

ORIGINAL ARTICLE

Gender and Race in the International Sciences: Organizational Practices of Diversity

“Flying under the radar”: Postfeminism and teaching in academic science

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Abstract

Neoliberal academia is marked by vertical and horizontal gender segregation, and science, technology, engineering and mathematics (STEM) is a particularly concerning case. Women with PhDs are underrepresented, and when they do participate, they are more likely than men to be in teaching-intensive roles. Beyond equality concerns, this is problematic because when women are interpreters rather than producers of disciplinary knowledge, the STEM enterprise remains gender-biased. Using data from a 2-year ethnography with physical science faculty in teaching-intensive roles, this paper argues that gender inequity is reproduced through postfeminist discourses of work-life balance. Participants who are mothers say they are *flying under the radar* at work. They self-surveil as they engage in both paid labor as university educators and unpaid carework at home. Importantly, when participants challenge hegemonic gender norms, they attract the radar's attention and are sanctioned. This study contributes to a growing understanding of how and why women are marginalized in STEM careers. Women with science PhDs fulfill their university's teaching mission with minimal support for the implied compensation of work-life balance, leaving the institutional structures which privilege men's participation in STEM research intact.

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academic science, gender, neoliberalism, postfeminism, teaching, work-life balance

1 | INTRODUCTION

Women have historically been underrepresented in science, either through explicit exclusion (Rossiter, 1982, 1998) or implicit marginalization by an androcentric culture (Harding, 1991; Keller, 1985). Institutional policies and laws produce explicit segregation and exclusion. Implicit marginalization occurs through cultural processes and gender schemas that privilege androcentric ways of knowing and being (Valian, 2005). These positivist ontologies and epistemologies preserve the stereotype of a scientist as male, white and middle-class, which discursively excludes women and people of color, as well as other intersectional identities (Archer & Francis, 2006; Haraway, 1988). Despite these barriers, some women do manage to persist in science research. Extraordinary figures such as Marie Curie and Barbara McClintock earned Nobel Prizes for their contributions to basic knowledge about atoms and cells. Too many others, such as Rosalind Franklin, remain underrecognized or ignored.

In its second wave, the feminist movement pushed boundaries to open opportunities for women in science education and careers (Rossiter, 2012). While the first wave pushed mainly for voting rights, what followed was concerned with supporting women's economic and cultural independence. Science and engineering, formerly almost exclusively male, began including women in increasing numbers. By the time feminism reached its third wave, at the turn of the 20th century, women were participating in some science disciplines at near-parity with men. For example, in the United States, by 2012 women earned ~50% of undergraduate science degrees and ~30% of graduate degrees in science. After graduation, however, women with PhDs leave scientific work at higher rates than their male peers (Rosser, 2012). Similar attrition occurs in other neoliberal societies such as Sweden (UKÄ, 2022) and Denmark (Nielsen, 2017). This pattern of PhD women having lower participation in the science, technology, engineering and mathematics (STEM) workforce is especially concerning because, among other reasons: (a) they have demonstrated a particular persistence to earn PhDs (Hirshfield, 2015; Hughes et al., 2017), (b) they leave STEM at higher rates than their counterparts working in other specialized professions (Glass et al., 2013), and (c) the STEM fields hold a place of particular importance in shaping society, and women's underrepresentation is detrimental to the advancement of scientific knowledge (Murphy et al., 2020; Smith-Doerr et al., 2017).

Academia is a salient sector to understand women's marginalization from science. Much of the basic research that impacts technology, healthcare, and other critical domains occurs in universities, which are "gendered organizations nested in a gender hierarchy" (Britton, 2017, p. 5). The underrepresented women who do participate in academic science are blocked from advancing in rank due to inequity in collaboration and evaluation (Fox, 2020) and their roles are often evaluated as less prestigious (Britton, 2017; Macaluso et al., 2016). Moreover, women in science may seek out, or be steered into, career pathways such as teaching, often under the rationale that as teachers they will have better work-life balance than as researchers (Fox et al., 2017). Ultimately, these inequities produce gendered occupational stratification (Acker, 1990), where vertical segregation has women clustered in lower ranks and more teaching-intensive roles in science departments (Fox, 2020). Gaining greater understanding of this segregation can shed insight into how science creates gender inequity through a masculine culture that also devalues teaching.

