6-16Murphy.pdf>; and R.J. (Sam) Berry, "Natural Evil: Genesis, Romans, and Modern Science," *Perspectives on Science and Christian Faith* 68, no. 2 (2016): 87–98, <https://www.asa3.org/ASA/PSCF/2016/PSCF6-16Berry.pdf>.
- <sup>4</sup>A. C. Grayling, "Is God to Blame? A Theologian and an Atheist Philosopher Clash over the Great Theme of Suffering," *Prospect* (February 20, 2005), <https://www.prospectmagazine.co.uk/magazine/tsunami-god-suffering-evil-grayling>; Bimal Kanti Paul and M.D. Nadiruzzaman, "Religious Interpretations for the Causes of the 2004 Indian Ocean Tsunami," *Asian Profile* 41, no. 1 (2013): 67–77; B. A. Robinson, "Why Did the South Asian Tsunami Happen? Reasons Given by Some Religious Conservatives," posted January 1, 2005, updated March 14, 2014, <http://www.religioustolerance.org/tsunami04c.htm>; and an article by R. Albert Mohler Jr. (President, Southern Baptist Theological Seminary) walks an uncomfortably fine line between attributing divine causality without culpability: "God and the Tsunami: Theology in the Headlines," *Alliance of Confessing Evangelicals*, <https://www.alliancenet.org/god-and-the-tsunami-theology-in-the-headlines>.
- <sup>5</sup>Stephen N. Williams, "Could God Have Commanded the Slaughter of the Canaanites?," *Tyndale Bulletin* 63, no. 2 (2012): 161–78, [https://legacy.tyndalehouse.com/Bulletin/63=2012/01\\_Williams18.pdf](https://legacy.tyndalehouse.com/Bulletin/63=2012/01_Williams18.pdf); Eric A. Seibert, "When God Smites: Talking with Students about the Violence of God in Scripture," *Teaching Theology & Religion* 17, no. 4 (2014): 323–41, <http://dx.doi.org/10.1111/teth.12238>; Plato's dialogue: *Euthyphro*.
- <sup>6</sup>John Calvin wrote "the earth was cursed on account of Adam ... the whole order of nature was subverted by the sin of man," *Commentary on Genesis*, 2 vols., trans. John King (1554; Grand Rapids, MI: Baker, 1996), 1:102, <http://www.ccel.org/ccel/calvin/calcom01.pdf>.
- <sup>7</sup>John Hudson, "Pat Robertson Blames Natural Disaster Victims," *The Atlantic* (January 14, 2010), <https://www.theatlantic.com/technology/archive/2010/01/pat-robertson-blames-natural-disaster-victims/341489/>; and Warren J. Blumenfeld, "God and Natural Disasters: It's the Gays' Fault?," *HuffPost*, posted November 5, 2012, updated February 2, 2016, [https://www.huffpost.com/entry/god-and-natural-disasters-its-the-gays-fault\\_b\\_2068817](https://www.huffpost.com/entry/god-and-natural-disasters-its-the-gays-fault_b_2068817).
- <sup>8</sup>"The Causes of Climate Change," NASA Global Climate Change: Vital Signs of the Planet, <https://climate.nasa.gov/causes/>; and D. J. Wuebbles et al., eds., *Climate Science Special Report: Fourth National Climate Assessment*, vol. 1 (Washington, DC: U.S. Global Change Research Program, 2017), [https://science2017.globalchange.gov/downloads/CSSR2017\\_FullReport.pdf](https://science2017.globalchange.gov/downloads/CSSR2017_FullReport.pdf).
- <sup>9</sup>Colin N. Waters et al., "The Anthropocene Is Functionally and Stratigraphically Distinct from the Holocene," *Science* 351, no. 6269 (2016): aad2622, <https://science.sciencemag.org/content/351/6269/aad2622>.
- <sup>10</sup>Carolyn W. Snyder, "Evolution of Global Temperature over the Past Two Million Years," *Nature* 538, no. 7624 (2016): 226–28, <https://doi.org/10.1038/nature19798>.
