other in the large mass of data that is processed. For example, in 2008 MIT economists Alberto Cavallo and Roberto Rigobon used web-crawling software to gather half a million US product prices each day. Comparing prices for common items is not easy since different web pages may describe the products using different words or phrases. Nevertheless, they used this mass of data to detect a deflationary trend in prices right after Lehman Brothers filed for bankruptcy in September 2008. The more traditionally derived CPI data was not able to detect this significant event until the November 2008 numbers were available.

Third, perhaps the most profound change is a diminishment in the search for causation. Instead, the big data culture seeks correlations. Sometimes this is sufficient; in other cases, causation may be explored once an important correlation is found. The authors state, "Knowing why may be pleasant, but it's unimportant for stimulating sales" (p. 52).

The book develops these ideas and also explores their consequences. The authors consider some potential societal risks and offer proposals to prevent or minimize the negative consequences. Although the book is not primarily focused on ethical issues, the authors do take a strong stand on the potential for using big data to predict the behavior of individuals. They are quite uncomfortable with using big data correlations for making a preemptive arrest of a particular person based solely on a high predicted probability that a crime will be committed. After noting that such a prediction can never be disproved (since the arrest occurs before any actual crime), they state:

> Perhaps with such a system society would be safer or more efficient, but an essential part of what makes us human—our ability to choose the actions we take and be held accountable for them—would be destroyed. Big data would have become a tool to collectivize human choice and abandon free will in our society. (p. 162)

This strong assertion about the value of human free will is not grounded in any religious or ethical presuppositions or arguments; it is just assumed to be a universal value.

The authors state that "a single version of the truth" is no longer a useful goal. This assertion is made in the context of being able to query a data collection multiple times and get a consistent result, so we should not assume that they would make a similar claim about more profound kinds of truth. Nevertheless, in this context they state, "We are beginning to realize not only that it may be impossible for a single version of the truth to exist, but also that its pursuit is a distraction" (p. 44). I suspect that many readers may temporarily forget the context and interpret this as a general assertion. That would be unfortunate since the biblical record is quite clear that truth matters. Jesus claimed to be the truth (John 14:6). In 1 Corinthians 15:12–19, Paul makes a strong case that the validity of our beliefs matters. He would not affirm the radical postmodern sentiment, "if it makes you feel good, it can be a truth for you."

There is passing mention of a few other topics that might be of interest to readers who are interested in the interplay of Christian faith and the big data culture. These include the nature (or existence) of causality, whether data-driven decisions may maximize profits but suppress creativity and artistic/human merit, resulting in a culture of mediocrity and a shift in our worldview. The worldview shift is to see information as primary: "With the help of big data, we will no longer regard our world as a string of happenings that we explain as natural or social phenomena, but as a universe comprised essentially of information" (p. 96). Readers who want an in-depth examination of this topic should read *The Information: A History, A Theory, A Flood* by James Gleick.

The assertions about big data in this book highlight the notion that technology is not neutral. How we collect data, how we analyze it, and what we do with the results are all shaped by our worldview. But the culture of big data will also modify worldviews and reshape society. For instance, collections of data may become one of the most valuable resources a company or institution owns. In some cases, it may be the *most* valuable asset. If their warning against preemptive arrests is not heeded, big data may also reshape our understanding of legal culpability.

This book is a quick, nontechnical, but useful introduction to the culture of big data. For those wishing to investigate more thoroughly, there is an index and extensive endnotes and a detailed bibliography. However, you will need to provide your own religious and ethical framework from which to consider the impact of big data.

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Letters

If Adam Did Not Exist, Who Else Did Not?

"Adam never existed" is the bold statement made by Denis Lamoureux in his article, "Beyond Original Sin: Is a Theological Paradigm Shift Inevitable" (*PSCF* 67, no. 1 [2015]: 35–49, 40). With Adam and Eve relegated

to mythology, where does one place the people listed in the genealogies of Genesis in chapters 4–6? How far down the list of names must one go after Adam and Eve to encounter the first historical person? For example, is it Abraham? Or is he also part of ancient history? How about Enoch, mentioned once in Genesis 4 and twice in the New Testament (Hebrews 11 and in Jude)? Noah and the flood are referred to in the New Testament by our Lord, and again with all other Old Testament heroes of faith listed in Hebrews 11. Are these real people or so-so stories? What criteria do we use to make that distinction?