In this article, I analyze the experiences of women who earned PhDs in science and remained in academia. Trained as researchers, their main occupation is teaching in a lower-status role of 'contingent teaching faculty' (CTF), in contrast to the higher status, male-dominated role of 'tenure-line research faculty'. As such, study participants are interpreters of disciplinary knowledge rather than producers of new knowledge. According to the rules of elite universities in the United States, CTF are not eligible for tenure, working on yearly contracts for a lower pay than tenure-line faculty. Data collected during a 2-year ethnographic study in a physical science department at a research-intensive university in the southern United States provides the empirical basis to examine their experiences.

1.1 | Neoliberalism and postfeminism

Wendy Brown explains how neoliberalism, as the governing logic of late capitalism, operates as a distinct mode of reason “extending a specific formulation of economic values, practice and metrics to every dimension of human life” (Brown, 2015, p. 30). Neoliberalism works through disciplining forces on the mind and body, which Foucault terms governmentality. Governmentality conceptualizes individuals as subjects to be “used, transformed, and improved” in service of neoliberal projects (Foucault, 1977, p. 137). Governmentality has particularly high personal costs for women, especially those with minoritized races and ethnicities, whereby the discursive self becomes a kind of a ‘spreadsheet’ premised on audit technologies and centering individual choice as empowerment (Leathwood & Read, 2013; Rottenberg, 2019). As a response to the feminist movement’s emphasis of social egalitarianism, neoliberal governmentality folds feminism’s discourses into market logics that center individualism within a rubric of meritocracy (Fraser, 2012), producing the ‘sensibility’ of postfeminism (Gill, 2007).

In eurowestern contexts, policy interventions related to gender tend to be aligned with postfeminist agendas (Gill, 2007). This ‘Lean In’ feminism (Sandberg, 2013) dictates that women can achieve equality by better asserting themselves, leaving the patriarchy intact by placing burden for change on women rather than challenging a system (Rottenberg, 2018). As a “distinctive sensibility” of neoliberalism, postfeminism emphasizes self-discipline by focusing on individualism, choice, and empowerment (Gill, 2007, p.147). Operating as a discursive formation, postfeminism is a repudiation of strident second-wave feminism in favor of something more moderate and congruent with neoliberal projects (Petrucci, 2020).

By centering women’s right to self-determination and an equal opportunity to participate in society along with men, postfeminism does not question the basic structure of the nuclear family (Gill, 2007). Rather, within a neoliberal context, postfeminism supports a ‘careless’ model of citizenship and privileges an ideal worker “unencumbered by care responsibilities and free to play the capitalist games in a global context” (Lynch et al., 2012, p.83). Ideal workers’ productive labor is made possible by reproductive carework - parenting, looking after the aged, doing domestic chores - that is either unpaid or done for devalued wages (England, 2005). By centering the experiences of middle-class women whose performance as ideal workers might be enabled by the labor of working-class people, often women of color, postfeminist discourses also reifies class structures and white supremacy.

Moreover, postfeminism promotes gender essentialism by framing reproductive labor as emotional and productive labor as analytical (Grünberg & Matei, 2020), bolstering the neoliberal narrative that women’s happiness is achieved through work-life balance (Rottenberg, 2018). The binarization implied by ‘balance’ forces carework into the domestic sphere. Locating domesticity in the private realm of home, despite it being paid work for many women, is an example of neoliberal carelessness. Joan Williams (2001) argues that when carework is understood as fulfillment rather than reproductive labor, it entitles employers to hire ideal workers, entitles men to be ideal workers, and entitles children to have mothers who prioritize domesticity over paid work.

