

Gloria Hewitt: Mathematician

*Hey
C'men
Come out
Wherever you are
We need to have this meeting
at this tree
Ain' even been
Planted
Yet*

—June Jordan (1989)

do so. Much of the evidence documenting the barriers to an equitable mathematics education for African American children is quantifiable: the number of college-preparatory courses taken, teacher-student ratios, and technology in the schools. Other barriers are more subtle and cannot be assigned numerical values.

For instance, Luchins and Luchins (1980) argued that if women are to overcome barriers in the mathematical sciences, dispelling the myths about women and their inability to understand mathematics is imperative. Several other scholars have posited some historical and cultural factors that may discourage African American women from participation in mathematics. These factors include overt and covert racism perpetuated by people of good will, the lack of a quality education, and gender discrimination. Kenschaft (1987, p. 170) articulated the point in the following way:

The widespread American belief that blacks and females cannot learn mathematics as easily as white males is a self-perpetuating myth. It causes black children to be exposed to less rigorous mathematics training in our segregated schools and their teachers' expectations to be lower in most schools. Because statistically their parents have received an inferior mathematical education, their homes are not as brimming with mathematical enticement as those of whites.

Gordon (1992) suggests that biographic information about scholars of color helps forge a bond between minority scholars across disciplines. Further, the experiences of such scholars supply important data for those interested in providing equitable educational experiences for children of color (Ladson-Billings and Tate 1995). Partly because of the women's movement, the specific contributions of African American female mathematicians have come under greater scrutiny and have been open for more evaluation within the past decade. The lives, experiences, and works of African American female mathematicians have been ignored by the mathematics community for decades. However dur-

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EXPERIENCES OF AFRICAN AMERICANS in mathematics have been conspicuously absent from mainstream literature (Hilliard 1989). Gordon (1992, p. 27) points out the importance of incorporating minority life histories in education:

Black cultural knowledge and products with implications for the education of African-American people have always been available and are continually emerging. Some products that might be useful to the educational community may not specifically focus on educational issues, but more broadly focus on understanding the culture of African-American community beyond college course textbooks.

Women constitute only 9 percent of Ph.D. mathematics faculty (Cross University Research in Engineering and Science Group 1996). African Americans, Native Americans, Asians, and Hispanics were 22 percent of the population in 1990; but in 1993 they accounted for only 10.6 percent of the bachelor's degrees in mathematics, 6.7 percent of the master's degrees in mathematics, and only 4.3 percent of the doctoral degrees in mathematics (National Science Foundation 1994, 1995). Clearly, too few African Americans complete the requirements for a career in mathematics, and fewer female African Americans

I used my answers as barter with the biggest girls in school

ing the last several years, African American female mathematicians have made their voices heard and have insisted that this social erasure and invisibility end. Unfortunately we know few names from among what were no doubt many brilliant African American female mathematicians; posterity can never honor them because they are nameless to us.

Perhaps a glimpse into the life of one African American mathematician, Gloria Conyers Hewitt, can help dispel the myth that African American women cannot become mathematicians. Her life story is an inspiration, and her biography should inspire more African Americans of both sexes to enter this field, a field with limitless possibilities.

GLORIA CONYERS HEWITT

We next look at the life of Gloria Conyers Hewitt, who overcame many barriers and went on to great success.

Early childhood

Gloria Conyers Hewitt was born on 26 October 1935 to Emmett and Crenella Conyers. Both her parents were college graduates. With regard to her education, Hewitt especially acknowledges and pays respect to her parents:

My dad was a printer, an occupation which paid very little money, but one he could perform with dignity and one that allowed him to be his own boss. My mother made an honest living, but very little money, as an elementary school teacher in Sumter, South Carolina. All of my siblings did attend college, and they earned graduate degrees. My parents believed that education was the only avenue through which an African American man or woman could better themselves. Therefore, they encouraged all of their children to attend college. While we were not wealthy, by the standards around us, I always thought we were middle class. I was proud of the fact that my parents could vote in the presidential election. Not everyone could in those days.

