

# THE WALL STREET JOURNAL.

This copy is for your personal, non-commercial use only. To order presentation-ready copies for distribution to your colleagues, clients or customers visit <http://www.djreprints.com>.

<http://online.wsj.com/articles/book-review-adass-algorithm-by-james-essinger-1412976961>

## BOOKSHELF

# Book Review: 'Ada's Algorithm' by James Essinger

Her father was Lord Byron. Her mother was the 'princess of parallelograms.'

---

## Solid state

Charles Babbage's 1832 'Difference Engine' mechanical computer. GETTY IMAGES

By **HOWARD SCHNEIDER**

Oct. 10, 2014 5:36 p.m. ET

**Her father, Lord Byron**, was the celebrated poet, charismatic cultural figure—and one of the most lurid rakes in 19th-century Britain. She had a zeal for mathematics and technology that she channeled into an undertaking exceptional for her day: analyzing and explaining a new kind of machine that we today can reasonably call a computer. She was Ada Lovelace, and in “Ada's Algorithm” James Essinger passionately desires to prove her greatness.

---

## ADA'S ALGORITHM

---

*By James Essinger*

*Melville House, 254 pages, \$25.95*

Augusta Ada King, Countess of Lovelace, usually known as Ada Lovelace, was born to Byron and his wife, Annabella, in 1815. The parents had only been married about a year, and it wasn't a happy union. Byron berated his wife and cheated on her—with his half-sister. Moreover, Annabella was convinced that her husband had only married her because her family was wealthy, a supposition that was undoubtedly true. About a month after Ada's birth, Annabella could no longer bear Byron's abuse: She took her baby daughter and fled to her parents' home. Three months later the poet, bedeviled by debt and notoriety, escaped to the Continent. He never saw or communicated with Ada again.

Byron was a knave, but Ada's mother was an embittered prig who spent her postmarital life, when

she wasn't "taking the waters" (she was also a hypochondriac), trying to maintain dominance over her daughter. But Annabella was highly educated for her era; Byron had dubbed her the "princess of parallelograms." She "was particularly keen for Ada to have a mathematical education," Mr. Essinger writes. "Lady Byron wanted to suppress Ada's imagination—which [she] saw as dangerous and potentially destructive and coming from the Byrons—and wanted to make Ada, as far as feasible, completely rational." As it happened, it was within the discipline of mathematics that Ada's imagination flowered.

At the age of 19, Ada married a fellow aristocrat, William Lord King, an amiable nebbish who at least recognized his wife's intellectual gifts. They had two sons and a daughter. (Mr. Essinger unfortunately includes practically nothing on Ada's relationships with her children or what they were like.) Ada's true soul mate was Charles Babbage. Born in 1791 into a wealthy family, educated at Cambridge, Babbage might legitimately claim the unfortunate distinction of being one of Victorian Britain's most frustrated individuals. A superlative mathematician and engineer, he conceived two inventions, the Difference Engine and the Analytical Engine, that would surely have changed history—the latter was essentially a prototype computer—if they had ever been constructed. The Difference Engine came about because Babbage was exasperated that the logarithm tables of his time, which were used in such fields as navigation, astronomy and finance, were teeming with errors. Babbage believed that his Difference Engine, a mechanical construct that would produce mathematical tables almost devoid of human error, would be a great boon to the Industrial Revolution that was already transforming British society. "The machine's operation would be based around meshing independently moving cogwheels arranged in vertical columns with each other. This meshing process would carry out an arithmetical calculation."

Work on the Difference Engine began in 1820, and a small-scale demonstration model was finished in 1832. Regrettably, Babbage's full-scale device was never constructed in his lifetime. Lack of funds and the inability of manufacturers to punctiliously mass-produce small parts were two reasons. Another was that by 1834 Babbage became consumed with the idea of a successor apparatus, the Analytical Engine, which would be even more sophisticated, precise and useful. Perhaps the most ingenious technical aspect of Babbage's new machine was his plan for it to be controlled by punched cards, an idea he lifted from the design of the Jacquard loom, an early-19th-century French invention that had revolutionized that nation's silk-weaving industry. Unhappily, the Analytical Engine never made it beyond the pondering stage. But even as a conceit (a well-planned and diagrammed conceit), it allowed Ada Lovelace to vigorously exercise her intellectual powers and perceptions.

In the 1830s and 1840s Babbage hosted parties at which he displayed the wonders of his model Difference Engine. The parties became a lodestone for Britain's intellectual elite: Darwin and Dickens were among the guests, and, in 1833, the 17-year-old Ada and her mother attended for the first time. They visited again less than two weeks later, by which time Ada had fallen in love—with the Difference Engine. Ada and Babbage also became great friends. In 1842 the Italian mathematician Luigi Federico Menabrea published a paper, in French, on the Analytical Engine, having earlier met Babbage in Turin. Ada decided to translate the article into English to boost her friend's prospects and her own. At Babbage's instigation, Ada also annotated the paper. She produced

seven largely technical notes in all, which cumulatively were longer than the Italian mathematician's original text.