In neoliberal societies organized around domesticity and informed by postfeminist discourses, women face constrained career paths that encourages their participation in traditionally feminized work, such as teaching. As such, work-life balance is frequently used as a reason to “dial-down” their career goals (Stone, 2007). For example, in South Korea, teaching is culturally framed as a desirable profession for women because the balance is viewed as bi-directional: one can be a better mother working as a teacher, and thus being a mother makes one a better teacher (Kang et al., 2020). In Sweden, women in teaching-intensive roles in universities attributed their exclusion from research as due to individual choices and did not recognize that their labor served to further the agenda of a “highly competitive and commodified” institution (Angervall & Beach, 2018, p. 14). Although male faculty increasingly have carework responsibilities in several contexts (Lund & Tienari, 2019; Sallee et al., 2016), masculine ‘ideal academic’ discourses continue to disproportionately disadvantage female faculty (Lester & Sallee, 2017; Lund, 2012).

1.2 | Neoliberal academia and precarity

Similar to its effect on feminism, neoliberalism's market logic produces governmentality in higher education (Fraser, 2012). Through public sector 'soft capitalism', teaching and research are commodified as a means for universities to meet performative criteria (Olssen & Peters, 2005), and "because the academy is premised on the curriculum vitae and individual competitiveness it gives rise to particular sorts of performative hyper-masculinities, often thinly disguised in egalitarian rhetoric" (Clegg, 2008, p. 219). The tensions of marketization have gendered consequences, as traditional male-dominated disciplinary fields are increasingly governed by business ideals whilst female-dominated, formerly vocational disciplines such as nursing are subjected to new metrics such as research outputs (Ek et al., 2013).

Marketization promotes vertical gender segregation, clustering men in higher status roles and women in lower status roles. In academia, vertical segregation is expressed as m*en are more likely to be successful in forging a path in research through social networks and mobility whereas female faculty take on more teaching (Angervall et al., 2015) as well as academic housekeeping tasks which are not valued for promotion (Babcock et al., 2017). For example, female contingent faculty in Ireland responsible for high levels of teaching and service reported being denied basic elements integral to career progression such as research leave (O'Keefe & Courtois, 2019). Vertical segregation can be viewed as evidence of neoliberal carelessness, threatening not just contractual security but also relational-affective security. Those who 'opt out' of institutional structures suffer contractual precarity, while the relational lives of those who stay in are peripheralized, producing affective precarity (Ivancheva et al., 2019). While precarity affects all faculty through neoliberal funding cuts, department closures, and threats to academic freedom, it disproportionately marginalizes women and persons of color (Davies & Bansel, 2007).

To understand the working conditions in academia, it is important to pay attention to precarity and ask why it is so widespread despite obvious disadvantages for individuals and institutions. To this effect, Robin Zheng (2018) suggests that precarity functions through entangled fictions: the myth of the meritocracy and the myth of work as its own reward. These myths obscure scrutiny into the problems that precarity produces. The neoliberalization of higher education creates stratification that allows inequity to flourish under the guise of meritocracy, where neoliberal governance operates through relations of accountability (Zheng, 2018). In the United States, this stratification is marked by numbers of contingent faculty rising steadily and replacing more secure tenure-track positions. Numbers of faculty working on a contingent basis began increasing substantially after 1972s Equal Employment Act and Title IX, paradoxically as part of a "quest for mechanisms that would expand opportunities for women" (Glazer-Raymo, 1999, p. 57). Dual tracks became an acceptable hiring strategy, and contingent faculty could be brought on to teach courses with significantly lower costs and greater flexibility than tenure-track faculty. Women are overrepresented in contingent positions, comprising 52% of this track as compared with 42% of tenure-track positions (Digest of Education Statistics, 2018). As a tendency that centers markets and meritocracy, neoliberalism is one of the factors that allows the precarity of contingent positions to be obscured by discourses of work-life balance (Gill & Donaghue, 2016).