- <sup>11</sup>Anthony D. Barnosky et al., "Has the Earth's Sixth Mass Extinction Already Arrived?," *Nature* 471, no. 7336 (2011): 51–57, <https://www.nature.com/articles/nature09678>.
- <sup>12</sup>The Chicxulub impactor event, occurring approximately 66 million years ago in what is now known as the Yucatán Peninsula of Mexico, is often linked to the massive extinction of the dinosaurs; and Luann Becker, "Repeated Blows," *Scientific American* 286, no. 3 (2002): 76–83.
- <sup>13</sup>The explosion of Krakatoa in 1883, the 1815 eruption of Mount Tambora in Indonesia, and the 1783 eruption of the Laki volcano in Iceland were all accompanied by several years of significant global cooling and crop failures. The Laki eruption caused a famine which killed a quarter of the Icelandic population, and 23,000 British people died from the poisoning of the atmosphere by sulphur. Thorvaldur Thordarson and Stephen Self, "Atmospheric and Environmental Effects of the 1783–1784 Laki Eruption: A Review and Reassessment," *Journal of Geophysical Research* 108, no. D1 (2003): AAC 7-1–AAC 7-29, <https://doi.org/10.1029/2001JD002042>.
- <sup>14</sup>Michael R. Rampino, Ken Caldeira, and Yuhong Zhu, "A 27.5-My Underlying Periodicity Detected in Extinction Episodes of Non-marine Tetrapods," *Historical Biology* (2020), <https://www.tandfonline.com/doi/abs/10.1080/08912963.2020.1849178?journalCode=ghbi20>.
- <sup>15</sup>G. C. Dismukes et al., "The Origin of Atmospheric Oxygen on Earth: The Innovation of Oxygenic Photosynthesis," *Proceedings of the National Academy of Sciences* 98, no. 5 (2001): 2170–75, <https://www.pnas.org/content/98/5/2170>.
- <sup>16</sup>L. Paul Knauth and Martin J. Kennedy, "The Late Precambrian Greening of the Earth," *Nature* 460, no. 7256 (2009): 728–32, <https://www.nature.com/articles/nature08213>.
- <sup>17</sup>"Albedo" pertains to the ability of an object to reflect solar energy. Our snow-covered lawns and paved driveway have very different albedos (high and low, respectively), resulting in very different outcomes when the sun comes up in the morning.
- <sup>18</sup>Jenine McCutcheon et al., "Mineral Phosphorus Drives Glacier Algal Blooms on the Greenland Ice Sheet," *Nature Communications* 12 (2021): article number 570, <https://www.nature.com/articles/s41467-020-20627-w>.
- <sup>19</sup>In the same way that Christians can hypothesize God using the Big Bang to bring the cosmos into being, and using genetic mutation and natural selection to drive biological speciation.
- <sup>20</sup>Stephen J. Bennett, "Unsustainable: Sin and the Environment in Genesis 6–9," In search of Global sustainability, NSS Thursday, November 6, 2014, [https://www.academia.edu/10023177/Unsustainable\\_Sin\\_and\\_the\\_Environment\\_in\\_Genesis\\_6\\_9](https://www.academia.edu/10023177/Unsustainable_Sin_and_the_Environment_in_Genesis_6_9); Peter Heinegg, "Ecology and the Fall," *The Christian Century* 93, no. 17 (1976): 464–66; also see Henry M. Morris, "Creation and the Environment," Institute for Creation Research (1974), <https://www.icr.org/article/creation-and-the-environment>; and Henry M. Morris, "The Bible, Creation, and Ecology," Institute for Creation Research (1991), <https://www.icr.org/article/bible-creation-ecology>.
- <sup>21</sup>Charles Fensham, "Sin and Ecology: A Conversation with Jürgen Moltmann and the School of René Girard," *Journal*

