

# Narratives of the Double Bind: *Intersectionality in Life Stories of Women of Color in Physics, Astrophysics and Astronomy*

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## THE DOUBLE BIND

*“The fact that I don’t have things in common with the guys in the [research] group, is that because I’m a woman, or is that because I’m a minority? Or is that because I’m both? I can’t really tell.”*

—Laura\* (Latina, Physics)

\*A pseudonym.

## INTRODUCTION TO THE “DOUBLE BIND”

- Women of color who pursue advancement in the science, technology, engineering, and mathematics (STEM) fields are caught in a “double bind” due to the intersection of their race and gender (Malcom, Hall & Brown 1976).
- Dually occupying undervalued identities of femaleness and non-whiteness—especially undervalued identities in STEM contexts—can lead to personal, professional, and societal repercussions to a degree that white women and men of color do not experience (Traweek 1998; Ong 2005; Crenshaw 1993).

## INTRODUCTION TO THE “DOUBLE BIND”

- Persistently low numbers of women of color in STEM.
  - Less than 10% of Ph.D.s in science and engineering (NSF 2007).
  - Continue to be stuck on bottom rungs of employment ladder (Nelson & Rogers 2004).
- Potential human resource crisis for the U.S.

## BEYOND THE DOUBLE BIND (BDB)

- NSF-funded study (PIs: Maria Ong, Ph.D. and Apriel Hodari, Ph.D.).
- *What strategies enable women of color to achieve higher levels of advancement in STEM education and professions?*
- Studies women of color (African American, Asian American, Latina/Hispanic, and Native American) across four broad STEM disciplines (Physics, Astronomy/Astrophysics, Computer Science, and Engineering).

## THEORETICAL FRAMEWORK

- Framework of intersectional theory to develop an understanding of how salient, multiple identities, such as race and gender, function simultaneously to produce outcomes for individuals and society
- Intersectionality theory posits that minority women's experiences can amount to “greater than the sum of racism and sexism”(Wei 1996).

## METHODS AND ANALYSIS

- Findings draw on 51 sources constructing narratives on 23 women of color in physics, astronomy and astrophysics.
- Sources of data: extant (published) texts and oral interviews.
- Narrative analysis develops emergent codes and groups these codes into themes (Riessman 2007; Czarniawska 2004; Riessman 2004).

# FINDINGS SUPPORT EXISTING LITERATURE ON WOMEN OF COLOR IN STEM

- Unfriendly science environments.
- Isolation.
- Not fitting the conventional image of a scientist.
- Authority figures doubting their abilities.
- Importance of support (e.g., family, peers).

See: M. Ong, C. Wright, L. L. Espinosa and G. Orfield, “Inside the Double Bind: A synthesis of Empirical Research on Undergraduate and Graduate Women of Color in Science, Technology, Engineering, and Mathematics,” *Harvard Educational Review* **81**, pp. 181-196 (2011).

## ACTIVISM AND WORK-LIFE BALANCE

- Two salient themes.
- Have received minimal or no attention in literature on women of color in STEM compared to some of the other themes that have arisen.

## ACTIVISM BY WOMEN IN BDB

- Defined as “STEM-related volunteer work.”
- Often motivated by experiences of race, gender or both.
- The intersection of these multiple identities in STEM environments acted as a catalyst and fervor for activism.

## ACTIVISM

*“It’s always been very exciting. My groups always have mostly girls in them for some reason. I think partly because I’m always either one of only two female mentors that they can choose from... the first year I did it, I had two students from [where] my family’s from. So for me, it was really, really exciting to have these young women of Caribbean origin in my group. And I also had a student from South Africa in the group. It was an incredibly international group.”*

—Chloe\* (African American, Physics, Astronomy and Astrophysics)

\*All oral interviewees in this study were given first-name-only pseudonyms.

## ACTIVISM: MOTIVATIONS

- Increase diversity in STEM
- Seeing those with a background similar to their own
- Rewarding feelings and experiences
- Feeling at home with fellow activists
- Incorporating personal and work issues

## ACTIVISM: MOTIVATIONS

*“During my postdoc... a subgroup of us had started coalescing around issues of social justice... at the point when some of those ideas sort of became mainstream in physics education research, [it] was very gratifying for most of us. We thought that not only we had found sort of our personal tribe, but we had found a way to bring in personal issues that we cared about into the core of our work.”*

—Apara (African American, Physics)

## ACTIVISM: TACTICS

- Two main audiences: authority figures and other women and minorities in STEM.
- Conducting research on students in STEM.
- Providing scholarship opportunities.
- Serving on national committees promoting women, minorities and women of color in STEM.
- Getting policies for equity reinforced.
- Educating the general public.
- Recruitment and retention efforts.
- Teaching and mentoring.

## ACTIVISM: TACTICS

*“Currently, I’m also involved with a program in College Park that encourages K-12 students to explore areas of science and engineering. I believe that by being a minority woman, I am providing a role model for the students I’ve encountered, especially the girls.”*

—Luz Martinez-Miranda (Latina, Physics)



## ACTIVISM: SACRIFICES

- Not usually rewarded with promotion or tenure.
- Giving up time that could be spent on research and coursework.
- Passing up prestigious positions (e.g., full professorship) in order to devote more time to activism.
- Changing locations in order to be closer to the issues of minorities in science.

