

# Resource Reviews

## The Code Economy

Philip E. Auerswald. 2017.  
Oxford University Press  
(<http://global.oup.com/?cc=us>).  
298 pages.

*Reviewed by*  
*Morgan C. Benton*

Are humans doomed? Will computer code replace humans in the future economy? Should human beings worry that they will become irrelevant? The reassuring answer, according to economist Philip Auerswald in his newest book, *The Code Economy*, is "no, not likely." Auerswald takes a fresh look at questions similar to those posed by Brynjolfsson and McAfee in their 2014 book, *The Second Machine Age* (reviewed in *Quality Management Journal* in January 2016). While many of the conclusions Auerswald reaches echo those of Brynjolfsson and McAfee, he takes a very different, and much broader, path to get there and arrives at a conclusion that paints a more holistic picture of what it means to be human.

*The Code Economy's* key observation: replace the word "code" with the word "recipe" and it becomes possible to fit today's disruptive innovations into the puzzle of all of history's other innovations. Beginning 40,000 years ago, the story of code is traced from counting and agriculture, all the way to artificial intelligence. Auerswald builds a framework that logically and coherently captures the evolution of economic theory as it co-evolves with the recipes, or code, that drive human production. He seeks to bring balance to an economics that has been overly focused on consumption and consumer choice by illuminating

the technology and drive to create that underlies the human quest for meaning.

Auerswald is not a starry-eyed utopian; he pragmatically addresses the growing problem of the increasingly unequal distribution of wealth in society. Readers will want to read this book to understand his application of the concept of "sequential bifurcation" to economics. They will also want to see how *The Code Economy* echoes the recent work in psychology, sociology, management, education, and other fields, which increasingly focus on how the need to find meaning and purpose in life underlies the drive to do everything.

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## Heartificial Intelligence

John C. Havens. 2016.  
Tarcher/Penguin  
(<http://www.penguin.com/publishers/tarcherperigee/>).  
267 pages.

*Reviewed by*  
*Nicole M. Radziwill*

At the 35th Annual ASQ Boston Conference (BOSCON) in April, the first day featured several presenters (including this reviewer) who emphasized the emerging significance of artificial intelligence (AI) in quality management. Smart manufacturing and the industrial internet of things (IIoT) are already in place; even cars today are complex, intelligent machines that frequently make decisions on the driver's behalf. In 2015, "deep

learning" (neural networks with thousands of layers that make it possible to accurately detect patterns in complex data sets in an almost magical way) went from a curiosity to a proven industrial algorithm, which will accelerate the incorporation of AI into more business processes.

When AI has a dominant role in business processes, it will also play a featured role in quality systems. As a result, it is important for all quality managers to begin learning about this field now, and this book is a great place to begin. The author, John C. Havens, provides a very readable introduction to the issues associated with value-driven implementation of AI and, in fact, probably provides the first treatment of AI from this perspective.

Each chapter starts with a story about some fictional scenario that takes place 15 to 20 years in the future. The first few are dystopian, while the later stories are inspiring and hopeful, which will appeal to all readers. Every story illustrates approximately three primary ideas. The stories integrate interviews with researchers and specialists, and solid explanations of the philosophical and ethical constructs that motivate the author's conclusions. For example, chapter 9 describes the learning process for a kitchen assistant robot as it is trained to behave in alignment with different human values. The assistant faces a challenge: there is no chicken available in the house, and the robot needs chicken for the recipe it is trying to cook. Should the kitchen assistant use the catbot for meat? Although this is a silly example, it is memorable, and it accentuates the need to design human values into AI-intensive systems. Designing

quality into next-generation systems will require designing human values into AI in the same way that this, and the other stories in this book, describe.

Havens concludes that "the journey of identifying your humanity starts with tracking your values." Rather than just stating this as an aphorism, he provides concrete recommendations for how readers can start doing this. Although he does not address how to scale this process to the organizational level, his work provides the idea and theoretical foundation for value tracking as a central component of business intelligence programs.

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## **Throwing Rocks at the Google Bus: How Growth Became the Enemy of Prosperity.**

Douglas Rushkoff. 2016.

Portfolio/Penguin

(<http://www.penguin.com/publishers/portfolio/>).

278 pages.

