The Real Ada, Countess of Lovelace

by Carol L. James and Duncan E. Morrill

It was becoming embarrassing. The Department of Defense had been working for some years on the development of the high-order language to program its embedded computers, but the language still had no official name--only informal designations like DOD-1, which no one in the DOD High Order Language Working Group favored because that implied a language specifically for military purposes and might inhibit its use in universities and other non-military spheres.

According to Air Force Colonel William A. Whitaker, the first HOLWG chairman, many names were proposed, but it was Commander John D. Cooper, the Navy's HOLWG member, who in May 1979 came up with a name that HOLWG (representing various government branches) could approve unanimously: Ada*, in honor of an obscure but talented mathematician--Ada, Countess of Lovelace.

Back in the 1840s, Ada Lovelace had worked with Charles Babbage on his mechanical computer invention, the analytical engine. Babbage's hopes for continued funding from the British government for building his machine were frustrated after a few years, compounding his technical difficulties--the greatest one being that the engine required parts whose fabrication was beyond the state of the art then and for many decades thereafter--so that the computer never became fully operational. Nonetheless, the Countess of Lovelace worked out most of its theoretical principles, as well as its programming, and has thus been called--with much justification--the first computer programmer.

Evidently inspired by Bertram V. Bowden's 1950s computer book, Faster Than Thought, which dealt with the work of Babbage and the countess, HOLWG approved the name "Ada" and received permission from Ada's descendant, the Earl of Lytton, to use it. Colonel Whitaker says the earl, himself a retired lieutenant colonel of the British army, was immediately enthusiastic about the idea and pointed out that the letters "Ada" stood "right in the middle of "radar."

The Ada project is still almost as unfamiliar to most people as the name Ada Lovelace, but its activities and accomplishments are considerable and include the Ada language MIL-STD-1815 (10 Dec 1980), Ada for MIL-STD-1750A instruction-set architecture, Ada-Europe, and AdaTEC of the ACM.

Use of the countess's name seems especially fitting for such ambitious endeavors since any serious study of the historical record shows that hers was not some idiosyncratic affliction but a comprehensive and integrated faculty encompassing the philosophical and the practical. Her major extant scientific work--notes she appended to her translation into English of the L.F. Menabrea paper on Babbage's analytical engine--attest to her mathematical knowledge and scientific intellect. About three times longer than the Menabrea work itself, the notes display mastery of both the mathematical theory and numerical techniques of Babbage's computing engines. England's scientific leaders of the day--Michael Faraday, Sir John Herschel, Charles Wheatstone, Mary Somerville, and Augustus De Morgan--knew and appreciated her abilities.

Her father was the poet Lord Byron who, while still a bachelor, underwent an experience that was to have profound effects upon his only legitimate child, born Augusta Ada Byron. At 25, he fell in love with his married half sister, Augusta Leigh; and to deny that an incestuous relationship existed between them is to ignore an overwhelming body of evidence, although his paternity of her daughter Elizabeth Medora Leigh, born in 1814, is less certain.

In January 1815, Byron married Annabella Milbanke, a puritanical young woman of good family and an amateur mathematician. Unfortunately, their personalities were incompatible, and a few weeks after Augusta

*Ada is a registered trademark of the U.S. Department of Defense (OUSDRE-AJPO).

Ada was born (December 10, 1815), the couple separated. Shortly afterward, rumors concerning Byron's previous affair with Augusta destroyed his reputation and social acceptability, forcing him to take up permanent residence on the Continent. However, subsequent letters and much of his poetry show tender concern for the child he never saw again. He died at 36, eight years after her birth.

Lady Byron resolved to bring up her daughter (now called Ada, for obvious reasons) to be as unlike Byron as possible. Setting herself up as a paragon while hinting of unspeakable evil in her husband's character, she encouraged Ada's mathematical talent but discouraged any traits that reminded her of Byron.

When Ada was about 14, she suffered a severe paralytic illness--possibly of psychosomatic origin. Unable to walk for almost three years, she pursued the mathematical studies she loved and became an accomplished musician and linguist. Like most young ladies of her social class, she was taught by tutors--some of whom were eminent scientists and mathematicians, such as Augustus De Morgan, a family friend.

At 19, Ada married William King (created Lord Lovelace three years later). Her mother became the dominant and domineering figure in the marriage, forming a kind of ruling partnership with Ada's husband--the covert reason being that Ada--whose mercurial Byronic temperament they wished to control--must be kept busy and out of mischief. Together they freed Ada from many of the usual feminine social and family responsibilities so that she would have time to carve out a mathematical and scientific career; but, tragically, the countess's health never allowed her to progress as far as she would have liked.

After the birth of her third child, and about the time her notes on the Menabrea paper were published (when she was 29), she began to suffer both physical and mental breakdown. Because she was subject to frequent digestive and breathing problems, her doctor advised her to use various dangerous combinations of brandy, wine, beer, opium, and morphine, which led to serious personality disorders, including delusions to the effect that her mind--admittedly brilliant--could comprehend the secrets of the universe and make her God's prophet on earth.

After some years, she came to recognize that drugs were disastrous to her equilibrium and managed to shake off the addiction through sheer will power--only to fall victim to a new obsession: horse race gambling. Since highborn ladies did not deal directly with bookmakers, she used a servant and Babbage as go-betweens. Unbeknownst to Babbage at first, she ran into catastrophic debt, pawned family jewels, and became the target of blackmailers who threatened public exposure. Her husband, when he learned of her difficulties, stood by her; but consequent family squabbles among Ada, Lord Lovelace, and Ada's mother brought permanent estrangement on all sides.

To add to her torment, Ada was suffering from internal cancer, to which she succumbed in 1852 at the age of 36. She was buried, at her request, beside Lord Byron in the Byron family vault. If there is one bright spot in the darkness of her last years, it is that she had finally come to understand and accept her own identity, and that of the father she had been taught to despise.

References

V.R. Huskey and H.D. Huskey, "Lady Lovelace and Charles Babbage," Annals of the History of Computing, Vol. 2, No. 4, October, 1980.

C.L. James, "Ada: They Named a Language After Her," Softalk, Vol. 2, November 1981.

D.L. Moore, Ada, Countess of Lovelace (New York: Harper & Row, Publishers, 1977).

M. Moseley, Irascible Genius: The Life of Charles Babbage (Chicago: Henry Regnery Company, 1964).

About the authors: Freelance writer Carol L. James has written a number of articles on computer subjects. Duncan E. Morrill, a computer scientist, is the author of several technical papers on computers and software. They are currently at work on a more comprehensive study of the countess's involvement in protoprogramming.

[NOTE: In this article, the name "Ada" applied to Countess Lovelace is *not* a trademark of the U.S. Department of Defense (Ada Joint Program Office). Ed.]