UNDERSTANDING THE TENURE-TRACK EXPERIENCES
OF BLACK WOMEN IN SCIENCE AND ENGINEERING

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Abstract — While women and minorities have made some strides in joining the American professoriate during the last several decades, they continue to be sorely underrepresented among science and engineering faculties at research universities. To understand more about the tenure-track experiences of a particular group of underrepresented faculty—African American women in science and engineering—Dr. Cecilia Lucero recently conducted a qualitative study that explored the nuances of several Black women’s early career faculty socialization. This research focused particularly on communication between Black women and their colleagues, especially with regard to messages about job expectations—what it means to be a science and engineering professor. Dr. Lucero summarizes her research here. For the WEPAN conference, Dr. Lucero presents her findings and asks a diverse group of female science and engineering faculty to compare and contrast their own tenure-track experiences with those of the African American women whom she interviewed.

Index Terms — Black women faculty, new faculty socialization.

INTRODUCTION

In the last two decades, minorities and women have made considerable progress in joining the ranks of the professoriate. Despite their progress, however, the proportion of women and minority faculty who are employed full-time and/or awarded tenure remains abysmally low, especially relative to their White male counterparts (Carter & Wilson, 1996; Chronicle, 2000-2001; NCES, 2000; Schneider, 1997). Moore and Sagaria (1991) found that in 1989, women comprised only 17 percent of nearly 21,500 full-time faculty positions at the 20 most prestigious research universities in the U.S. In 2001, 25.7 percent of the full-time faculty at the top universities were females; women of color, however, represented only 6.6 percent of the full-time faculty (Sagaria & Stewart, 2002).

Various reports indicate that Black women’s representation among full-time faculty hovers around 2 percent (Chronicle, 2000-2001; Gregory, 1999; NCES, 2000). Gregory (1999) writes that the presence of Black women faculty is actually declining despite increased recruitment and hiring, because they are choosing to leave academia. As McKay (1997) argues, optimistic reports about the status of all African American faculty are misleading. “What appears to be an unprecedented ‘buyer’s market’ for black women and men scholars . . . is anything but the true state of affairs for the majority of the group seeking academic careers outside of the historically black colleges” (p. 18).

While faculty of color are concentrated in disciplines such as education, social work, and nursing, they are “practically invisible” in engineering and science (Gregory, 1999, xi). Furthermore, although the life sciences and civil engineering have become more feminized, gender segregation persists in physics, mathematics, computer sciences, and engineering in general (Glover, 2000). Recent NSF (2000) statistics show that minority women Ph.D. scientists and engineers in the academy continue to be sorely underrepresented. As the NSF (2000) report shows, for example, Black women comprised nearly eight-tenths of 1 percent of the total and 3.5 percent of all female academic scientists and engineers at four-year institutions. By comparison, White, non-Hispanic males comprised 64 percent of the total, and White, non-Hispanic females comprised 81 percent of all women, and 18 percent of the total.

Furthermore, Black, Latina, and Asian women were less likely than White women or men of any racial/ethnic group to be tenured. Twenty-nine percent of African American women, 29 percent of Latina women, and 17 percent of Asian women had tenure in 1997, compared to 38 percent of White women, 63 percent of White men, and between 43 and 53 percent of Latino, Black, and Asian men (NSF, 2000). A comparison of the total number of tenured and tenure-track women of color to all tenured and tenure-track Ph.D. scientists and engineers—not just their particular gender and racial/ethnic groups—underscores the reality that female faculty of color are practically invisible in academic science and engineering.

Identifying and examining the factors that affect Black women’s faculty careers still represent “a serious and important gap in academic research” (Gregory, 1999, xvii). While a handful of scholars has examined the barriers that keep women and faculty of color from reaching tenure, the body of research specifically about Black women in the academic work force is impoverished. Scholarship about Black women in general is often subsumed under feminist studies, which privilege White women’s perspectives, or race studies, which concentrate mostly on Black men (Hull, ¹ Cecilia Lucero, Ph.D., The National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc. (GEM), P.O. Box 537, Notre Dame, IN 46556, (574) 631-7764, Lucero.5@nd.edu
Scott, & Smith, 1982; Lewis, 1997). The title of Hull, Scott, and Smith’s (1982) collection of essays on Black women’s studies neatly sums up the state of scholarship on “women and minorities”: *All the Women are White, All the Blacks are Men, But Some of Us are Brave.*

In the last 25 years, a few scholars have documented the scarcity of Black women in academic science and engineering, and have presented individual narratives about prominent Black female scientists (Essien, 1997; see for example, Ambrose, Dunkle, Lazarus, Nair, & Harkus, 1997; Malcom, Hall, & Brown, 1976; Tolbert, 1993). With the exception of a few personal reflections, however, little is known about the quality of the collective experiences of Black women scientists and engineers.