- of *Reformed Theology* 6, no. 3 (2012): 234–50, <http://dx.doi.org/10.1163/15697312-12341266>; David James Bryant, “The Human Animal and Christian Ecotheology: Reflections on Taking Biology Seriously,” *Journal for the Study of Religion, Nature and Culture* 8, no. 1 (2014), <http://dx.doi.org/10.1558/jsrnc.v8i1.85>; and “An Evangelical Declaration on the Care of Creation,” Evangelical Environmental Network, <https://creationcare.org/what-we-do/an-evangelical-declaration-on-the-care-of-creation.html>.
- <sup>22</sup>David D. Smits, “The Frontier Army and the Destruction of the Buffalo: 1865–1883,” *Western Historical Quarterly* 25, no. 3 (1994): 312–38, <https://doi.org/10.2307/971110>.
- <sup>23</sup>Luigi L. Capasso, “Antiquity of Cancer,” *International Journal of Cancer* 113, no. 1 (2005): 2–13, <https://pubmed.ncbi.nlm.nih.gov/15389511/>.
- <sup>24</sup>Nohemi Sala et al., “Lethal Interpersonal Violence in the Middle Pleistocene,” *PLoS ONE* 10 (2015) e0126589, <https://doi.org/10.1371/journal.pone.0126589>.
- <sup>25</sup>Largen, “Un/natural Death and Extinction,” 279–86; Peters, “Extinction, Natural Evil, and the Cosmic Cross,” 691–710; and Terry Mortenson, “Young-Earth Creationist View Summarized and Defended,” February 16, 2011, <https://answersingenesis.org/creationism/young-earth/young-earth-creationist-view-summarized-and-defended/>.
- <sup>26</sup>This taxonomical and genealogical line is not as easily drawn, and not as cleanly demarcated, as many might think it is.
- <sup>27</sup>Mortenson, “Young-Earth Creationist View Summarized and Defended”; James Stambaugh, “Creation’s Original Diet and the Changes at the Fall,” *Journal of Creation* 5, no. 2: (1991): 130–38, <http://answersingenesis.org/tj/v5/i2/diet.asp>; and Brian Thomas, “New Diet Study Matches Genesis,” Institute for Creation Research, February 26, 2018, <https://www.icr.org/article/new-diet-study-matches-genesis>.
- <sup>28</sup>Susan Elmore, “Apoptosis: A Review of Programmed Cell Death,” *Toxicologic Pathology* 35, no. 4 (2007): 495–516, <https://doi.org/10.1080/01926230701320337>.
- <sup>29</sup>“Wolf Restoration,” National Park Service, <https://www.nps.gov/yell/learn/nature/wolf-restoration.htm>.
- <sup>30</sup>Will Stolzenburg, “Lords of Nature: Life in a Land of Great Predators,” directed by Karen Anspacher-Meyer, narrated by Peter Coyote, 55:44, 2009, <https://www.greenfireproductions.org/the-films/lords-of-nature/>.
- <sup>31</sup>E.L. Gulbranson et al., “Permian Polar Forests: Deciduousness and Environmental Variation,” *Geobiology* 10, no. 6 (2012): 479–95, <https://doi.org/10.1111/j.1472-4669.2012.00338.x>.
- <sup>32</sup>Aneta K. Urbanek, Waldemar Rymowicz, and Aleksandra M. Mirończuk, “Degradation of Plastics and Plastic-Degrading Bacteria in Cold Marine Habitats,” *Applied Microbiology and Biotechnology* 102, no. 18 (2018): 7669–78, <https://doi.org/10.1007/s00253-018-9195-y>.
- <sup>33</sup>Christopher McNamara et al., “Corrosion of Aluminum Alloy 2024 by Microorganisms Isolated from Aircraft Fuel Tanks,” *Biofouling* 21, no. 5–6 (2005): 257–65, <https://doi.org/10.1080/08927010500389921>.
- <sup>34</sup>Eva Fuglei and Rolf Anker Ims, “Global Warming and Effects on the Arctic Fox,” *Science Progress* 91, no. 2 (2008): 175–91, <http://dx.doi.org/10.3184/003685008X327468>.
- <sup>35</sup>Gen. 1:11, 20, 24; my emphasis added.
- <sup>36</sup>Not that I fully subscribe to such accommodative statements (i.e., God reducing the language and concepts to accommodate the less advanced science of the age in which the original authors wrote the text). I do not envision the ancient author(s) actually witnessing the evolutionary process, even if in just a vision, and then describing what they saw in their own terms.