Mr. Essinger states that “Babbage’s new Engine could do three things: process mathematical formula written in symbols, crunch numbers and calculate algebraical results in literal notation.” Ada, however, was realistic about the limitations of the machine. “[It] has no pretensions whatever to originate anything,” she wrote in one note. “It can do whatever we know how to order it to perform.” But it is Ada’s more speculative observations that have intrigued future biographers and science historians. Annotating one of her annotations, Mr. Essinger says that “Ada is here seeking to do nothing less than invent the science of computing, and separate it from the science of mathematics.” He sums up Ada’s achievement: “It took Ada to see what the Analytical Engine truly represented in the forward evolution of human technology. . . . Ada realized that the Analytical Engine could be applied to any process involving the manipulation of information.” Or, as others have suggested, Ada Lovelace was the first computer programmer.

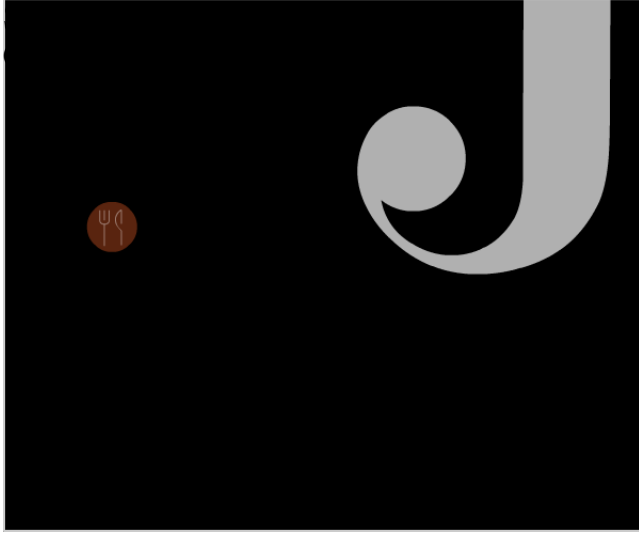
Ada’s translation and notes were published in a British journal in September 1843. They caused no great stir. (Mr. Essinger claims that “one of the big problems was that Ada was a woman.”) There were no more ambitious mathematical or scientific forays during the rest of her life, unless one believes, as some do, that her betting on horses in her last years was actually a scheme to test certain math-grounded techniques. If that was indeed the case, they failed miserably, for she ran up huge debts. In 1864, Ada died at age 36 of uterine cancer, having suffered greatly. During the last months of Ada’s life, Annabella moved into her daughter’s house and imposed her will yet again, refusing to let Babbage visit or be designated executor of Ada’s will. But at Ada’s insistence, she was buried next to her father in Nottinghamshire. Her mother wasn’t at the funeral. Neither was Babbage, probably because he feared running into Annabella.

Mr. Essinger is adept at describing technology, but “Ada’s Algorithm” has flaws of style and structure. Mr. Essinger can be repetitive, and at least once, on the subject of whether Babbage persuaded Ada to translate Menabrea’s article, he seems to contradict Babbage’s own memoir. But the book must be judged on the fact that it is as much a brief for Ada Lovelace’s significance as it is a biography. In the preface, Mr. Essinger speaks of her genius and declares that she is “the most famous woman in the history of technology.” Discussing one sentence in Ada’s notes, he maintains that a “strong case could be made that this sentence is the most visionary sentence written during the entire nineteenth century.” The sentence reads: “We may say most aptly, that the Analytical Engine *weaves algebraical patterns* just as the Jacquard-loom weaves flowers and leaves.” I was left nonplused by Mr. Essinger’s grandiloquence. Other biographers have questioned whether Ada had the mathematical expertise to write the Menabrea notes on her own. And surely one can find more visionary sentences by Nietzsche, Kierkegaard, Lincoln, and many others? And I was unpersuaded in general by Mr. Essinger’s apologetics, because his evidence is skimpy: Although the book contains a bibliography, there are only four endnotes.

There is a tantalizing topic buried in “Ada’s Algorithm.” It is the story of a society proceeding irrevocably but ambivalently into the modern age, enthralled by advances in science and technology,

adapting to new social mores, and yet still beholden to many antiquated traditions. Ada Lovelace embodied those contradictions, but Mr. Essinger eschews this subject—yet another missed opportunity in a disappointing book.

—Mr. Schneider reviews books for magazines and newspapers.



Copyright 2014 Dow Jones & Company, Inc. All Rights Reserved

This copy is for your personal, non-commercial use only. Distribution and use of this material are governed by our Subscriber Agreement and by copyright law. For non-personal use or to order multiple copies, please contact Dow Jones Reprints at 1-800-843-0008 or visit [www.djreprints.com](http://www.djreprints.com).