Alternative theories and research methods must be developed to address the inequities that exist for Black women in the academia (Lewis, 1997). In addition, an understanding of Black women’s lives should emerge from their own interpretations of their experiences. Echoing the sentiments of Black women activists, artists, writers, and scholars, Howard-Vital (1989) writes: “Unless we African American women take an aggressive, unrelenting lead in identifying who we are, we will continue to react to distortions and perceptions created by others” (p. 190).

**RESEARCH QUESTIONS**

The purpose of my study was to describe and understand more fully Black women faculty’s experiences in academe, especially as they interpret and articulate their own perspectives on these experiences. In particular, I wanted to focus on Black female scientists and engineers because they challenge the pervasive stereotype that females and minorities are not suited for the more prestigious and rigorous “hard” disciplines (Eisenhart & Finkel, 1998). I also wanted to explore Black women’s lives in and of themselves, not in comparison to other groups. Thus, to uncover the human experiences behind the statistics, to begin drawing out the richness and complexity of Black women faculty’s lives, I placed Black women science and engineering faculty at the center of analysis.

As we wrestle with more complicated scientific challenges, the need for Black women scientists and engineers among the faculty grows more urgent, especially to mentor the next generation of scientists and engineers. It is essential that the academy cultivate the best scientific minds and ensure full participation in the scientific/technological enterprise (Essien, 1997). “If science is to continue to prosper and move forward,” the National Academy of Sciences (2000) states, “we must ensure that no source of scientific intellect is overlooked or lost” (p. vii). Given the dramatic demographic shifts in the population, “A science establishment run primarily by White males runs the danger of alienating our nation and our people from science” (National Academy of Sciences, 2000, p. 4). It is essential, then, that we learn to develop the potential of minorities and women in science and engineering.

**Research Context and Conceptual Frameworks**

Since Black women are relative newcomers to the American professoriate, some insights into their lives in academe may be gained by examining the higher education literature on new faculty socialization, as well as socialization research in other fields. One of the major shortcomings of this body of research is the tendency to assume a singular view--the organization’s--of what it means to become a member of the organization. Research has tended to focus on what institutions are *doing* to new faculty, and has been unable to capture more than superficially the perspectives that novice professors have about their own academic lives. Given that female professors and faculty of color continue to encounter more difficulties in their work experience than their white male counterparts, assumptions made about new faculty must be interrogated. Although some research acknowledges gender differences in socialization (e.g., Reynolds, 1992; Tierney & Bensimon, 1996), overall, studies have not accounted fully for individual differences in race, ethnicity, socioeconomic status, and even degree of physical ability (Dunn et al., 1994; Tierney & Bensimon, 1996). These contextual variables shape disparate viewworlds or philosophies that, in turn, affect how individuals experience socialization to the academic profession. Tapping into the experiences of women and minority faculty, then, was especially important in my study.

I examined the ways African American women process information about what a science or engineering faculty member ought to do; how they respond to this information; to what extent they change the environment, if at all, as they construct their roles; and to what extent they revise their own expectations for their roles, as well as their behavior, when they cannot change their environment. I was also curious about what they bring to the negotiation with their environment--i.e., how their individual background, personality, personal and professional values and beliefs, aspirations, etc., shape the way they interpret and respond to information, and interact with the environment. My two main research questions were as follows:

- What information, or messages, affect the way Black women faculty in sciences and engineering construct their faculty roles?
- How do these Black women faculty respond to these messages?

I examined these questions using three different conceptual frames: 1) symbolic interactionism, a social/philosophical perspective that posits that social structure is formed by interpersonal relationships in everyday life; 2) Jablin’s model of organizational entry, *assimilation, and exit*, a socialization stage model that focuses on communication and communication.
relationships, and calls attention to often neglected variables in the organizational socialization process; and 3) Black feminist thought, specialized knowledge or theories that deconstruct social institutions, such as family and work organizations, to expose how racism, sexism, and class discrimination together oppress African American women. According to Black feminism, a collective consciousness becomes possible when individual expressions are combined; a self-defined collective standpoint is the key to African American women’s survival.