During our conversation, Hewitt's early memories of mathematics were sparse. She remembers two scenarios, however. In the first scenario, Hewitt recounts the following story, which happened in the second grade at Moore Elementary School in Sumter, South Carolina:

I had not done my homework. The teacher called on me to recite, but I could not do the problems. I was called up to the front of the room and paddled in the hand for what seemed forever. In those days, in the African American community, it was permissible to spank other people's children. I never forgot that incident; I also never forgot to do my arithmetic homework after that.

Her next memory of a mathematics experience required doing mathematics in a different social context, which led to survival among her peers.

As arithmetic extended to the study of fractions, I discovered I could use the solutions to the problems as barter with the biggest girls in the school, and in exchange no one bothered me. It was a good thing I liked working with fractions!

Secondary education

Hewitt always hated public school, and having to walk so far to get to school did not help her like it. Her parents sacrificed to send her to Mather Academy, a coeducational boarding school in Camden, South Carolina. They had little extra money but thought that the boarding school would offer a better learning opportunity. At Mather, Hewitt was required to take only intermediate algebra, corresponding to today's ninth-grade algebra, and geometry. Hewitt recalls the time at Mather Academy when her class was studying how to solve simultaneous equations in two unknowns. Once again, she had not done her homework. As punishment, the teacher sent her out of the class to sit on a bench just outside his classroom window, where he could watch her, with instructions to solve approximately a hundred of those equations by the end of the school day. However, Hewitt liked mathematics in spite of these types of encounters. She does not advocate this approach as a method of forcing a student to learn mathematics. She has often wondered whether she would have disciplined herself to study mathematics without these experiences.

During high school, Hewitt told others that she wanted to become a nurse. It was not a professional pursuit to which she was committed; it was just something that she said when asked about what she wanted to be. In those days, career choices were limited for all women—and for African American women in particular, and she realized that medicine was not a career option for an African American woman. She knew that she could always choose teaching as a career. Hewitt was accustomed to, and familiar with, the stereotype that the professional African American man was a preacher, whereas the professional African American woman was a teacher.

College experience

When Hewitt entered Fisk University, she did poorly on placement examinations and was placed in the "slow" sections of mathematics and English. She never understood why she performed so poorly on those examinations. However, she never believed that she could not do as well as anyone else in a mathematics course. Her mathematics class was boring, and she found that earning an A was very easy. The next semester, she was placed in the "B" section. Although her roommate and her friends were always studying mathematics, they did not welcome any help from her. She was sure

that she would have learned more about mathematics that year if she had been challenged and exposed to higher levels of mathematics and if more had been expected of her.

The next year, Lee Lorch, the department chairman, asked Hewitt whether she was planning to take calculus. She had not given it a thought. In fact, she did not have the slightest notion what calculus was. He suggested that she enroll in calculus, and she did. When she went home for winter break, the only book that she took with her was her calculus textbook. She wanted to work on word problems. She worked on one problem for the whole two weeks before solving it. In hindsight, she realizes that the problem was not that hard, but at the time she just did not understand the process involved. When the light dawned and she succeeded, she was happy. She said that she did not believe that she had ever felt so rewarded. It was a major breakthrough. She was hooked.

She recalled sitting on the campus doing calculus problems for recreation. Although a fellow student told her that rumor had it that she was crazy because of her affinity for mathematics, Hewitt was relieved that her true friends did not think that she was crazy.

In her sophomore year, Hewitt married and started a family. Her parents were crushed. Their dream of educating all their children did not seem to be coming true for their youngest child and only daughter. Her father, who was no longer able to work, agreed to care for her child; and with the help of her parents, she returned to school. Finally,



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she had to choose a major and prepare for a career. She decided to be a high school mathematics teacher. So she took cookbook-type mathematics courses, methods courses in teaching mathematics, and educational courses.

Hewitt's undergraduate growth in mathematics essentially ended in 1954. It did not help that Lorch, the department chairman, began to experience serious backlashes from his activities on behalf of human rights. The McCarthy investigations took a heavy toll on him and his family, and Fisk University fired him in 1955.