- <sup>37</sup>J. Richard Middleton, *The Liberating Image: The Imago Dei in Genesis 1* (Grand Rapids, MI: Baker/Brazos, 2005); David L. Wilcox, “A Proposed Model for the Evolutionary Creation of Human Beings: From the Image of God to the Origin of Sin,” *Perspectives on Science and Christian Faith* 68 no. 1 (2016) 22–43, <https://www.asa3.org/ASA/PSCF/2016/PSCF3-16Wilcox.pdf>; Daniel C. Harlow, “After Adam: Reading Genesis in an Age of Evolutionary Science,” *Perspectives on Science and Christian Faith* 62, no. 3 (2010): 179–95, <https://www.asa3.org/ASA/PSCF/2010/PSCF9-10Harlow.pdf>; Keith B. Miller, “Theological Implications of an Evolving Creation,” *Perspectives on Science and Christian Faith* 45, no. 3 (1993): 150–60, <https://www.asa3.org/ASA/PSCF/1993/PSCF9-93Miller.pdf>; Graeme Finlay, “Homo Divinus: The Ape That Bears God’s Image,” *Science and Christian Belief* 15 (2003): 17–40, <https://www.scienceandchristianbelief.org/articles/finlay.pdf>; and J. Wentzel van Huyssteen, *Alone in the World? Human Uniqueness in Science and Theology* (Grand Rapids, MI: Eerdmans, 2006).
- <sup>38</sup>Fazale Rana and Hugh Ross, *Who Was Adam? A Creation Model Approach to the Origin of Man* (Colorado Springs, CO: NavPress, 2005), in particular, see pp. 179, 195, 313, 332, and 377; and Malcolm Jeeves, “Neuroscience, Evolutionary Psychology, and the Image of God,” *Perspectives on Science and Christian Faith* 57, no. 3 (2005): 170–86, <https://www.asa3.org/ASA/PSCF/2005/PSCF9-05Jeeves.pdf>.
- <sup>39</sup>Middleton, *The Liberating Image*; and John H. Walton, *The Lost World of Genesis One* (Downers Grove, IL: InterVarsity, 2009).
- <sup>40</sup>See Bernhard W. Anderson, “‘Subdue the Earth’: What Does It Mean?,” *Bible Review* 8, no. 5 (1992): 10, <https://www.baslibrary.org/bible-review/8/5/1/>; Carr et al., “The Faithful Skeptics,” 288; Climenhaga, “Towards a Theology of the Environment,” 81–82; and Beisner, “Environmentalism.”
- <sup>41</sup>Largen, “Un/natural Death and Extinction,” 282.
- <sup>42</sup>Beisner, “Environmentalism.”
- <sup>43</sup>Perhaps it is also worth mentioning that the humans who were so commanded preceded the Abrahamic covenant, and obviously also Jesus himself; so, this is not specifically a Jewish or Christian mandate.
- <sup>44</sup>And then losing control over nature in the third chapter of Genesis: thorns and thistles now taking over the ground that we had previously been tending so well.
- <sup>45</sup>See Gen. 3:18. The text does not say that thorns and thistles previously never existed and here suddenly appeared. Instead, it now portrays Adam’s work in maintaining the garden being made more difficult by those unwanted plants (Adam stepped outside of boundaries assigned to him; the plants would step outside of the boundaries he placed on them).
- <sup>46</sup>This timeline includes hominid and nonhominid ancestors and changes in them which prepared us for our own unique part of that trajectory. See Luke J. Janssen, “‘Fallen’ and ‘Broken’ Reinterpreted in the Light of Evolution Theory,” *Perspectives on Science and Christian Faith* 70, no. 1 (2018): 36–47, <https://www.asa3.org/ASA/PSCF/2018/PSCF3-18Janssen.pdf>.
- <sup>47</sup>“The Causes of Climate Change”; also see Virginia R. Burkett et al., “U.S. Geological Survey Climate and Land Use Change Science Strategy—A Framework for Understanding and Responding to Global Change,”

