John von Neumann: 'automaton'

by Michael Minnicino

John von Neumann has been credited—or loudly credited himself—with playing a decisive role in the creation of the computer, nuclear weapons, game theory, systems theory, behaviorism, cognitive science, robotics, economic modelling, and advanced weather forecasting. He is often compared to the polymath seventeenth-century Englishman Francis Bacon.

John von Neumann

That comparison is proper: Von Neumann was one of the few modern scientists to equal Bacon in both his self-promotion and his clinical phobia of uncontrolled human creativity. Just a couple of scenes from his biography demonstrate his maleficence.

Janos Neumann de Margitta was the son of a Budapest banker who had been ennobled in 1913 for services to the Austro-Hungarian Empire. "Johnny" was acquainted with many of the other Jewish intellectuals in Budapest before World War I, including physics student Leo Szilard, and Georg Lukacs, later the Comintern agent who founded the so-called Frankfurt School.

During graduate studies in Germany at the University of Göttingen, von Neumann demonstrated his lifelong obsession with order, and became a disciple of David Hilbert, who had embarked on a project to "clean up" the messy theoretical questions left by Bernhard Riemann, by demonstrating that all mathematics could be based on eternal axioms. Von Neumann continued happily in this endeavor until 1931, at which time he read a paper by Kurt Gödel which demonstrated conclusively that any set of axioms such as that sought by Hilbert and von Neumann must necessarily be incomplete. The biographical evidence strongly suggests that von Neumann suffered a psychological "breakdown" after reading Gödel's proof. Typically, von Neumann praised Gödel publicly, and bitterly criticized him privately.

Barred from Hilbert's axiomatization project by Gödel's superior proof, von Neumann threw himself into game theory, a subject with which he had toyed earlier in his career. To this day, von Neumann is still, ignorantly, identified as the founder of game theory, based upon his 1928 paper, "On the Theory of Parlor Games." Actually, the only person who might reasonably be called the founder of game theory is Emile Borel. A decorated World War I veteran and Sorbonne professor, Borel wrote several papers on games starting in 1921. Games had been a minor, although not-illegitimate branch of mathematics since the early seventeenth century. As part of his analysis, Borel made the competent observation that game theory could *not* be used for a strategic military analysis; this was an especially pungent observation, as Borel was eventually to become a member of Parliament and France's Minister of the Navy, and, during World War II, a Resistance hero. In 1953, after the media had made von Neumann one of America's best-known scientists, Borel's papers were translated and republished; von Neumann's plagiarism was vaguely suggested. In print, von Neumann responded graciously. Simultaneously, he made screaming telephone calls to Borel's adherents.

In von Neumann's version of the theory, games could *definitely* be used for strategic military analysis. Indeed, he insisted that all human activity could be predetermined by mathematical analysis, because, as he put it, the human individual is nothing more than "an efficiently organized, large natural automaton."

Von Neumann's militant positivism led a friend of his, Frank Aydellote, to make a useful suggestion in 1943. Aydellote was president of the Institute for Advanced Study at Princeton, where von Neumann was then working; Aydellote was also America's leading Anglophile, the head of the American Rhodes Trust, and a member of the Committee of Fourteen, a group of influentials who called for a postwar world federation led by Britain and America. Aydellote teamed von Neumann up with Oskar Morgenstern, an economist also working at the institute. By 1944, von Neumann and Morgenstern published *The Theory of Games and Economic Behavior*, which for the first time purported to prove that economic activity was subject to deterministic modelling.

Before you call your broker . . .

All subsequent mathematical game models of the economy, even the Black-Scholes model used until recently at Long Term Capital Management, derive from the von Neumann-Morgenstern original. If your broker is using modelling (and, he is), then you have John von Neumann to blame. And, before you call your broker again, consider this anecdote: Von Neumann was so obsessed with the positivist ideology of determinism, that he refused to accept the idea of accidents. At the same time, he was demonstrably the poorest automobile driver in Princeton, New Jersey, driving on the wrong side of the road with equanimity, daring other drivers to give way. Thus, the man who didn't believe in accidents "totaled" at least one car a year.

Anyone wanna buy a slightly dented economic model?