Black feminist thought in particular shaped my inquiry. Several core themes of Black feminist thought and particular features of Black feminist epistemology are relevant to research about Black women faculty’s socialization: the deconstruction of controlling images and symbols; the consultation of everyday actions and experiences to inform theoretical work; the use of dialogue to assess knowledge claims; and the ethics of caring. While a thorough discussion of these themes is beyond the scope of this paper, I briefly summarize them below.

Controlling images and symbols: Collins (2000) and others argue that maintaining stereotypical images of Black women provides ideological justification for race, gender, and class oppression. “Because the authority to define societal values is a major instrument of power, elite groups, in exercising power, manipulate ideas about Black womanhood. . . controlling images are designed to make racism, sexism, poverty, and other forms of social injustice appear to be natural, normal, and inevitable parts of everyday life” (Collins, 2000, p. 70).

Everyday actions and experiences: Tapping into “everyday, unarticulated consciousness” (i.e., values, attitudes, beliefs) and concrete, everyday experiences to inform theory and research is fundamental to the work of Black feminist scholars (Collins, 1991, p. 26). Traditional social science methodology requires that researchers distance themselves from their objects of study, as well as from their own values, interests, and emotions. Collins (2000) contends, however, that “Such criteria ask African-American women to objectify ourselves, devalue our emotional life, displace our motivations for furthering knowledge about Black women, and confront in an adversarial relationship those with more social, economic, and professional power” (p. 256).

Using dialogue to assess knowledge claims: The emphasis on dialogue represents a convergence of African American culture and feminist epistemology (Collins, 2000). Black discourse modes reflect an African worldview that emphasizes harmony and balance among communities and individuals. Through these modes, “the individual can actualize his or her sense of self within the confines of the group” (Smitherman, 1986, pp. 103-104). One such discourse mode, the call-and-response, demonstrates the importance of oral traditions in Black culture as a means for discovering truth. “Composed of spontaneous verbal and nonverbal interaction between speaker and listener in which all of the speaker’s statements, or ‘calls,’ are punctuated with expressions, or ‘responses,’ from the listener, this Black discourse mode pervades African-American culture. The fundamental requirement of this interactive network is active participation of all individuals. . . . For ideas to be tested and validated, everyone in the group must participate (Collins, 2000, p. 261).

The use of dialogue also invokes “women’s ways of knowing,” an epistemology that is based on connectedness to others (Belenky, Clinchy, Goldberger, & Tarule, 1986). In contrast to “separate” knowing (a more masculine epistemology), whereby truth is discovered through impersonal (objective) methods, “connected knowing builds on the subjectivists’ conviction that the most trustworthy knowledge comes from personal experience rather than the pronouncements of authorities” (Belenky et al., 1986, p. 112-113). Dialogue is essential to Black feminism, as “People become more human and empowered primarily in the context of a community,” and only when they seek the type of connections, interactions, and meetings that lead to harmony (Collins, 2000, p. 261). Thus, in exploring the socialization of Black women faculty, it is important to focus on communication and discourse.

The ethics of caring: The ethics of caring affirms the integrity of the intellect and emotion (or the unity of mind, body, and spirit) through three interrelated components: an emphasis on individual uniqueness and self-expression; the appropriateness of emotions in intellectual discourse, which indicates that a speaker believes in the validity of his or her argument; and the capacity for empathy, which leads to increased understanding of each other’s positions (Collins, 2000).

Integrating the Conceptual Frameworks

Although they are distinct concepts, symbolic interactionism, Jablin’s (1987) model of entry-assimilation-exit, and Black feminist thought may be integrated into a conceptual framework that guides inquiry into socialization because they share common assumptions: 1) social life or organization is a process of communication/interaction among individuals, 2) people create or negotiate the meaning of events, artifacts, relationships, etc., through everyday social interaction, and 3) symbols--language, gestures, images--communicate meaning for people. For this study, symbolic interactionism focused my inquiry on daily interactions and negotiations between individuals. I narrowed the focus on communication variables associated with Jablin’s (1987) stage model, especially its exit phase--which examines employee leave-taking--which I considered in examining Black women faculty’s early-career period. Finally, Black feminist thought narrowed the focus even more, by taking into account race, gender, and other factors that affect how Black women faculty interact with others and negotiate their roles.
RESEARCH DESIGN