U.S. Geological Survey Circular 1383-A, <https://doi.org/10.3133/cir1383A>.

<sup>48</sup>"Invasive Species: What You Can Do," The Nature Conservancy, July 7, 2013, <https://www.nature.org/en-us/what-we-do/our-priorities/protect-water-and-land/land-and-water-stories/invasive-plant-species-invasive-species-education-1/>; "Combatting Invasive Species," National Wildlife Federation, <https://www.nwf.org/Our-Work/Environmental-Threats/Invasive-Species>; and "Control Mechanisms," U.S. Department of Agriculture, National Invasive Species Information Center, <https://www.invasivespeciesinfo.gov/subject/control-mechanisms>.

<sup>49</sup>James R. Roberts and Catherine J. Karr, "Pesticide Exposure in Children," *Pediatrics* 130, no. 6 (2012): e1765–88, <https://pediatrics.aappublications.org/content/130/6/e1765>; and Thomas H. Jukes, "DDT," *Journal of the American Medical Association* 229, no. 5 (1974): 571–73, <https://jamanetwork.com/journals/jama/article-abstract/355923>.

<sup>50</sup>C. E. Grueber et al., "A Tasmanian Devil Breeding Program to Support Wild Recovery," *Reproduction, Fertility and Development* 31, no. 7 (2019): 1296–1304, <https://doi.org/10.1071/RD18152>; Cesar Tovar et al., "Regression of Devil Facial Tumour Disease Following Immunotherapy in Immunised Tasmanian Devils," *Scientific Reports* 7 (2017): 43827, <https://doi.org/10.1038/srep43827>; and Hannah S. Bender, "Devil Facial Tumour Disease (DFTD): Using Genetics and Genomics to Investigate Infectious Disease in an Endangered Marsupial," in *Marsupial Genetics and Genomics*, ed. Paul D. Waters, Janine E. Deakin, and Jennifer A. Marshall Graves (New York: Springer, 2010), 499–516.

<sup>51</sup>Luke J. Janssen, "Pandemics in Need of a Christian Response," *Perspectives on Science and Christian Faith* 73, no. 1 (2021): 13–22, <https://www.asa3.org/ASA/PSCF/2021/PSCF3-21Janssen.pdf>.

<sup>52</sup>"WHO Director-General's Opening Remarks at the Media Briefing on COVID-19," World Health Organization, March 11, 2020, <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>.

<sup>53</sup>Southgate, "Explorations of God and COVID-19," 23–32; also see Peters, "Extinction, Natural Evil, and the Cosmic Cross," for an analysis of Southgate's argument.

<sup>54</sup>Norbert Pardi, Michael J. Hogan, and Drew Weissman, "Recent Advances in mRNA Vaccine Technology," *Current Opinions in Immunology* 65 (2020): 14–20, <https://pubmed.ncbi.nlm.nih.gov/32244193/>.

<sup>55</sup>Matt McGrath, "Climate Change: Jet Fuel from Waste 'Dramatically Lowers' Emissions," March 15, 2021, <https://www.bbc.com/news/science-environment-56408603>.

<sup>56</sup>Oliver Milman, "Make It Rain: US States Embrace 'Cloud Seeding' to Try to Conquer Drought," *The Guardian*, March 23, 2021, <https://outline.com/A9hqt4>.

<sup>57</sup>There is an important difference between "resurrection" and "resuscitation." When Jesus raised people to life, they were resuscitated and continued the same kind of existence until they later died a second time. When he himself was resurrected, that was to an entirely new existence.

<sup>58</sup>Southgate, "Explorations of God and COVID-19," 23–32.

**ASA Members:** Submit comments and questions on this article at [www.asa3.org](http://www.asa3.org)→RESOURCES→Forums→PSCF Discussion.

## Call for Papers

### GENDER: FROM CHRISTIAN PERSPECTIVES

Questions of gender identity and gender dysphoria have become prominent in our culture. Our churches are not exempt from this development, as Christians can also struggle with gender identity. What do we know about the biology of gender? What are Christian perspectives on gender and the trans experience? What are the important and unresolved questions?

On the ASA and CSCA websites, Tony Jelsma, PhD (McMaster University), has written an essay that informs us about what we know and do not know about gender.

He is chair and professor of biology at Dordt University and has taught courses in human anatomy, physiology, biopsychology, and developmental biology. He has a research background in neuroscience and molecular biology, and a longstanding fascination with the brain and questions of faith and science. He is a Fellow of the ASA and has given multiple presentations at ASA annual meetings on faith and science topics.

Readers are encouraged to take up one of the insights or questions in the invitation essay, or maybe a related one that was not yet mentioned, and draft an article (typically about 5,000–8,000 words) that contributes to the conversation. These can be sent as an attachment to Tony Jelsma at [Tony.Jelsma@Dordt.edu](mailto:Tony.Jelsma@Dordt.edu). An abstract should be included in the text of the email. He will send the best essays on to peer review and then we will select from those for publication in a theme issue of *Perspectives on Science and Christian Faith*.

The lead editorial in the December 2021 issue of *PSCF* outlines what the journal looks for in the articles we publish. For best consideration for inclusion in the theme issue, manuscripts should be received electronically before April 30, 2022.

Looking forward to your contributions,

**James C. Peterson**, *Editor-in-Chief*