*Reviewed by*

*Morgan C. Benton*

If the global economy was a massive computer, what would its operating system look like? Rushkoff uses this metaphor to organize an extremely well-researched argument in which he essentially makes three points:

1. The economy is "programmed" to promote growth above all else, particularly human well-being, despite the obvious evidence that a growth mentality is proving disastrous.
2. The historical path by which society arrived at this point is

relatively clear, meaning the consequences of failing to change course now are both predictable and severe.

3. Human beings have the theoretical and technological competence to forge a new economy based on "digital distributism," a framework that sustainably serves people and the planet.

Modern human economies have passed through three eras and are entering a fourth. The Artisanal Era (CE 1000-1300) saw the emergence of a middle class centered around local markets in which craftspeople built highly personalized webs of value based on the products and services they provided to their neighbors. The Industrial Era (CE 1300-1990) birthed artifacts such as centralized currency, stock markets, time-based employment, mass production, and the grow-or-die mentality. This era was catalyzed by nobility striving to retain power, which was waning due to the growing artisanal class. While certainly a time of phenomenal innovation, the resulting entrenched bifurcation of society into "haves" and "have nots" was intentional—a "feature" rather than a "bug." The Digital Industrial Era (CE 1990-2015) saw the linear growth of the Industrial Era become exponential as a result of computers.

If the last 25 years have taught us anything, it is that the current mode of operation is unsustainable. Rushkoff's vision of the new era, which he calls "digital distributism," is both compelling and possible. His entire narrative is thoroughly grounded not only in well-established academic literature, but also by his extensive personal experience inside Silicon Valley startup culture. He echoes and builds on the work in Charles Eisenstein's 2011 book, *Sacred Economics*. While not citing Eisenstein directly,

these books are complementary and draw from the same deep well of understanding about the nature of the economy and whom it is programmed to serve.

Whether one is an executive responsible for charting the course of a company, a young innovator building a startup, or just an individual looking to maximize the positive impact of one's own investments, this is an extraordinarily readable, practical, and highly recommended guide to fixing the economy's broken operating system.

**Morgan Benton** is cofounder of the Burning Mind Project, and an associate professor in the Department of Integrated Science and Technology at James Madison University in Harrisonburg, VA.

## **Introduction to SolidWorks: A Comprehensive Guide with Applications in 3D Printing.**

Godfrey C. Onwubolu.

2016. CRC Press

(<https://www.crcpress.com/>).  
1165 pages.

*Reviewed by*

*Nicole M. Radziwill*

The technique of solid modeling in computer-aided design (CAD) is becoming a more central skill for quality professionals involved in business, design, and engineering. Business analysts may need to reference dimensions and tolerances on drawings and assemblies, either in-house or from suppliers, to ensure quality requirements are being met. Designers may need to prototype products or portions of products, and generate artifacts using 3D printing. Engineers at all levels may require more finely tuned skills in engineering design, including power integration, cam design, and working with special materials like sheet metal.

SolidWorks is one enterprise-class commercial package that

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is available for solid modeling to support professionals at all levels, from novice to advanced. (Other packages in this class include Auto CAD, Autodesk Fusion 360, SketchUp, Inventor, and Wolfram's Mathematica, among others.) The purpose of this review is not to advocate SolidWorks as a software package, but rather to assess the value of this book for those readers who already use or are considering using the tool in their organizations. The book's stated goal is to be a resource for users at all levels.

The book consists of four sections and is organized according to skill level: Introductory Engineering Design, Intermediate Engineering Design, Advanced Engineering Design, and Introductory 3D Printing. The first section provides step-by-step instructions for

creating parts and assemblies. The second part covers custom surfaces and boundaries, gears, animation, and rendering. The third (and most advanced) section addresses mold design, design for sheet metal, routings, power transmission elements, cams, dies, and threads. There is an excellent chapter on geometric dimensioning and tolerancing with exercises that are ideal for a course where lab equipment is not readily available. The final section, which presumes only a low intermediate skill level, discusses additive manufacturing in the context of design for assembly and prepares the reader to use this software to generate models for 3D printing.

Early chapters do not presume a background in engineering design, solid modeling, or SolidWorks. One particular

strength of this book is that theoretical concepts are addressed whenever relevant: for example, when the software calculates the volume of a part, the integral calculus solution is provided for comparison. This makes the book particularly useful as an educational tool, for students at the community college or undergraduate levels or people in vocational training programs. Overall, this book is strong, practical, eminently readable, and demonstrably achieves its goals. This comprehensive SolidWorks reference manual may be the only book one needs on the subject.

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