

Lively New Book on what Distinguishes Manufacturing Precision from Perfection

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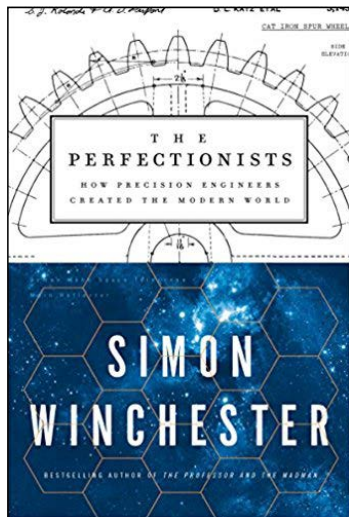
Most of us would agree that the idea of a perfect world is absurd. Just for starters, who gets to decide what “perfect” means?

Indeed, *perfection* — according to the Oxford English Dictionary — is defined as “The action or process of improving something until it is faultless.”

And that is the premise of a fascinating new book — *The Perfectionists: How Precision Engineers Created the Modern World* (Harper Collins, 411 pages) — by Simon Winchester. In this book the best-selling author (*The Professor and the Madman, A Crack in the Edge of the World*) delineates the “birth,” if you will, and evolution of technology — from the dawn of Industrial Age to the Digital Age — in search of the single component crucial to advancement — precision. The findings of his research serve both as homage to the search for precision and cautionary tale for our cyber-intensive future.

Winchester explains in detail how manufacturing could not have happened without attention to precision. He demonstrates how, even in the earliest days of the Industrial Revolution in eighteenth-century England, standards of measurement were established. He describes how this paved the way to the revolutionary concept and realization of machine tools, i.e. — machines that make machines. Winchester describes in entertaining detail how the embryonic creation and application of precision tools and methods resulted in the mass production of precision-based products such as guns, mirrors, lenses, watches and cameras. He also describes in entertaining detail how the former technology led to further breakthroughs, including gene splicing, microchips, and the Hadron Collider. His account of the development of the Hubble telescope and why it is so important is fascinating.

Winchester takes us back to the origins of the Industrial Age, to England where he introduces the scientific minds that helped usher in modern production: John Harrison, John Wilkinson, Henry Maudslay, Joseph Bramah, Jesse Ramsden, and Joseph Whitworth. Thomas Jefferson later brought these mechanical wonders to the fledgling United States, setting the nation on its course to becoming the leader of the manufacturing world. Winchester moves forward through time, to today’s cutting-edge developments occurring around the world, from America to Western Europe to Asia.



As he introduces the minds and methods that have changed the modern world, Winchester explores fundamental questions. Why is precision important? What are the different tools we use to measure it? Who has invented and perfected it? Has the pursuit of the ultra-precise in so many facets of human life blinded us to other things of equal value, such as an appreciation for the age-old traditions of craftsmanship, art, and high culture? Are we missing something that reflects the world as it is, rather than the world as we think we would wish it to be? And can the precise and the natural co-exist in society?

The word “perfectionist” can conjure up the image of a fussy, slightly anxious person who needs to relax more. Indeed, the constant pursuit of the flawless can be exhausting. Nothing in our world, after all, is exactly perfect. But what if perfection is not only a goal in its own right but also something on which the lives of others depend? What if, for example, the slightest misalignment of a tiny tube in a jet engine could cause a fatal catastrophe?

In “*The Perfectionists*,” Simon Winchester celebrates the unsung breed of engineers who through the ages have designed ever more creative and intricate machines. He takes us on a journey through the evolution of “precision,” which he believes is the major driver of what we experience in modern life.

Our cars, planes, cellphones, washing machines, computers — every manufactured mechanism — are all the result of our pursuit of this fundamental concept. Winchester tells us that precision had a birth date. Our ancestors made some truly beautiful and impressive objects — like the ancient Greek “antikythera” mechanism used to predict astronomical positions and eclipses. But it wasn’t until the 19th century — and with it the ability to harness and utilize steam power — that true precision engineering was born. It might be difficult to accept the notion that there was such a “precise” turning point in our history, but Winchester makes a convincing case.

But perhaps the most entertaining portion of the book is the pages devoted to Henry Ford and Henry Royce. Amidst the description of how each of these manufacturing titans brought their dreams to fruition, Winchester tells us why ultimately Ford and Royce were not competitors. For Royce, it was all about seeking perfection. For Ford, it was all about *production*.

Winchester ends with a take on Sir Isaac Newton that — shall we say precisely? — describes that falling apple incident that we first learned about in grade school:

“*Woolsthorpe Manor was the home of Sir Isaac Newton. It was to Lincolnshire that Newton had fled from Cambridge in 1666. And it was here, during the summer of that annus mirabilis (remarkable or auspicious year), that he famously observed the apple falling from the tree. It was here, and from wondering of the force that might have impelled the apple’s fall, that he came up with the notion of gravity as a force that affected both this humble fruit and, by logical extension, affected the constant motion and altitude of the moon in orbit around the planet Earth.*” 