our trust in ourselves we are left with nothing but a hand-wringing hope: a restless wishing. Thankfully, our salvation and the fate of humanity does not rest on us and our abilities, but rather, in the sovereign God of the universe and in the redemptive work of Christ, his Son. Humanity's creativity is certainly unique, but ultimately it is God's relationship with us that makes us special. Our human capacities, including our creativity, are gifts from God to be used in response to his call to lovingly serve others and the rest of his creation. Humankind and the selfishness of our sinful hearts have given rise to our problems. It is only by God's grace, through the work of the Holy Spirit, that we can bring healing to this world by redirecting our creative efforts toward the Kingdom of God.

Ashton asks us to rest on our wits, but what we find there is not rest at all, but rather a frantic scramble to save ourselves. Creativity is a gift from God that only brings blessing when used in accordance with His will.

You should read *How to Fly a Horse* for its many insights and interesting stories but do not look to it for ultimate meaning. That meaning can come only from acknowledging that true hope is not found in ourselves but in the God who saves us. As a final note, Andy Crouch's *Culture Making: Recovering Our Creative Calling* (InterVarsity Press, 2013) flows from a biblical worldview and makes a wonderful companion read to Ashton.

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HOW WE GOT TO NOW: Six Innovations That Made the Modern World by Steven Johnson. New York: River Head Books, 2014. 293 pages, index. Hardcover; $30.00. ISBN: 9781594632969.

This best-selling book was created simultaneously with a PBS/BBC television series that had the same name. Steven Johnson is a prominent writer who has written extensively on the intersection of culture, science, and technology. Among his other books are *The Ghost Map, The Invention of Air, Where Good Ideas Come From,* and *Everything Bad Is Good for You*.

He looks at technology's effect on modern society through six broad categories: glass, cold, sound, clean, time, and light. For reasons unknown to me, these categories are in a different order in the television series. This does not really matter as the six main chapters can be read in any order.

This is neither a Christian book nor an anti-Christian book. Johnson does not look at worldview as one of his main topics. He delights in showing how the development of technology has had unusual sources and unanticipated consequences. He writes,

> Innovations usually begin life with an attempt to solve a particular problem, but once they get into circulation, they end up triggering other changes that would have been extremely difficult to predict. (p. 3)

This has implications for Christians in engineering and science research. Frequently we may get bogged down in the details of our research and do not think through the implications and potential applications of it. As Johnson points out many times, technological developments often have a life of their own and lead to results that their creators may never have imagined.

One of the few times he gets into worldview related issues is when he discusses sound. He discusses the problem of sex selection abortions that have been indirectly promoted by technological development.

> This may be one of the most astonishing, and tragic effects in all of twentieth century technology: someone builds a machine to listen to sound waves bouncing off icebergs, and a few generations later, millions of female fetuses are aborted thanks to that very same technology. (p. 123)

He does show a misunderstanding of Christian faith when he writes about radiometric dating of the earth. He writes that this technology is "establishing the most convincing evidence that the biblical story of the earth being six thousand years old is just that: a story, not a fact" (p. 191). He appears to assume that all Christians believe in a young earth. I do not think that many people reading this review will see radiometric dating as contradicting the Bible.

One example of his approach is to show how the sacking of Constantinople in 1204 and development of the movable type printing press in the 1440s ultimately led to the development of the telescope. The fall of Constantinople led to many of its glass makers fleeing to the small Venetian island of Murano. Their work led to Murano becoming what we would today call an innovation hub for glassmakers. The eyeglasses they developed were expensive, but since few people could read there was little demand for them. With Gutenberg's printing press, many things could now be reproduced. This led to a greater interest in reading by the public. Many people then discovered for the first time that they had bad eyesight. This created a surge in demand for spectacles. Johnson writes,

> Thanks to the printing press, the Continent was suddenly populated by people who were experts at manipulating light through slightly convex pieces

> of glass. These were the hackers of the first optical revolution. (p. 22)

As more and more people tinkered with curved pieces of glass, this eventually led to the development of the microscope and telescope.

Johnson refers to many of the developers of technology as time travelers, for they could see beyond the present day of their era. Sometimes they also had to be stubborn to keep working on something when no one else saw a purpose in it. An example of this is the story of Frederic Tudor. In the early 1800s, he saw many cargo ships coming into Boston harbor filled with goods from the West Indies. However, they were going back there empty. He had the idea to take ice from New England and ship it to the West Indies in what would have been the empty ships. He eventually became a very wealthy man from this business. However, it had a difficult start as most people in the West Indies had never experienced anything cold and saw no use for this strange material called ice. He had to work hard to create a demand for his product. Many people develop technologies that are eventually popular, but which people initially have no desire to purchase. The creators of the technology may have to work to help create a demand for its use.

This is an excellent book written for an intelligent lay audience. Since many of us in ASA are really lay people when it comes to anything outside our individual areas of expertise, I think most members would enjoy the book. In addition to having creative content, Steven Johnson is an excellent writer. Reading this book has motivated me to obtain and read some of his other books dealing with technology and culture.

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AND WEST IS WEST by Ron Childress. Chapel Hill, NC: Algonquin Books, 2015. 320 pages. Hardcover; $26.95. ISBN: 9781616205232.

For some time, I held a popular view that tools and technologies are neutral: they have no moral value in and of themselves, apart from how we use them. This was an empowering way for me to think about my own use of computing technologies, and perhaps helpful to the extent that it caused me to evaluate the directions of my research.

One of my close friends, however, holds a degree in philosophy and has the troubling habit of asking challenging questions and inviting me to think carefully about my assumptions and their implications. He likes to point out that tools and technology actually change a person. Yes, a hammer can be used for good purposes, or for bad ones, and it is up to the person holding that hammer to determine what use she will put it to. In that sense, we may call it neutral. But a person who picks up a hammer becomes a different person.

Or, to use a more poignant example, a person becomes a different person by picking up a gun. Not only in many circumstances might I act very differently with the gun in my hand, but equally importantly I would think of myself differently. The tools and technologies we use change us.

Childress's new novel *And West Is West* provides a fascinating exploration of how the technologies we use change us. The tale follows two protagonists on opposite sides of the country: Jessica, a drone pilot who carries out missile strikes on suspected terrorists, and Ethan, a quant or programmer who designs algorithms that enable his bank to profit off high-speed currency exchanges based on the market fluctuations caused by terrorist activities. Both protagonists wrestle with moral qualms about their work and the suffering it causes or exploits.

I had some doubts when I picked up the book and saw it had won a prize for "socially engaged fiction." Socially engaged is good. But I feared the writing would be didactic: a sermon thinly veiled as a story. While the author does not leave the reader with many doubts about his view of drone strikes, or of algorithmic trading that profits off human suffering, the much more interesting and subtle exploration describing the seemingly "neutral" technologies the protagonists make use of, and the isolating impact and depersonalizing nature of those technologies. It is not only what the technologies are used for that change the user, but also the nature of the technologies themselves.

Jessica sits thousands of miles away from her targets, flying her drone from a military base in the Nevada desert. She launches missiles (euphemistically called "angels") at blurry images on a computer screen. Sometimes the missiles take innocent lives. She and her colleagues escape the monotony, and perhaps also the feelings of guilt, through overeating, gambling machines, and nicotine. "On the base they call it Operation Expanding Waistline, partly because covert snacking is the main pastime during shifts at a drone monitor."

Ethan is a quant; he works seven-day weeks in the Wall Street trading world, sitting alone behind a computer monitor writing code, keeping himself going