1.3 | Contingent faculty in STEM

Cartesian dualities such as rational/irrational, self/other, male/female were integral to the formation of normative science practice (Harding, 1991). As science knowledge came to be leveraged for wage-earning potential during the industrial revolution, science became understood as a masculine domain; fields where women, as the 'other', did not belong (Tolley, 2003). This narrative has shifted across time and place with neoliberal themes of inclusion and equality, but women in postindustrial societies still participate in science and engineering at lower rates than their male peers, accounting for only 25% of those in STEM jobs (Simon et al., 2017). While an inadequate supply of women in 'the pipeline' superficially accounts for their underrepresentation (Xie & Shauman, 2003), young women's disinterest in science may also be due to its "culturally pervasive association" with masculinity (Keller, 1985, p. 71).

The hegemonic masculinity of STEM produces an inhospitable culture with especially performative interpretations of research, a narrow conception that marginalizes those who prioritize work-life balance (Fox et al., 2017; Healey & Davies, 2019). This hegemony resonates with neoliberalism's emphasis on outputs and can block women in STEM from constructing a 'stable academic identity' because they have little time to build a personal life and form a family (Archer, 2008). For female STEM graduate students, the mere 'specter of motherhood' may produce fear because it is viewed as in opposition to professional legitimacy (Thébaud & Taylor, 2021). Moreover, women in STEM often do not see these patterns as systemic, but rather the result of choices that require individualized solutions (Britton, 2017). Explaining gendered marginalization in academic science as women's individual choices ignores how it manifests as a pattern to exclude them from the tenure-track and research. And while these patterns are present across the disciplines of neoliberal academia, they are exacerbated by the particular salience of discourses of choice and individuality in the STEM fields.

We understand, therefore, the ways that postfeminist discourses in the neoliberal academy produce marginality and precarity and how it disproportionately affects women. Women in STEM academia, however, have a unique experience because they are underrepresented numerically as well as vertically segregated into teaching-intensive contingent positions. In this study, I contribute to extant literature by asking:

How are the experiences of women in contingent, teaching-intensive positions in neoliberal academic science shaped by postfeminist discourses?

2 | METHODOLOGY

2.1 | Context

This is an ethnography of CTF in a physical science department at a public university in the United States. To protect participants' confidentiality, the precise discipline, location, job title, and their names have been obscured. The university enrolls approximately 50,000 students, about 80% of whom are undergraduates. It is an 'R1 flagship' in a large state system, with very high research activity. The physical science department has ~100 employees, inclusive of support staff for research and teaching laboratories, administrative assistants, and faculty (but not postdocs or graduate students). The faculty, all with PhDs, exist on two tiers: tenure-line and contingent. Those on the tenure-line conduct scientific research, which in this discipline usually means overseeing graduate students and postdocs in a laboratory setting. They teach one or two courses per year, often at the graduate level. In contrast, CTF do not have research labs. They are responsible for the undergraduate courses, teaching two sections of approximately 400 students each semester. *Intro*, the first two courses, are required not just for physical science majors, but also for those who wish to major in engineering and to pursue medical school. With about 10,000 students enrolled each year, they are colloquially known as 'weedout' courses (Doerr, 2021).

I first became aware of the CTF while I was the research assistant for a curriculum committee in the Natural Sciences College and I became friendly with Dr Welles (all names are pseudonyms). With her help, I offered a lunch-time discussion forum on issues of equity in STEM teaching. We invited everyone in the department, but only some of the CTF and graduate teaching assistants participated. I was struck to learn that, in a department and discipline that was 70% men, the CTF was reverse—about 65% women. I developed preliminary research questions for this study around this disparity, and decided they were best answered with feminist ethnographic methodology (Davis & Craven, 2016).

2.2 | Data/sample

The data presented and analyzed in this article was collected over 2 years. My positionality in this study is as an insider-outsider. After studying physical science as an undergraduate, I began a PhD in the same field but dropped out due to a sense of not belonging in research. Instead, I became a high-school science teacher, only to pursue a PhD in Education in my mid-30s. My personal politics are progressive, and my return to academia was spurred on by concerns about equity and access in science education. In the male-dominated physical sciences the gendered self is discursively read through a masculine culture, and the social categories man/woman have a particular analytical salience (Haraway, 1988; Keller, 1985). That is, while I label my participants with these binary terms, I recognize that gender is a social and cultural performativity and these categories are woefully inadequate (Butler, 1990). As a white person raised in a conservative middle-class family, I identify as genderqueer.

