Book Review

Margot Lee Shetterly. *Hidden Figures: The American Dream and the Untold Story of the Black Women Mathematicians Who Helped Win the Space Race.* New York: William Morrow, 2016. 349 pp. Paper $15.99.

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Historically, gender norms prevented the vast majority of women from pursuing careers in science or mathematics. Even women who were exceptions to this rule have seldom been given their due by scholars. Margot Lee Shetterly, an independent researcher, goes a long way in rectifying this neglect. She has produced a compelling examination of an unsung group of black women who were recruited during and immediately after World War II to be computers at the Langley Memorial Aeronautical Laboratory in Hampton, Virginia, a federal instillation that played a significant role in America's space program.

"Computers" seems like an awkward term, but it is entirely accurate: people, not machines, had to perform arduous calculations prior to the 1960s. Shetterly focuses on four such individuals: Christine Mann Darden, Mary Jackson, Katherine Johnson, and Dorothy Vaughan. Shetterly interweaves their lives, moving back and forth in time, to illustrate the social, political, and legal factors that both encouraged and hindered the aspirations of black women in mid-twentieth-century America.

However enlightened the federal government might have been in its willingness to hire African Americans as mathematicians and engineers, it adhered to prevailing racial arrangements, especially in the South. For example, Langley's black computers not only had to use separate bathrooms and sit at designated tables in the cafeteria, but they also had to work in a separate building. How they responded to and ultimately vanquished these strictures gives Shetterly's story much of its inspirational appeal.

Salient sections of Shetterly's narrative focus on her protagonists' academic interests and the formal educational opportunities that were or were not available to them. Two key institutions emerge in this regard. The first was Howard University, an intellectual mecca that caught the eye of Dorothy Vaughan, who would have enrolled in its graduate mathematics program had economic hardships not intervened. Nonetheless, Howard's influence reached beyond its campus. One of its alumni, William Claytor, eventually attended the University of Pennsylvania, becoming only the third African American to earn a Ph.D. in mathematics. Claytor, in turn, accepted a position in the mathematics department at West Virginia State College, where he was an influential mentor to Katherine Johnson.

Hampton University was another institution that provided rigorous academic opportunities for African Americans with mathematical aptitudes. It was the alma mater of Christine Mann Darden and Mary Jackson, an ironic happenstance since Hampton's best known graduate, Booker T. Washington, had emphasized the need for African Americans to develop vocational, not intellectual, skills. That irony aside, Shetterly underscores (but does not excuse) one of the consequences of discrimination: the "prejudice" of white schools was a "windfall" for black schools (p. 13), at least in terms of the students and faculty the latter institutions could attract.

In addition to her emphasis on post-secondary education, Shetterly also discusses k-12 schooling. She rightly notes that some of the nation's fiercest battles against integration occurred in Virginia. The entire Prince Edward County school system, including Morton High (where Dorothy Vaughan had been a math teacher), was closed from 1959 until 1964.

Even before then, Mary Jackson—already a college graduate—had to obtain special permission to enroll in University of Virginia engineering courses being held at night in the all-white Hampton High School. Shetterly ruefully points out that it would have been easier for Jackson to enter Hampton High if she had been a janitor. That Langley's black computers could overcome such obstacles and indignities provides further evidence of their talents and determination.

Hidden Figures complements other recent works such as Nathalia Holt's *Rise of the Rocket Girls* and Dava Sobel's *The Glass Universe*. However, by highlighting race as an analytical category, Shetterly's investigation is a welcome extension of the existing scholarship of women in science. The book's only drawbacks are truly minor. A detailed timeline of events and a listing of the major individuals would help readers navigate through the text. A basic map or plan of Langley would be useful, too.

Although Twentieth Century Fox's film version *Hidden Figures* (2016) has now introduced the topic of black computers to a mass audience, that is no reason to skip the book. Specialists and the general public will enjoy and benefit from Shetterly's engaging analysis, particularly since equality of educational opportunity remains a necessary, but sometimes elusive, goal.