My research was an exploratory study based on the phenomenological tradition of inquiry, a method that attempts to describe and interpret the more complex and hidden facets of experience. The challenge in phenomenology is to look and reflect upon an experience repeatedly in order to obtain accurate and comprehensive descriptions of it and discover its hidden meaning (Moustakas, 1994). Phenomenology allows for more authentic interpretations of experience because it takes primary account of an individual’s experience of a phenomenon as he or she interprets it (Moustakas, 1994). This is an especially appropriate method for gaining insight into the experience of Black women because it “attempts to eliminate everything that represents a prejudgment [i.e., by others], setting aside presuppositions and reaching a transcendental state of freshness and openness” (Moustakas, 1994, p. 41).

I conducted a total of 12 in-depth (two- to three-hour-long) interviews with African American women faculty—10 in engineering and two in science disciplines—at various research universities. In the end, I used data from 10 interviews (eight engineers, two scientists). Interview questions focused on messages that participants encountered throughout periods of anticipatory socialization (early schooling, industrial employment, college, and graduate school) and early in their faculty appointment. I focused on variables that participants identified as significant to their transition to faculty life, including communication and relationships with parents and other relatives, and elementary, high school, undergraduate, and graduate school teachers and counselors/advisors.

In presenting my findings here, I focus primarily on the collective experiences of the African American women faculty I interviewed. I highlight the kinds of messages that the Black women have encountered. In a more thorough discussion elsewhere (Lucero, 2002), I analyze the sources of communication (people, events, rituals/symbols, policies, practices, images/ stereotypes, documents, etc.); the context of communication (e.g., setting and structure of communication; participant’s relationship to the source); the nature of communication; and the meaning that participants ascribed to the messages.

FINDINGS

Anticipatory Socialization

Research about new faculty socialization often focuses on just the graduate school period when examining anticipatory socialization. For the Black women in this study, however, anticipatory socialization encompassed time periods well before they entered graduate school. Below, I summarize several themes—i.e., the kinds of messages Black women heard—related to anticipatory socialization:

- **Affirmation**
  a. Participants heard messages that they were intelligent, had unique talents, and were capable of meeting high expectations.
  b. Participants did not hear messages stereotyping them because of race, gender, social class, etc.

- **“Possible Selves”**
  a. Messages about unlimited career opportunities were presented to them.
  b. Participants were not discouraged from traditionally male domains.

- **Dissonance**
  a. Participants encountered questions about their legitimacy.
  b. Participants did not identify with traditional images of scientist/engineer/or academic.

- **Reaffirmation of self**
  a. Participants heard messages that faculty life would give them freedom to develop intellectually, professionally.
  b. Participants heard messages that faculty life would allow them to balance their personal life with their professional life.

Early-Career Faculty Experiences

If we reconceptualize organizational “socialization” as a process in which individuals co-construct their roles through communication/negotiation with their environment, then analysis of the Black women’s descriptions of their early-career experiences shows that they engage actively in this enterprise. Participants encounter, process, and respond to a variety of messages, which I categorized as follows:

- **Official feedback**—formal messages directly related to faculty’s job (explicit information, rules, procedures, and assessment) conveyed by institutional representatives, such as the department chair, dean, and in some cases, provost and president. Faculty lamented that official feedback, e.g., about tenure requirements, was “here and there.”

- **Informal feedback**—information regarding their job performance gleaned from student evaluations, teaching awards, merit raises, etc., often gathered by the faculty members themselves.

- **Devaluation**—explicit and implicit messages that reflect other people’s low expectations of participants, resentment towards them, and doubt about their legitimacy based on stereotypes of race, gender, age, youth, and in some cases, specialized research area.

- **“Double talk”**—lack of “straight talk” or honesty in discourse. Double talk refers to situations in which others have communicated indirectly or dishonestly with participants. One participant, for example, related an instance of the lack of “straight talk” about her work.
  “There’s some [colleagues] that think what I do is all
fluff. It has no substance and no rigor ‘cause it’s not mathematical enough, or it’s not what they think, you know, engineering ought to be. I don’t think they’ve ever said it directly to me. But they’ve said it to some students and it’s gotten back to me, or they’ve said it to some colleagues, . . . and that group of people will say, ‘Well, you know [so and so] thinks what you do is crap.’”

