

Evelyn Boyd Granville

(1924–2023)

Mathematician and space scientist who transcended barriers of race and gender.

Evelyn Boyd Granville was one of the first African American women to be awarded a PhD in mathematics in the United States. Granville earned acclaim for her contributions to US advances in space and aviation technologies. She worked on software for two of the first US endeavours in human space flight, Project Mercury and the Apollo programme, before returning to academia as a professor of mathematics. As a computer programmer at technology firm IBM and other private companies working on high-profile space projects, Granville was a key figure in science, technology, engineering and mathematics (STEM), and in the history of women and Black people in computing.

Granville wrote of her childhood, “We accepted education as the means to rise above the limitations that a prejudiced society endeavored to place upon us.” Early in her career, she was forbidden from attending a meeting of the Mathematical Association of America. As a Black woman, she was also barred from applying for faculty positions at most US higher-education institutions until after federal civil-rights legislation had been passed in the 1960s. Despite this, Granville rose to the top of her fields, first in her study of maths, then in commercial and scientific computing, and ultimately in her return to academic teaching and research. Although ignored by many for decades, Granville’s experiences and accomplishments have now become a key part of the growing literature on Black people’s contributions to advanced technology.

Born Evelyn Boyd in Washington DC in 1924, Granville’s childhood was shaped by both segregation and the Great Depression of 1929–39: her father did low-paid jobs and her mother worked in the home. She later wrote that, although she was aware of the limits placed on her, as a child she came into contact daily with Black people “who had made a place for themselves in society ... and read about individuals whose achievements were contributing to the good of all people”. She attended Dunbar High School, which focused on preparing Black pupils to attend prestigious colleges and universities. There, teachers encouraged her to pursue maths further.

In 1941, Granville gained entrance to Smith College in Northampton, Massachusetts, a college for women founded in 1871 that accepted Black women from 1898. She studied maths, physics and astronomy. In 1945, she



won a scholarship to do a graduate degree at Yale University in New Haven, Connecticut. In 1949, when she completed a thesis on functional analysis, she and Marjorie Lee Browne at the University of Michigan in Ann Arbor became the first Black women in the United States to earn doctorates in maths after Euphemia Lofton Haynes, who did so at the Catholic University of America in Washington DC in 1943.

After briefly teaching at New York University, Granville took up an associate professorship at Fisk University in 1950, a historically Black university in Nashville, Tennessee. However, frustrated by the limits imposed on academic institutions by segregation, in 1952 she returned to Washington DC, where she worked on mathematical analyses of missile designs at the National Bureau of Standards. Here she began to consider the possibilities of applying newly developed electronic-computing technologies to scientific problems. From 1956, Granville wrote software for IBM, moving to its New York City office to undertake numerical analysis at the Data Processing Center of the Service Bureau Corporation (an IBM subsidiary). When IBM received a contract to produce software for NASA, Granville returned to Washington to write cutting-edge programs for formulating orbital computations that could track vehicles’ paths in space. She recalled it as being “without a doubt the most interesting job of my lifetime”.

The cold war, and the early sixties in

particular, were a boom time for electronically aided computation and Granville made the most of her in-demand skills, moving from job to job in search of more interesting and lucrative work. In 1960, she married and moved to Los Angeles, California, working on orbit calculations at Space Technology Laboratories, before joining North American Aviation in 1962 to provide technical support, numerical analysis and computing expertise to a team working on designs for the Apollo programme. A year later, she was back at IBM, continuing her work in trajectory analysis, orbital computation and numerical analysis for its Federal Systems Division in Los Angeles.

In 1967, she accepted a position at California State University (CalState), Los Angeles, teaching programming at a time when computer science was in its infancy and few Black people were in positions of authority in the field. After marrying her second husband, Edward V. Granville, in 1970, she taught for another 27 years. Granville retired from Cal State in 1984 and moved to Texas, teaching computer science at Texas College in Tyler from 1985 to 1988, and at the University of Texas at Tyler as the Sam A. Lindsey professor of mathematics, until 1997. She remained active and interested in issues of STEM education and was a champion for women in maths throughout the rest of her life. In 1989, she was awarded an honorary doctorate by Smith College, the first one given by a US institution to a Black woman.

Granville was not only a ground-breaking computer scientist, but also someone who – in addition to her work in industry – had a lasting positive impact on the generations of students that she taught. Whether as a college professor or through teaching programmes in elementary schools designed to make maths more approachable and meaningful to students, Granville shared her expertise and her love of maths far and wide. She did so while being aware that many of her white, and male, contemporaries found it difficult to accept that a Black woman could be so successful and have such authority in the field. “I always smile when I hear that women cannot excel in mathematics,” she once remarked.

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