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## Book Review: Small Miracles All Around Us

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# Small Miracles All Around Us

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Steven Johnson, *How We Got to Now: Six Innovations That Made the Modern World* (New York: Riverhead Books, 2014).

Are you reading this book review on your iPad, perhaps in the air-conditioned comfort of your home? Are you reading it at night, possibly while sipping a glass of water, with National Public Radio playing in the background? While doing so, did you steal a fleeting glance at your watch or cell phone, to see what time it is? If you are participating in any or all of these activities, you are immersing yourself in the subject matter of Steven Johnson's entertaining and intriguing new book *How We Got to Now: Six Innovations That Made the Modern World*. None of these activities seems remarkable to us today, and we likely take these modern conveniences for granted. Johnson's book reminds us that we shouldn't. For example, when most of us in the developed world get a drink of water from the tap, we trust that it won't kill us within a few days. When the sun sets, we can plan to engage in activities other than sleep. Prior generations had no such luxuries.

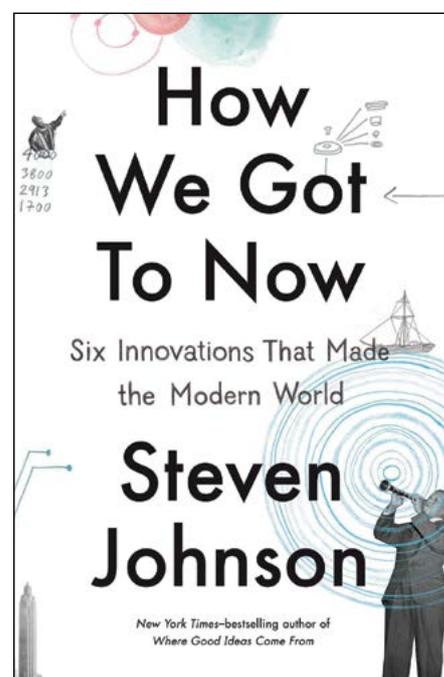
Johnson is a popular and prolific science and technology writer who writes with a literary style that is accessible, clear and engaging. His beautifully illustrated book (and the accompanying six-part PBS documentary series) takes readers on a multi-century and multi-continent tour of the origins of ideas that make modern life possible. The book is organized around six big ideas: Glass, Cold, Sound, Clean, Time, and Light. Johnson gives each one its own chapter and neatly summarizes its development and consequences. Curiously, Johnson never informs the reader why these

particular six ideas attracted his attention, but that omission constitutes only a minor irritant.

*How We Got to Now* makes two central arguments. First, Johnson wants us to examine a world that we take for granted with a fresh set of eyes. We are surrounded by objects that are the legacies of thousands of inventors, hackers, and dreamers, some widely known (nice to see you again, Alexander Graham Bell), and some heretofore lost to the sands of history (pleased to make your acquaintance, Charles Babbage, inventor of the first mechanical

computer in the early nineteenth century). Johnson makes the point that our day-to-day happiness has been influenced more by these legions of tinkerers than by our celebrated politicians, generals, statesmen and corporate titans. In doing so, Johnson effectively shovels more dirt onto the coffin of Thomas Carlyle's "Great Man" view of history, replacing it with history as "Great Object." Given the choice to honor Abraham Lincoln or the wristwatch, Johnson tells us to take the watch.

The second principal argument that Johnson advances involves consequences. While most innovations are initially developed to fix a specific problem (i.e. sun goes down + people can't see = all productive work ceases, prompting the search for economical source of artificial light), they often have unforeseen effects far beyond their original domain. Some of these consequences are intuitive and obvious; others remain more subtle, leaving behind less visible causal fingerprints. Johnson hopscoches through history following the links in these strange chains of influence, and explores their cultural and social implications.



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For example, in 1902, a Brooklyn-based printing company retained a young engineer named Willis Carrier to solve a problem that had long bedeviled the trade: keeping ink from smearing during the humid summer months. Carrier's "apparatus for treating air" (today, we call it an "air conditioner") effectively removed the humidity from the printing room but had a second,

South to North that had started after the Civil War began to reverse course. New York, Pennsylvania and Illinois were the nation's three most populous states in 1900. Today, California, Texas and Florida earn that distinction. In turn, this migration redrew the political map of America. Warm-climate states gained 29 Electoral College votes between 1940 and 1980,

they improve upon the status quo and succeed in achieving a specific, local objective. Viewed through this lens, innovation moves along a positive arc over time. The problem lies with those unintended consequences and other externalities. A car will get you from Boston to Bridgewater more quickly than a horse-drawn carriage, but it would be hard to make the argument that the automobile is an unalloyed social good.

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entirely unexpected benefit. It chilled the air, an effect that Carrier first noticed when his colleagues suddenly starting eating lunch next to the printing presses. Carrier then began to work on other devices that could regulate the humidity and temperature of indoor spaces. Between 1925 and 1950, most people experienced air conditioning only in large public spaces such as movie theaters, department stores and office buildings, but by the mid-1950s, the technology had spread to people's homes, and areas of the United States that had once been insufferably hot and humid suddenly seemed much more hospitable. By the mid-1960s, the great migration of Americans from

while the comparatively frigid states of the Northeast and the Rust Belt lost 31. Johnson notes that this demographic shift is not solely a U.S. phenomenon, as the fastest-growing megacities are disproportionately located in tropical climates (Bangkok, Dubai, and Jakarta). Johnson calls his approach "long-zoom history": more than a century after young Carrier solved an ink-smearing problem in Brooklyn, massive cities sprouted in the desert.

Two other aspects of this book warrant mention. The first is that Johnson generally maintains an agnostic stance toward the value of the innovations that he writes about. Many innovations get "selected" by society because

A second noteworthy aspect of the book is that it is written almost exclusively from a North American and European perspective. As Johnson mentions, the story of how Brazil or China "got to now" would be very different and no less entertaining. Even though this is primarily a European/North American story, the innovations included in the book have diffused across the world. As the world becomes even more interconnected, we can expect that innovations will be less constrained by geographic boundaries and national identities. But that is a story that remains to be told. Until then, Johnson's *How We Got to Now* proves a competent guide to the history behind some of most important comforts and necessities of modern life.



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