

# Book Review

Joseph E. Aoun. Robot-Proof: Higher Education in the Age of Artificial Intelligence. Cambridge, MA: MIT Press, 2017, 187 pages.

Reviewed by Alanah Mitchell, Associate Professor of Information Systems, College of Business and Public Administration, Drake University.

**Subject Area:** Information Systems

Joseph Aoun is currently the seventh president of Northeastern University. His book, Robot Proof, prepares students, faculty, universities, and businesses to think about how artificial intelligence (AI) and machine learning will impact the future of education.

Chapter 1 (*Fears of a Robotic Future*) begins by mentioning a 2015 survey which found Americans fear technology more than death, crime, earthquakes, and public speaking. The chapter then presents the history and evolution of the world moving from the agricultural revolution to the industrial revolution to the technological revolution and how higher education has evolved throughout this time. Along with the historical review, Chapter 1 presents some of the tasks technology and AI excels at (e.g., scanning, summarizing, and classifying large amounts of data) compared to tasks humans better suited for (e.g., inventing, communicating, understanding abstract concepts, working together, imagining, and using creativity).

Chapter 2 (*Views from the C-Suite: What Employers Want, in Their Own Words*) recognizes that a world which values big data and AI of course values employees with skillsets in computers, software, algorithms, and coding. However, a 2016 survey of employers cited “leadership” and “the ability to work in a team” as the most desirable skill sets for new hires (pg. 27). Other valuable skills include: “written communication,” “problem solving,” and “strong work ethic or initiative.” Chapter 2 concludes by identifying both critical thinking (i.e., analyzing and applying ideas in a skillful and useful way) and systems thinking (i.e., seeing across areas in a whole, integrated manner) as the crucial skills for human employees in the future.

Chapter 3 (*A Learning Model for the Future*) presents Aoun’s three new literacies for “robot-proof” thinking. These literacies are:

1. Technological literacy (i.e., knowledge of basic principles for math, coding, and engineering),
2. Data literacy (i.e., the capacity to understand and utilize data analysis), and
3. Human literacy (i.e., the power to communicate, engage, and value other humans).

While these three literacies comprise the foundation of humanics, Chapter 3 also presents four cognitive capacities necessary to thrive in the digital economy. These capacities are 1) critical thinking, 2) systems thinking, 3) entrepreneurship, and 4) cultural agility.

Critical thinking was defined in the previous chapter, but Chapter 3 expands on this discussion by explaining how computers are great at yes/no or black/white thinking and not as good at handling real-world, dependent, or gray area challenges.

In relation to systems thinking, Chapter 3 discusses the importance for human involvement in system analysis exploration. Specifically, Chapter 3 provides examples of how humans are able to think cross-functionally to address system-wide challenges (e.g., climate change or state-wide public health concerns).

Entrepreneurship is identified as a critical cognitive capability for humans to apply their creative mindset to economic and social challenges arguing “the whole world may not be Silicon Valley, but the whole world can be inspired by it” (pg. 68). This chapter states that “65% of children entering primary school today will eventually work in jobs that do not yet exist” (pg. 67). Humans need to be able to think creatively from both a startup perspective as well as within the context of existing organizations. In addition, humans need to be able to deal with the failure that can often result from entrepreneurial ventures.

Finally, Chapter 3 identifies cultural agility and the ability to successfully operate in a cross-cultural situation as an important cognitive capability. True cultural agility and the ability to have empathy, discretion, and other human nuances is beyond the reach of AI but is necessary to be successful in the globalized, digital world enabled by technology.

The goal of Chapter 4 (The Experiential Difference) is to present ideas on how higher education can prepare students to master the literacies and competencies outlined in the previous chapter. Popular education concepts including experiential learning, growth mindsets, learning through co-ops, and assessment are all highlighted in this chapter.

Chapter 5 (Learning for Life) makes a case for the importance of lifelong learning, suggesting that in the world of AI staying current will be imperative for all humans. Aoun identifies a few ways for higher education institutions to develop custom and personalized programs to meet the needs of individuals (e.g., students and alumni) and businesses (e.g., for-profit, non-profit, and government). Specifically, Aoun quotes Warren Buffet by recommending each party “stick to what you know” and allow universities to serve the educational needs of businesses and organizations through customized partnerships (pg. 120).

The book closes with an afterword highlighting the data analytics program we have started at Drake University as a great example of an academic institution partnering with businesses to work together to meet the needs of various industries and future employers (pg. 144).

Overall, I really enjoyed this book. As a researcher and educator in the area of information systems, I found it fascinating to read ideas related to AI and higher education from the perspective of a linguistics scholar. Aoun’s historical review of higher education changing with technology as well as his ideas about the future of higher education in the era of AI are worth reading and thinking about for any student, educator, professional, or life-long learner in today’s digital world.