- **Silence**--lack of discourse (“nobody talks”) and lack of validation of participants’ experiences (“that can’t be happening”). Silence was the most common and most profound experience among participants. Just as feedback about job performance and expectations was hard to come by, discourse about other dimensions of participants’ lives was rare. Also, participants found that colleagues often did not take at face value what they reported as instances of racism and sexism.

- **Authentic discourse (talkin’ and testifyin’)**--straightforward discourse and messages of self-affirmation and affirmation from others. Some participants received these messages from family members and some colleagues. The Black women faculty in this study actively sought opportunities and relationships that made authentic discourse possible. For the engineers, this was found through an informal network of Black women colleagues.

**Black Women in Engineering: The Network**

Perhaps one of the most intriguing findings of this study is how many of the Black women faculty in engineering know each other and have similar connections. During my interviews with five participants, one or another of the women’s names came up in conversation. Some of the women met each other through two mentors who have been quite influential in their engineering careers. One mentor is an associate dean of engineering who, at different times, served as graduate advisor and mentor to two of the Black women. The other mentor was affiliated with a national organization for minority scholars in which three of the women had participated as graduate students. Two of the Black women know each other, as well, through their administrative work with minority engineering programs; and two others met through an NSF women’s leadership conference, where they were the only two Black women.

Referring in particular to a friend with whom she has collaborated frequently on research, one participant explained why relationships among the Black women in this network are so important. “What we figured out like two years into this was that we were not going to make this alone, you know. We had all these studies that said engineering is a community where the students, if you study together, you do better. So like, so why would we abandon as faculty members?” Another participant described how the network helps to mitigate the isolation Black women faculty feel being in predominantly male engineering departments and predominantly White universities. When I asked if the experience of marginality applied to her, being among the less than 2 percent of Black women in sciences and engineering, she responded:

“I know there's not a lot of us. But . . . I know where they are. . . . So I’m very fortunate in that I know, you know, 20 Black women that are Ph.D.s in sciences or engineering that I can call on if I really needed something . . . and they call me too . . . So I really don’t see that 2 percent. . . The real experience is that the ones of us that know each other, call each other for a variety of things.

**Silence v. authentic discourse:** To interpret what silence might mean to Black women faculty, and why networks, especially a Black women’s network, are so important, I turned to Smitherman’s (1986) perspectives on Black American language and discourse. Smitherman (1986) explains that in African American culture, oral tradition has served as a fundamental vehicle for “gittin’ ovuh,” i.e., for material survival in a world of oppression by Whites (p. 73). Oral tradition is carried on in different ways, “through song, story, folk sayings, and rich verbal interplay among everyday people” (Smitherman, 1986, p. 73). Although the forms of communication vary, they share a “deep structure,” the traditional African belief in a “fundamental unity between spiritual and material aspects of existence” (Smitherman, 1986, p. 75). The “complementary, interdependent synergic interaction between the spiritual and material” harmonizes the universe (Smitherman, 1986, p. 75). This rhythm in the universe also harmonizes human communities; keeping this harmony requires that individuals maintain interdependent relationships, which are nurtured through language (Smitherman, 1986).

Thus, the Black community places a high value on the spoken word. “We’re talking, then, about a tradition in the Black experience in which verbal performance becomes both a way of establishing ‘yo rep’ as well as a teaching and socializing force” (Smitherman, 1986, p. 79). Through different modes of discourse, “raps of various kinds,” Black folk are acculturated into the Black value system (pp. 79-80). “We are not talking about speech for the sake of speech,” Smitherman (1986) writes, “for black talk is never simple cocktail chit-chat, but a functional dynamic that is simultaneously a mechanism for learning about life and the world and a vehicle for achieving group approval and recognition” (p. 80).