My ethnographic method included purposely sampling participants, engaging in participant observation, and semi-structured interviewing (Hammersley & Atkinson, 2007). Following Institutional Review Board approval, this study began with participant-observation of the CTF responsible for teaching *Intro*. I focused on this group because I wanted to be able to compare participants' teaching, so the same course content acted as a natural control. In addition, the enterprise of a 10,000 student per year science course, with 15 sections running simultaneously, was likely to present a range of gendered hierarchies and practices.

I engaged with my participants, all of whom consented in written and oral form, in a reflexive snowball fashion. I started with Dr Welles, for reasons explained above. While doing participant-observation in her classes and during her office hours, I met her colleagues informally and told them about my study. Then I followed up with an emailed invitation and we set times to meet and then for me to attend their classes and spend days with them. This continued until I had recruited all the CTF teaching *Intro*, as well as two *Intro* lab coordinators and the Associate Dean who was tenure-line but teaching *Intro* for a semester. Ultimately, seven women and four men participated. This paper is focused only on the experiences of women CTF. These participants, and a timeline of my time spent doing fieldwork and reflexive data collection is presented in Table 1.

I spent full workdays with my participants, while they were teaching classes, sitting in their offices preparing, walking around campus, having lunch, meeting with colleagues, committees, and students. As a participant-observer with a shared scientific background, I helped small groups of students during office hours and offered ideas during lesson planning sessions. Depending on the context, I typed or jotted notes which would be formed into fieldnotes in the evenings. Because I spent so much time with them at work, I was able to gather life history and demographic data during participant observation.

TABLE 1 Overview of focal participant demographics and 2 years of ethnographic fieldwork (other participants not included in this inquiry are not included in this table)

Name	Age	Years in this job	# of children & their ages	Fall '17	Spr. '18	Fall '18	Spr.'19
Dr Welles	50	20	2 (age 16, 23, 26)		I	I	
Dr Smith	45	15	2 (age 10, 13)		I		I
Dr Scripps	30	3	0		I		I
Dr Hollins	45	15	2 (age 8, 11)				
Dr Newnham	50	15	cats, goats, hens (ages unknown)				I

Note: All focal participants' names are pseudonyms, given as a nod to women's colleges. They all identified as white, used she/her pronouns, were married to cis-men, and held PhDs in physical science. Blocks that are shaded indicate months spent in participant observation, and Is indicate when a formal interview, all approximately 1 hour, took place.

All the participants were white, which is unfortunately in alignment with underrepresentation of persons of color in academic science. They ranged in age from ~30 to 50 years. Due to their level of education and income, they were in the middle class. They all self-identified as wo/men, used s/he pronouns, and were heterosexually “married” to “husbands/wives”. With the exception of Dr Welles, they all completed PhDs in the department and wanted to stay in the city, often due to their spouse having a commensurate or better-paying job there. What emerged as an important intersectional distinguisher was parenthood, and in this inquiry I examine in particular the ways that motherhood, domesticity, and norms of femininity impacted their experiences in the workplace.

2.3 | Analysis

Analysis began with reading and annotating fieldnotes from participant-observation at the end of each week. After a few months, as shown in Table 1, I began to interweave participant-observation with audio-recorded interviews to develop emergent themes. During interviews, lines of questioning varied by participants and over time because they were shaped by my interpretation of fieldnotes alongside reading of theory (Davis & Craven, 2016). I asked participants to explain aspects of my observations, reflect upon events in their classes or meetings, and give their opinion about institutional policies. Key informants were interviewed several times, to test and develop emergent themes (Ravitch & Carl, 2015). For example, after I developed an initial theme, I discussed it with Dr Welles, Dr Smith, and Dr Scripps in separate interviews and their interpretations allowed for development of subthemes. Throughout rounds of participant observation and interviewing, I wrote and revised analytic memoes on how gender shaped CTF's identities and interactions, through visibility, career development, and salary.

