

**REVIEW OF
*TURING (A NOVEL ABOUT COMPUTATION)***

STUART M. SHIEBER

Turing (A Novel about Computation). Christos Papadimitriou. 284 pp. MIT Press, 2003. \$24.95.

Christos Papadimitriou's *Turing (A Novel about Computation)* is an epistolary novel, or rather, an e-pistolary novel, constructed in large part as a transcript of computer dialogs between various human and computer characters.

The structure is familiar: boy meets girl, boy loses girl, boy gets girl, but that structure is perhaps the least important part of the book, as it ignores the fact that the crucial character in the book is a computer program. This program, **Turing**, is a simulation of Alan Mathison Turing himself, the founder of the field of computer science and seminal contributor to essentially all of its major subfields. The simulation is perfectly fluent, even writing in Britishisms: maths, programme, telly, labour.

Ethel, a high-flying software guru vacationing in Corfu, mentions the chimerical **Turing** program to her new lover, Alexandros. Alexandros is an archaeologist struggling with his current discovery, a mysterious geared device recovered from an ancient shipwreck from Kythera. After their fevered assignation, Ethel leaves Alexandros heartbroken. He spends the next 200 pages working through the loss while being educated by **Turing** in a great swath of computer science and related topics.

The book's subtitle is apt, and the coverage of computing-related topics is daunting, including non-Euclidean geometry, the liar paradox, Cantor's diagonalization proof, pipelined computer architectures, packet switching, Turing machines, uncomputability, the halting problem, morphogenesis by reaction-diffusion, Arrow-Debreu economic equilibria, NP-completeness, public-key cryptography, and the Turing test. Not coincidentally, many of these core ideas from computer science were due to Alan Turing himself, and not just the ones with his name on them. As the denouement, **Turing** engages in a Turing test itself. The crucial conversation precipitating the reuniting of Ethel and Alexandros has **Turing** standing in, Cyrano-like, for the male suitor.

In the end, the threads get resolved—Ethel, Alexandros, Turing, the Kytherian gearbox.

Perhaps the most attractive thing about the book from the point of view of a computer scientist—and in stark contrast to the vast majority of fiction that includes references to or relies on computer-related issues—is the quality of the discussion of computing. Typical attempts to make computer science concepts accessible to a lay readership have a cringe-making quality. Papadimitriou, an acclaimed computer scientist and a professor in the renowned computer science department of the University of California at Berkeley, is not someone to make the kinds of elementary mistakes that one finds in journalistic coverage of computer science or in the hands of the garden-variety science-fiction writer. This alone is enough to make a scientist grateful. More, Papadimitriou is, refreshingly, willing to grant the reader some intelligence; he describes the Aegean shoreline as “so hauntingly beautiful because its fractal dimension happens to be equal to the golden ratio” and is willing to stop there, with no pedantic explanations of either of the technical concepts. (Whether the claim is true is a different matter.)

This is truly a novel of ideas, and not only computer science ideas. The author brings up philosophy from ancient (more Greek philosophers than any human outside a philosophy department should be able to name) to modern (Bertrand Russell), history both distant (Roman Empire) and recent (Edward and Mrs. Simpson), both deep (World War II) and superficial (Edward and Mrs. Simpson), ideas from mathematics, economics, biology. The breadth of knowledge that Papadimitriou displays is striking, without being overbearing; one is left with the feeling that a meal with the author would be fascinating, not tedious.

True, the writing gets a bit mawkish at times. “He pauses, he looks deeply into her eyes, then: ‘All I want now is to be with you, my love. All the time. No masks, no games.’” Jackie Collins is ventriloquized in sex-charged scenes. On the other hand, some of the tropes seems to have come from the oeuvre of William Gibson: “‘If this is true, if he can pick out clients of relevance engines, you know what it means?’ Her little face is now full of shadows. ‘It means that this is runner code, Dad. It means he has taken over the relevance engines, shredded their smoke.’” Or, as Gibson would have it, “cracked their ice.”

And, of course, there are plenty of details to quibble about. Indeed, much of the “Afterword”—thirty-eight pages of emails attributed to members of a book club reading the novel—is devoted to quibbles on one or another topic. Is the author’s presentation of the history of cryptography “timid” in not making clear the conspiratorial role of the

NSA? Did Archimedes really die at the hand of a soldier who erased a diagram he was drawing in the sand? Is the author too kind to the Macedonians? Not kind enough? Most of the contributions to the afterword, however, allow Papadimitriou to provide references to the literature and to expand upon some of the technical ideas in the text without encumbering its flow.

I had my own quibbles. For instance, Papadimitriou passes on the myths that Turing predicted his eponymous test would be passed by the year 2000 and that he viewed passing as requiring a mere 30% probability of confusing the judge in the test. Both claims are based on common misreadings of Turing's seminal paper "Computing Machinery and Intelligence".

But nitpicking misses the point. The plot, such as it is, provides the excuse to present the most interesting, important, and exciting results of computer science, as well as a passel of other ideas, in a readable and entertaining way, surrounded by a veneer of romance. This novel is a fun read, but not a mere entertainment. It has profundity as a side effect.

STUART M. SHIEBER is the James O. Welch, Jr. and Virginia B. Welch Professor of Computer Science at Harvard University. His book *The Turing Test: Verbal Behavior as the Hallmark of Intelligence* will be published later this year by MIT Press.

Publication information: An edited version of this review appears as Stuart M. Shieber. 2004. A Postmodern Romance. *American Scientist*, volume 92, number 3, May-June.