In communication, therefore, active participation of all individuals is expected. “The process requires that one must give if one is to receive, and receiving is actively acknowledging another” (Smitherman, 1986, p. 108). Thompson (1974) has referred to the communication mode of call-and-response as “perfected social interaction,” an interactive system that emphasizes group cohesiveness, cooperation, and the collective common good, rather than individualism (cited in Smitherman, 1986, p. 109).
“Testifying” is an important element of African American communication. “To testify is to tell the truth through ‘story.’ . . . The content of testifying . . . is not plain and simple commentary but a dramatic narration and a communal reenactment of one’s feelings and experiences. Thus one’s ‘humanity’ is reaffirmed by the group and his or her sense of isolation diminished” (Smitherman, 1986, p. 150). Discussing the importance of everyday experiences in Black feminist epistemology, Collins (2000) indicates that “lived experience as a criterion for credibility frequently is invoked by U.S. Black women when making knowledge claims.” Because knowledge comes from experience, the best way of understanding another person’s ideas is to develop empathy and share the experiences. Echoing what Smitherman (1986) writes about the traditional African world view, Collins (2000) argues that “people become more human and empowered primarily in the context of a community,” and only when they “become seekers of the type of connections, interactions, and meetings that lead to harmony” (pp. 260-261). These perspectives on testifying illuminate why the network of Black women engineers (as well as one scientist’s social group of African American women professionals) has become a critical resource for them. These networks acknowledge the truth of Black women’s experiences and affirm them when they encounter silence and alienation in the academy.

Black women’s relationships with one another represent a safe space to construct individual and collective voices. “In the comfort of daily conversations, through serious conversation and humor, African American women as sisters and friends affirm one another’s humanity, specialness, and right to exist” (Collins, 2000, p. 102). There is “shared recognition” of they are in the world, even if they are strangers to each other, because they recognize the need to value Black womanhood (Collins, 2000, p. 103).

Silence, then, is at the heart of the Black women faculty’s isolation. Although some of them have learned to function in solitude, it has wounded them. As one participant conceded, being isolated “does allow for creativity. . . . You know, people don't want to talk to you, whatever, you go in your office and do some work. You get work done.” However, she concluded sadly, “it does something to your person, you know.”

CONCLUSION

For the Black women science and engineering faculty, early-career "socialization" involves more than just getting practical, task-specific information about research, teaching, and service. It is also more than just adopting (without question) disciplinary, departmental, and/or institutional values and identities. Rather, early-career “socialization” is about the active development of a complex self—a role-construction process—that entails various kinds of transactions between the individual faculty member and others in the academy, who have their own ideas about what Black women are, what they should do, or how they should be as faculty members in their particular disciplines. In constructing (or perhaps reconstructing) their roles, Black women faculty reject negative representations of themselves, reaffirm their own identities, redefine their realities, and to a certain extent, change their academic environment. Knowing that they can reap personal as well as professional benefits from their faculty work—material rewards, public acknowledgement, intellectual fulfillment, etc.—the Black women focus much time and energy in their early faculty career on developing the professional “possible selves” that they aspire to become. They see themselves, however, as more than just professionals; they are, more importantly, spouses, partners, mothers, daughters, aunts, friends, and confidantes as well as colleagues. They strive ultimately for (as participant put it) “the whole you,” a complex self that integrates and maintains equilibrium between personal and professional values, beliefs, aspirations, and behaviors.

Developing a complex self, however, is a process full of conflict, self-sacrifice, and occasional self-doubt. In their early career, Black women faculty have exhausted their emotional and physical energies trying to resolve tensions between what they want and what the department, college, and institution expects or demands. They have suffered assaults upon their race, gender, age, personality, and intellectual ability, which has led them at times to question their own legitimacy. Attempts to invalidate their experiences of racism, sexism, and other discrimination have eroded their trust in other people. They have endured loneliness, which has been extreme in some cases, because they have not been truly welcomed. They have also relinquished their personal desires, some measures of happiness, in the hope of achieving tenure and continued career advancement. In the end, tenure and promotion are, perhaps, Pyrrhic victories.

Nevertheless, the Black women’s sense of self remains intact because they were acknowledged and affirmed early in their lives, and they continue to find supportive relationships and communities that value them. Even though they realize that their individual actions may not necessarily cause immediate, dramatic changes that would make their department or institution more welcoming of Black women, they have seen encouraging signs of change for which they have some responsibility. Thus, despite the struggles in their early career, the Black women remain optimistic that collective actions will improve their status in the academy, as expressed in one woman’s statement.

It seems that a new model that embodies both our technical interest and feminine and ethnic qualities is definitely important if people will stay in this field. [A] limited set of role models exist, but I am noticing some major new female faces at the helm of engineering programs in American universities. Hopefully, this is a good sign that a wider diversity of ethnic and gender representation is on the way.
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