## ACTIVISM: NO REGRETS

*“Personally, I wanted to contribute to the advancement of black people. I was very comfortable in Europe but I was too far removed. By returning to America, I could work in science and deal with the issues of African Americans that were dear to my heart. Now that I think about it, I probably would not change a thing.”*

—Hattie Carwell (African American, Health Physics and Biophysics)



## ACTIVISM: AMBIVALENCE

*“People will ask me, ‘oh, you’re an astronomer, your husband’s an astronomer, do you want your kids to be astronomers?’ I look at them and say, ‘I want my kids to be happy.’ Why would I put my kids through that? I would not send my daughters out with a known rapist. And that’s what physics and astronomy **can** be. I’m not saying it’s always a situation where they rape your soul and crush your spirit, but it is not a pleasant experience, the process of becoming an astronomer.”*

—Jasmine (Latina, Physics, Astronomy and Astrophysics)

## WORK-LIFE BALANCE

- Overlapping themes from this with literature on women professionals in STEM, but there has been no work found on career-life balance issues for women of color in STEM (Ong et al. 2011).
- Different expectations—family roles, including needing to contribute financially, provide child care, or uphold culturally traditional female ideals (Ong et al. 2011)—can make it difficult for women of color to prioritize a work-life balance.
  - e.g. Greater propensity for black families to be female-headed and led by single-mothers (Eggebeen and Lichter 1991)

# WORK-LIFE BALANCE: INTENSE WORK SCHEDULES

- Part of the work culture.
  - Long hours.
  - Sacrificing weekends.
- Striking a balance.
  - A way to stay sane in STEM.
  - A necessity to continuing in STEM.
  - Hobbies and interests outside of STEM.

## WORK-LIFE BALANCE: TACTICS

- Did not marry and/or have children.
- Married or had children much later in life.
- Chose a sector or job with fewer work hours or more flexible work hours.

## WORK-LIFE BALANCE: TACTICS

*“The lifestyle that you would have to lead in order to be excellent in research and excellent in teaching, it's not a lifestyle that I would want to do, which is you would have to basically live at the university and do everything you do that's related to your job and not to your family, or to other things outside of work... I like to go on vacation. I'd like to bird watch. These are activities that I don't want to give up. And I wouldn't want to give them up if I was an assistant professor. So I don't think I could have been a good assistant professor.”*

—Laura (Latina, Physics)

## WORK-LIFE BALANCE: CAN WOMEN REALLY HAVE IT ALL?

*“I was asking him if he has—like I said, I know he had a family and obviously is very busy with his career right now—and if he had time to do anything else in his life... he said, “To be honest,” and it was nice he said it because he didn’t say it in a way where I just wrote it off as like demeaning... But he said, “Honestly, it’s because I’m a man. Like, my wife does absolutely everything with the kids. And I can, you know, I can barely cope... if I was a woman having kids and also being a professor, it would probably be impossible.”*

—Lola (Black, Physics)

## WORK-LIFE BALANCE: FLEXIBLE WORKPLACES

*“We have daycare on-site. We have a cafeteria. We have flexible hours. We have every other Friday off. We have a gym. They get the work-life balance thing.”*

—Teresa Segura (Latina, Astronomy, Astrophysics, Astrophysical, Planetary, and Atmospheric Sciences)



## SUGGESTIONS

- Support women of color in physics, astronomy and astrophysics in diversifying those fields.
  - Refer to them as a resource.
  - Incorporate more opportunities to do STEM-related volunteer work without it being a sacrifice to time spent toward furthering their careers.
- Produce more flexible workplaces for employees.
  - Ask them what they need to lead both successful personal and work lives.
  - Reinforce policies already in place or create new policies to make it easier for employees to have families and lives outside of work.

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# THANK YOU

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# PHYSICS, ASTRONOMY AND ASTROPHYSICS DATASET

- 51 narratives
- 23 women of color
- Race: (why is there only 22 here?)
  - African American (15)
  - Asian American (2)
  - Latina (4)
  - Mixed race (Latina/Native American) (1)
- 20 women persisted.
- 3 women left STEM after obtaining their baccalaureate degrees.

## ACTIVISM: AMBIVALENCE

*“I wanted to get other women to get into physics... But I'm not so sure anymore that that's the right thing to do. I think it's very selfish to do something like that. Maybe it's better just to tell them it's going to be hard and it's a difficult world... I used to be very active with... all kinds of mentoring and with physics. I was part of the Committee on Minorities, because I thought it was important to get more women and minorities into this field... then I started to think... We're not really welcome... why make other people's life more difficult?... so far... I haven't been mentoring [or] working for [any] organization[s]... I have not been very certain that it was a good idea for me to... advertise this life.”*

—Laura (Latina, Physics)

## WORK-LIFE BALANCE: TACTICS

*“[If] I feel that I won't be able to have the kind of lifestyle that I want, then I'll leave. And then, the lifestyle also means being there for people I care about, or being able to travel, and being able to not be stressed out 24/7.”*

—Meena (Asian American, Physics, Astronomy and Astrophysics)