Professional life

Hewitt graduated from Fisk University in 1956 with a bachelor of arts degree in mathematics. Soon after graduation, she realized that she did not want to teach high school. Through Lorch's efforts, she was offered a teaching assistantship to attend graduate school in mathematics at the University of Washington at Seattle. She accepted and soon learned that her mathematics background was weak compared with that of the other students. Her success was the result of considerable encouragement from her fellow graduate students and a few faculty members, as well as serious hard work on her part. In addition, she was too stubborn to give up. Whenever she seriously thought about quitting, she would think about her mother and the sacrifices that she had made, then try again.

In 1960 she received her master of science degree in mathematics from the University of Washington, and in fall 1961 she accepted a position as an assistant professor of mathematics at the University of Montana. In 1962, Hewitt became the third African American woman to be granted a Ph.D. in mathematics. Her doctoral thesis, under the direction of Richard Pierce at the University of Washington, was "Direct and Inverse Limits of Abstract Algebras." Except for two leaves of absence, in 1965–1966 to the University of Oregon and in 1980–1981 to Case Western Reserve University, she worked at the University of Montana continuously. From 1964 to 1972, Hewitt was a visiting lecturer for the Mathematical Association of America.

She became tenured and was promoted to associate professor in 1966, then to full professor in 1972. From 1972 to 1975, Hewitt served on the executive council for the mathematical honor society, Pi Mu Epsilon. She also worked with the committee that writes questions for the mathematics section of the Graduate Record Examination and served as its chair from 1984 to 1986.

Hewitt also worked as a reader, table leader, and faculty consultant for the Advanced Placement examination in calculus. She also served for four years on the Calculus Development Committee, where she developed syllabi and wrote examina-

Working on a calculus problem for two weeks during winter break hooked Hewitt

tions for the Advanced Placement calculus courses. She was awarded an ETS Certificate of Appreciation in June 1995 after twelve years of service. Hewitt was associate chair of the Department of Mathematical Sciences at the University of Montana for three years before being elected chair in 1995. She served in that position until her retirement from the university in June 1999. She is currently professor emerita in mathematics at the University of Montana—Missoula.

Hewitt's published and unpublished works focus on two areas of mathematics: abstract algebra and group theory. She has completed eight published research papers and twenty-one unpublished lectures. She has been a consultant to numerous companies and academic institutions and is an active participant in many professional organizations, including the Mathematical Association of America (MAA), American Mathematical Society (AMS), National Association of Mathematicians (NAM), Association for Women in Mathematics (AWM), and American Federation of Teachers (AFT). The importance of her scientific contributions is evidenced by these facts and by the honors that have been bestowed upon her.

SUMMARY

The story of Gloria C. Hewitt should encourage all potential mathematicians, especially those who belong to minority groups. Teachers should make a more concerted effort to include facts about this inspiring mathematician and others like her in teaching their mathematics courses.

From my own teaching experience, I know the importance of a positive attitude toward mathematics. As a result, I devote time in my class to encouraging and building self-confidence in elementary and secondary preservice teachers. This time spent helping these students pays at least as many dividends as discussing mathematics content. The inscription on my office door at the university reads, "If you enter this office and have a negative attitude about mathematics, let me help you change it."

Teachers can use several practical suggestions to encourage or inspire students to move forward in mathematics. First, teachers should keep their negative comments, beliefs, values, and practices regarding mathematics outside the classroom. My second suggestion is that teachers in kindergarten through twelfth grade should have literature that encourages students to do well in mathematics. Such literature includes *Mathematical People: Profiles and Interviews* by Douglas J. Albers and Gerald L. Alexanderson (1985), *Blacks in Science: Astrophysicist to Zoologist* by Hattie Carwell (1977), and *Math: A Rich Heritage* (1995) by Kirsten Richert. For more suggested readings, see the **bibliography**,

which lists a few of the works that mathematics teachers, college mathematics professors, and teacher education programs can use as resources to encourage and inspire students.

Educators should remember the words of poet Joan Walsh Anglund (1967):

one seed
can start a garden
one drop
can start a sea
one doubt
can start a hating
one dream
can set us free



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The time spent pays at least as many dividends as discussing mathematics content

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