



**Robot-Proof: Higher Education in the Age of Artificial Intelligence.** Joseph E. Aoun. The MIT Press, Cambridge, Massachusetts, USA. 2017. 216 pages. Price: Rs 1350.

We are living in interesting times of technological change. Any talk of artificial intelligence (AI) either evokes a doomsday scenario where machines will take over control of human existence, or it generates what is termed as ‘techno-optimism’ where unprecedented levels of resource optimization facilitated by intelligent machines will solve all our problems. This book does neither. The author Joseph Aoun (a professor of linguistics at the Northeastern University in Boston, Massachusetts, USA) follows a sober middle path. He is not a technology forecaster, but provides an incisive analysis of unprecedented changes sweeping through the technology space, its implications for the future of work, and how the education system needs to respond in order to keep pace.

Although the book never tackles it directly, there is an undertone that tries to allay the fear that in the face of AI, humans will lose agency. Aoun highlights important differences between intelligent machines and the inherent capabilities of humans. Our ability to sense the shifting context and adapt to it is difficult to match. Machines too are developing the ability to learn from the changing context, including culture, but ‘because they cannot know the world through human experience, they cannot fully account for or fully appreciate the human contexts’. Aoun highlights how human search for solutions is often different from that of machines. We have the ability to ‘escape the strictures of predetermined input’ and ‘break free of

our programming’ to take a different look at a problem with a completely new set of variables. Failure has a different meaning for us. Here is a gem: ‘Machines, unlike people, are designed to always succeed at their tasks. If there is a systems failure of some sort, the consequences are usually unpleasant. Yet when human beings fail, the consequences can sometimes be providential.’

While highlighting these important differences, Aoun delves into the future of work and the type of skills that will be required in an increasingly automated world. Command over specific domain knowledge will be no longer enough. The capability to synthesize inputs from a range of specializations will be in great demand. ‘The exponential value is delivered when you start connecting the dots.’ Citing often-repeated examples from tech giants such as Google, Aoun asserts that ‘these capacities are mindsets rather than bodies of knowledge – mental architecture rather than mental furniture’. How to inculcate such mindsets? He proposes a new framework for education and terms it ‘humanics’, which forms the centerpiece of the book.

Aoun argues that humanics would involve certain ‘new literacies’ as well as ‘cognitive capacities’. The former entails technical literacy (everybody should be conversant with coding), data literacy (everybody should be able to deal with vast amounts of data and ask the right questions) and human literacy (everybody should be able to communicate and engage, tap into human diversity and address the issues of inequality). The cognitive capacities would include critical thinking (ability to analyse multi-layered problems and complex situations), systems thinking (ability to connect across disciplines), entrepreneurship (ability to invent new ways to bring value) and cultural agility (ability to immediately grasp and respond to shifting cultural context).

While humanics is an interesting model of learning for the future, one can argue that it has been advocated in some form or the other under the garb of ‘holistic education’. What follows the description of humanics in the book is more interesting. The book makes a case for experiential learning. Classroom learning is coupled with real-world learning, wherein each reinforces the other and the learners make a conscious, mindful effort to develop the capacities outlined in the humanics model. The learning follows

the trajectory of acquisition of new skills and knowledge, integration across disciplines, and application in the real world. Aoun argues that such an approach would facilitate ‘far transfer’ of insights from one context to another, which he suggests will always be our competitive advantage over machines. He cites the example of how a deep study of restoration poetry might provide insights that can be used for designing public relations campaigns.

Such an approach has important implications for the way higher education is delivered. Universities have to begin to cater to life-long learners. Universities can no longer rely on ‘build it and they will come’ approach. They need to deliver much closer partnership with prospective employers as well as their own alumni. This will support high degree of customization of both the content of education and method of delivery. Aoun effectively demolishes the dichotomy between liberal arts and the so-called ‘harder’ disciplines. A new model of learning would require seamless integration between the two.

This book is a delightful, easy read even if it deals with a serious subject. It is important reading for anybody who is concerned about the future of his/her own work, and essential reading for those concerned with the relevance of higher education in the face of rapid technological development. My only quibble is that the book is heavily oriented towards the American context. While it touches upon issues of inequality in the context of technological change, it does not get to the root of some of the related issues. Why is it that public policies all over the world are always half a generation behind the technological advancements? How can we get the basics right – open data as a public good, interoperability of global data systems, platforms for interaction between producers of technological capacities and all its potential users – in order to ensure that the technological advancements are benefiting everyone and not generating new kinds of fragilities? Perhaps that could be the subject of the next book Aoun could write.

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