

The Time-Traveler John von Neumann

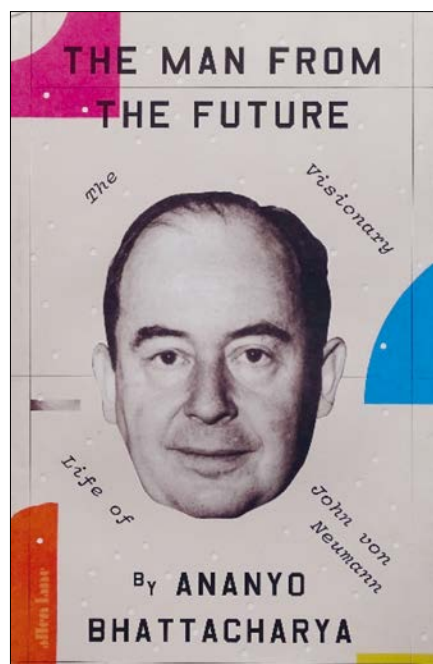
According to John von Neumann, only “an intelligent exercise of day-to-day judgment” can save us and our planet.

“I am thinking about something much more important than bombs. I am thinking about computers.” This was John von Neumann’s (1903–1957) response in 1946 to a question about his current interest. By then he was past two major periods of his activities and others would follow during the remaining decade of his short life. His exceptional achievements, presented in Ananyo Bhattacharya’s *The Man from the Future: The Visionary Life of John von Neumann*, are overwhelming.

It all began in Budapest where a number of high schools graduated great future contributors to world science such as Theodore von Kármán, Michael Polanyi, George de Hevesy, Leo Szilard, Dennis Gabor, Eugene P. Wigner, Edward Teller, and—von Neumann. He soon left Hungary, a conspicuously anti-Semitic country in post-World-War-I Europe. He embarked on a promising career in Weimar Germany only to move on even before the Nazis took it over. He was one of the first hires at the Institute for Advanced Study (IAS) in Princeton. Already as a teenager, he started publishing mathematical treatises. While in Germany, he authored the *Mathematical Foundations of Quantum Mechanics*. His scientific output did not suffer from the change of venue when he moved to America; on the contrary.

From 1940, he became involved in defense; steadily rising in various projects and committees. He had valuable inputs in strategic planning as well as concrete issues. He was one of the architects of the implosion ignition for the plutonium bomb and the determination of the position of exploding the atom bomb for highest efficiency. When the development of the thermonuclear bomb necessitated amounts of calculations of heretofore unseen enormity, it gave him an extra push to create the stored-program computer. An elaborate

section of Bhattacharya’s book discusses von Neumann’s game theory and his joint book with Oskar Morgenstern, *Theory of Games and Economic Behavior*, published in 1944, amid his most intense defense-related activities.



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Quiet persuasion with reason was von Neumann’s mode of operation rather than loud statements, let alone open belligerence. Yet he was a hawk (using a term that did not yet exist then) who advocated preemptive nuclear strikes on Moscow while the United States still had the atom bomb monopoly. His rational arguments made him an authority in forging post-war U.S. strategies throughout the Cold War even when he was no longer around. He supported developing the hydrogen bomb for its enormous destructive power, which was a necessity

when long-range ballistic missiles did not have sufficient accuracy in reaching their target. He was very much for developing long-range missiles and producing them in a great variety. He knew that scientific and technological progress could not be stopped and was aware that all discoveries and innovations might advance human well-being as well as be utilized for military purposes. He was early in recognizing the importance of climate change, the hazards of carbon-dioxide emission, and that even changing the climate might be turned into a devastating weapon.

Von Neumann’s razor-edge mind was constantly racing ahead. At one point he turned to biology. He compared the organism, a biological machine, to man-built machines, and arrived at his ultimate area of inquiry: the human brain. With his interest in replication, he embraced every area of cutting-edge science while the rest of the scientific community had still been catching up. His study, “*Can We Survive Technology?*” is a must read for everyone dealing with the future of humankind at any level, from local to global. His unfinished book, *The Computer and the Brain*, was based on his Silliman Memorial Lectures, which he could not deliver because of his devastating illness.

Bhattacharya’s book is not a usual day-to-day account; rather, it is more the story of von Neumann’s ideas, their roots and, more importantly, their afterlives. Those ideas have penetrated and continue to impact our every-day lives. Bhattacharya brilliantly places von Neumann’s work in perspective. Even though von Neumann left behind an incomplete oeuvre, this book offers a self-consistent pattern of what he accomplished for us and for generations to come. ■

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