This is not a rhetorical question. For me, it is the logical follow-on to the claims that Adam and Eve never existed. Once you argue yourself out of Adam (an Adam who did exist), what chapter in Genesis starts to become historical? For example, C. S. Lewis considered the first eleven chapters of Genesis as myth.

In my opinion, creationists ignore legitimate scientific explanations and try to force-fit them into Genesis 1 and 2. On the other hand, evolutionary creationists consider accounts recorded in Genesis 1 and 2 as ancient stories and try to re-interpret them in the light of the "proven facts" of Darwinian evolution.

Ultimately, we should show deference to our brothers and sisters in Christ, and humbly admit that we will never have the full picture of creation, this side of eternity.

Ken Touryan
Fellow of the American Scientific Affiliation

Response to Ken Touryan

I am grateful to Ken Touryan for his letter because he raises some significant issues. I believe that real history in the Bible begins roughly around Genesis 12 with Abraham. Like many other evangelical theologians, I view Genesis 1–11 as a unique type of literature (literary genre) that is distinct from the rest of the Bible. So from my perspective, was Abraham a real person? Yes. Was there a King David in the tenth century BC? Yes. Were the Jews deported to Babylon in the sixth century BC? Yes. Was there really a man named Jesus in the first century AD? Yes. Are the gospels eyewitness accounts of actual historical events, including the Lord's teaching and miracles, and especially his physical resurrection from the dead? *Absolutely yes!* Even though I do not believe that Adam was historical, I thoroughly believe in the historicity of Jesus and the biblical testimonies of his life. See 1 John 1:1–3; 2 Peter 1:16–18; Luke 1:1–4; and Acts 1:1–19. Also see Richard Bauckham, *Jesus and the Eyewitnesses* (2006).

Now an important clarification and correction needs to be made regarding Touryan's comment that "evolutionary creationists consider accounts recorded in Genesis 1 and 2 as ancient stories and try to re-interpret them in the light of the 'proven facts' of Darwinian evolution."

This is an absolutely false assertion. I have *never* interpreted scripture in the light of evolution. I interpret scripture in the light of scripture and ancient Near Eastern literature. As my article shows, the *de novo* creation of humans is an ancient conceptualization that is no different than the *de novo* origin of the firmament, the heavenly sea, and the sun, moon, and stars placed in the firmament. I reject scientific concordism for biblical reasons, *not* because of evolution. In fact, my PhD in evangelical theology came before my PhD in evolutionary biology. I rejected the historicity of Genesis 1–11 and concordist interpretations of these chapters in seminary when I was still a thoroughly committed anti-evolutionist.

It does concern me that an ASA Fellow uses scare quotes in the phrase "the 'proven facts' of Darwinian evolution." First, evolution is a fact. For those of us who have actually studied evolutionary biology to the PhD level, there is no debate because the evidence for evolution is *overwhelming*. In fact, a 2009 Pew study reveals that 97% of scientists accept evolution. Second, those of us who have actually published on evolutionary topics in refereed scientific journals rarely qualify evolution as "Darwinian." Does Touryan as an aeronautical engineer refer to gravity as Newtonian?

Finally, and most disturbing to me, is Touryan's final sentence in his letter: "Ultimately, we should show deference to our brothers and sisters in Christ, and humbly admit that we will never have the full picture of creation, this side of eternity."

Earlier Touryan accuses me of making a "bold statement" with regard to my denying the historicity of Adam. But I believe I offered a reasonable argument in my article—the Bible has an ancient understanding of the origin of the heavens and earth; it stands to reason that this is also the case with the origin of living organisms, including humans. And ancient Near Eastern creation accounts confirm my contention.

In contrast, Touryan's final sentence is merely a "bold" proclamation with no academic substantiation whatsoever. It is this type of anti-intellectualism that plagues evangelical Christianity, and it has been a stumbling block to many of our young people who have lost