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BOOK REVIEW

Two views of mathematicians gone mad

Reviewed by Mark Sarvas

A Madman Dreams of Turing Machines
By Janna Levin
Knopf. 230 pp. $23.95

The Man Who Knew Too Much
Alan Turing and the Invention of the Computer
By David Leavitt
Norton. 336 pp. $13.95

We are, it appears, suckers for a good paradox. Who hasn't at least once puzzled over the Liar's Paradox? ("Everything I say is a lie. I am lying to you.") How better to account for the durable appeal of a sub-genre that might be christened "Math-lit"? From novels (Apostolos Doxiadis' *Uncle Petros and Goldbach's Conjecture*) to biographies (Sylvia Nasar's *A Beautiful Mind*) to theater (David Auburn's *Proof*), the figure of the eccentric mathematician exerts a powerful hold on our imaginations. Perhaps it's our own paradox, a reflection of our unease at owing so much to those so odd.

For sheer eccentricity, it's hard to match Alan Turing and Kurt Gödel. Gödel, who redrew the mathematical landscape with his incompleteness theorem (which, grossly oversimplified, states that not all truths are provably true), starved himself to death in a paranoiac haze, convinced his food was poisoned. Turing, best known for cracking the German Enigma code, was given to riding his bicycle in a gas mask and wearing his pants held up with string.

But their lives were more than the sum of their quirks, as Janna Levin depicts in her intelligent if uneven debut novel, *A Madman Dreams of Turing Machines.* Levin, a professor of mathematics and physics at Barnard College, wades into the considerable literature on both men with an impressionistic, elliptical novel that eschews theory for the interiority of these great if tortured minds. Early on, Turing wonders "Where is God in 1+1=2?" Later, Turing has his Eureka! moment, lying on his back in Granchester Meadows:

Before the late hours of night, still on his back, growing cold in the dew, he sees how chess might be mechanized because he sees exactly how to mechanize 1+1. He invents a machine that can add. A machine with no mind, no spirit, no soul.

His discovery shines in his thoughts. The jewel of his mind's systematic expedition casts piercing rays of gold through the rotating dome above him.

This is a harbinger of Turing's Universal Machine, the theoretical forebear of today's computers. As Levin alternates between the lives of Turing and Gödel (the men never met, though they influenced each other), she delivers a convincing, palpably human portrait of solitary genius. Turing struggles with the loneliness his homosexuality imposes, and Gödel copes with exile and incipient madness.

The tales are cursorily knit together by the occasional, extraneous presence of an anonymous present-day narrator, a device never fully realized. And, like a pair of inverted parabolas, when Turing's story is at its most compelling, Gödel's is at its most leaden, and vice versa. Dramatic moments - Turing's persecution as a student, Gödel's flight from the Nazis, his first unveiling of his incompleteness theorem - are effective, whereas blocks of mathematical exposition feel forced and didactic. But Levin's novel is, at its heart, an effective meditation on interconnectedness, language and free will - can choice be rendered as an if/then statement? - a paean to misunderstood heroes, as well as an elegy to a lost, golden era of discovery.

It can be difficult today to appreciate the impact of these men, Gödel in particular. As the new century dawned, science was laying waste to its certainties. Einstein shattered the notion that time was constant. Heisenberg introduced the resonant notion of uncertainty. And Gödel showed that even arithmetic could not be counted on.

Into this climate, Turing injected his notions of intelligent machines, going so far as to envision humans as biological machines, equally subject to our own programming.

This notion speaks poignantly to Turing's homosexuality, as David Leavitt makes clear in his biography, *The Man Who Knew Too Much: Alan Turing and the Invention of the Computer*, out in paperback next month.

Leavitt, a novelist of exceptional ability, takes particular interest in Turing's status as a gay martyr. Upon the completion of his code-breaking successes at Bletchley Park, he was not accorded the thanks of a grateful nation. He was, instead, prosecuted in 1952 under the Gross Indecency Act - the same law under which Oscar Wilde was jailed and that remained on the books until 1967 - and sentenced to a course of chemical castration that ultimately drove him to suicide, via a cyanide-laced apple.

Although Leavitt occasionally overworks the gay subtext, he is an able guide through the thicket of Turing's life and mathematical ideas. He brings his clear and bracing style to chapters devoted to explaining the complex mechanics of a Universal Machine as well as to Enigma code-breaking, and he brings his considerable empathy to this portrait of a gay man at odds with a hostile society.

It serves as both a compact introduction to Turing and a useful adjunct to Levin's novel. The novelist-turned-mathematician complementing the mathematician-turned-novelist is the sort of paradox of which Turing and Gödel might well have approved.

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