

Book Reviews

society. She boldly argues that females have been portrayed as secondary to males, even in scientific attempts to elucidate the biochemical mechanisms which define the development of females from males.

She points out that the genomic approach of studying the sex chromosomes is too limited and riddled with gender politics. Such gender politics permeates the words we use to describe genetic pathways that cause differentiation of males and females. Terms such as dominant and default state have a hierarchical ring. Despite much talk about gender, “discourses around gender, discourses often framed by the expectation that the facts of biology would help to settle the matter of the hierarchy of the sexes once and for all” (p. 71), Richardson gives multiple examples showing that science, unfortunately, has had a hand in enabling negative gender stereotypes.

Richardson provides a helpful review and critique of how the approaches to assessing the nature of gender bifurcation among humans are riddled with biases. Specifically, she addresses several major areas including whether the X and Y chromosomes are appropriately named “sex chromosomes,” the claim that Y chromosome is shrinking, and that from a genomic perspective, men and women are not that different—certainly not different enough to consider each sex as having their own distinct genome.

Sex Itself is a great primer to begin examining our history and current academic approaches pertaining to defining sex and gender from a genomic perspective through a historical and philosophical lens. To be aware that we explore genomics and molecular mechanisms of development with a bias is only the first step, however. By placing humans into a dichotomy that is attempting to explain a spectrum of sex or trying to undermine one end of the spectrum over the other, we do all a disservice. This book leaves us with a challenge to critique how current paradigms fall short.

Whether an individual is perceived to be male or female impacts what one experiences from a physical, reproductive, psychological, and social perspective. Our gender labels influence who we perceive ourselves to be and can influence the limits and goals we set for ourselves. Should Christians then focus our analytical abilities on the mechanisms that generate phenotypic differences in sex? Should we carefully examine whether there are distinct God-intended roles for men and women? Are we doing a disservice to ourselves and future generations by continually bifurcating ourselves into one of two categories? If these questions intrigue you, you should read *Sex Itself*.

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TECHNOLOGY

BIG DATA: A Revolution That Will Transform How We Live, Work, and Think by Viktor Mayer-Schönberger and Kenneth Cukier. Boston, MA: Eamon Dolan/Mariner Books, 2014. 252 pages. Paperback; \$15.95. ISBN: 9780544227750.

The data trails we create do not disappear. They also do not remain dormant. Instead, they are aggregated and harvested to serve multiple purposes, many far different from the reason the data was first produced. This aggregated data can be used to predict flu outbreaks, predict who might be a potential terrorist, or locate city dwellings that have been illegally subdivided into multiple units. These applications and many more are possible due to the massive amount of data that exists. The culture and techniques that have recently appeared in this context are often called *big data*.

The book *Big Data*, written by Viktor Mayer-Schönberger (professor of Internet Governance and Regulation at Oxford University) and Kenneth Cukier (data editor of *The Economist*), is intended as an introduction for a general audience. It includes many interesting examples of how big data techniques are being used.

Rather than provide a precise definition of big data, the authors work from a more general statement:

Big data refers to things one can do at a large scale that cannot be done at a smaller one, to extract new insights or create new forms of value, in ways that change markets, organizations, the relationship between citizens and governments, and more. (p. 6)

They assert that big data is making fundamental changes in how we operate. Three changes are emphasized.

First, in the past, data was difficult or expensive to collect. Consequently, we used samples and sophisticated statistical analysis to reach meaningful conclusions. With big data, we are able to use data sets that approach comprehensive collections. For example, in 2004, Walmart used data-mining techniques to examine their old sales receipts for interesting correlations. They discovered that sales of strawberry pop-tarts increased seven-fold shortly before a hurricane. This discovery was possible because they looked for correlations in massive amounts of data with no preconception of what they were seeking.

Second, in the past, data needed to be collected carefully in order to minimize bias and increase the accuracy of the predictions. Big data can tolerate imprecise data and also data that are stored in different formats or using different units. The errors tend to neutralize each

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