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Book Review

Technology's Promise: Expert Knowledge on the Transformation of Business and Society

William E. Halal

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reviewed by José Cordeiro

This recent book by William Halal deals brilliantly with the co-evolution of technology, business, and society. A concise but complete “history of the future,” covering most scientific and technological fields – with specific scenarios until 2050 and with general ideas for the future of humanity – the book is a summary of his current research aided by an expert panel of about 100 futurists around the world. Educated as an aerospace engineer, Halal served as an Air Force officer, worked on the Apollo Program and in Silicon Valley, and has always been following science and technology and its impact in the “real world.” Halal is professor emeritus of science, technology, and innovation at George Washington University and co-founder of the Institute for Knowledge & Innovation. He is a respected scholar, consultant, public speaker, and the author of hundreds of articles, including op. eds. in the *New York Times*, the *Christian Science Monitor*, and the *Toronto Globe & Mail*. Macmillan’s *Encyclopedia of the Future* ranked Bill among “The World’s 100 Most Influential Futurists,” including H.G. Wells, Arthur C. Clarke, Alvin Toffler, and Daniel Bell.

Already a respected author with popular books such as *Internal Markets: Bringing the Power of Free Enterprise Inside Your Organization* (1993), *The Infinite Resource: Creating and Leading the Knowledge Enterprise* (1998), and *The New Management: Bringing Democracy & Markets Inside Organizations* (1998), Halal’s new book builds on his cumulative experience and that of his TechCast expert panel, which Halal founded a few years ago. TechCast (www.TechCast.org) can be described as a virtual think tank that tracks the technology revolution and its impact on humanity. The TechCast Project at George Washington University has developed a sophisticated Web site that surveys 100 high-tech executives, scientists, engineers, academics, consultants, futurists, and other experts around the world to forecast breakthroughs in all fields of science and technology. The TechCast Project strives to be the most complete forecasting system available, covering the entire span of technological innovation and updated

constantly. The current global TechCast results, blended together in a masterful way by Halal with his futurist ideas and visions, are the basis of *Technology's Promise*.

Halal begins his book with an excellent guide to the present technological revolution, followed by specific chapters about the most important technologies and their direct impacts on business and society. He then carefully reviews most of the major areas covered in the TechCast Project, namely: energy and environment, information technology, E-commerce, manufacturing and robotics, medicine and biogenetics, transportation, and space. Each chapter of *Part I: Forecasts of the Technology Revolution* makes an excellent summary of current developments and future possibilities in each field. No forecast is perfect, but this work covers the entire span of technological innovation and the data are continually updated, providing what is likely the best forecasts ever assembled.

Considering artificial intelligence (AI) as one of the leading technologies of the future, for example, Halal wonders about the rise of AI posing one of the most fascinating dilemmas of our time: “*Is there a fundamental difference between machine intelligence and human intelligence?*” Despite the fact that many of us are utterly convinced that human thought surpasses sheer information, could we be wrong? Is science poised for another great revolution demonstrating that we are fundamentally not much more than wet computers? Or will we be forced to accept consciousness and human spirit as a new frontier?

Part II: Social Impacts of the Technology Revolution builds on the previous chapters in order to visualize possible futures and the direct impact of science and technology on social institutions during this current Knowledge Age, which seems to be giving birth to an Age of Consciousness. The author argues that these changes are fundamental to the very survival of humanity. Halal then concludes by integrating all the previous forecasts across the different fields in vivid scenarios that take the readers in a virtual trip through time. He refers to the “World Online” for the 2010 scenario, the “High-Tech Arrival” for the 2020 scenario, the “Crisis of Maturity” for 2030, and the “Global Order” for 2040–2050. He finishes on a personal note, understanding our place in history and reviewing the “life cycle of evolution.” Halal closes by saying: “I marvel at what great privilege it is to witness this maturing of civilization’s long journey.”

These conclusions are not “optimistic” but conservative estimates based on a scientific method. *Technology's Promise* recognizes that the world must mature if it is to survive, and the evidence presents an entirely plausible path forward. In fact, Halal’s forecasts describe the most likely outcome, rather than mere possibilities. There are no guarantees, of course, but this is a reasonable basis for a vision able meet today’s challenges. Without such aspirations, nothing would change. We would remain captives of today’s world.

The book is really an important contribution to futures research and must be read by people seriously interested in the future, and even by those who only want some glimpses of many things to come. I thoroughly enjoyed reading Halal’s book, even if I might be more radical in terms of the speed and the changes that are happening. For example, the ideas of Ray Kurzweil and the “Singularity,” the continuous acceleration of change, and the possible technological evolution of humans to transhumans and posthumans are only briefly mentioned in the book. However, they are very powerful ideas that could make the future change faster and faster, and in more unpredictable ways. All in all, the possibilities considered by Halal are truly fascinating, and *Technology's Promise* is a fantastic way to review the history of the future, including different intriguing time scenarios.