The study's trustworthiness was ensured through design complexity, a form of validity that involves an iterative and recursive process and attention to triangulation of data (Ravitch & Carl, 2015). Prolonged engagement in the field produced rich data that is characteristic of ethnography (Carspecken, 1996; Hammersley & Atkinson, 2007). I also engaged in consistency checking, to clarify discrepancies between observations and interviews across participants (Carspecken, 1996). Finally, congruent with theories of feminist ethnography, reflexive engagement with power relations, by considering how participants perceived me, attended to the situatedness of this research (Davis & Craven, 2016).

3 | RESULTS

In Section 3.1, I show how the mothers in my study explain themselves as achieving work-life balance by *flying under the radar*. This metaphor, invoked by several participants, guides subsequent analysis of how CTF are recognized as gendered bodies. Section 3.2 examines their experiences when their children are older and they attempt to gain more recognition and develop their careers. Section 3.3 explores how recognition impacts work-life balance, particularly related to the future motherhood. Finally, Section 3.4 explores how *flying under the radar* is a feminized subject position, as a participant who did not conform to typical displays of femininity or masculinity was labeled as atypical and then surveilled by the institution.

3.1 | Seeking work-life balance when children are younger

A white woman in her early 50s, Dr Welles expected to be a science researcher having completed her PhD and 2 years of a postdoc. But, after moving to this city for her husband's work and finding herself without extended family

around and two small children, for several years focused on caring for children and home. After her third son was born, she returned to paid work as CTF. She recalled this time as:

I flew under the radar for eight years. I taught my class, I came and went, and never went to a single meeting. And most people didn't know who I was; because I was living my life, and I only did this for mental stimulation. I didn't want to lose all the information that I had in my head...it was for a little bit of extra money, and it was fun.

(interview, autumn 2017)

During these 8 years, a significant part of Dr Welles' life was domesticity often done solo because her husband traveled frequently. Such demanding reproductive labor reduced the time she could spend at work, so she did what she needed: came to campus, taught, and avoided meetings to the extent that she was relatively unknown. Insofar as she operating from a position of relative privilege as an educated white woman with a high-earning partner, the job was fun and a way to bring in some extra money. Thus, she viewed *flying under the radar* as at least partly of her own volition, a way for her to move between home and work on her own terms. Her colleague, Dr Smith, who is in her early 40s, used the same metaphor:

What kept me going through grad school was the thought that I wanted to get to a level where I could set my own hours. I had one baby while in grad school and one right after, and I didn't want them to have to go to afterschool care. I wanted my hours to match their school hours. When my kids were little, I was flying under the radar, just trying not to make too many mistakes, so that I could keep my job. I never wanted to be without a job.

(interview, winter 2018)

Dr Smith's motivation to earn a PhD was getting a job that was flexible. Being home for the kids after school is a common expectation of white, middle-class mothers in the United States (Hays, 1998; Stone, 2007). Dr Welles had a casual attitude toward her paid work because she didn't feel that it was needed for her family unit to be financially secure. In contrast, Dr Smith was raised in a low-income family and was a first-generation college student, which makes having a PhD especially notable (Holley & Gardner, 2012). She did not want to be without the financial security of the paid work her education allowed her to access. An added benefit was setting her own hours. At work, she focuses on not drawing attention to herself. Although their class origins produced different attitudes toward paid work, Dr Smith and Dr Welles were similar in their appreciation of the flexibility: "What keeps me in this job? It's the work-life balance. The flexibility, honestly. That's why I took the job and that's what keeps me in it. Isn't that terrible?" (Dr Welles, interview, autumn 2017).

Dr Welles started as CTF when all three of her children were very young, but during my study her youngest was close to graduating from high school. While the carework required for her children had lessened, she still appreciated the flexibility. A central intention in *flying under the radar* is to have a way to stay in science and stay employed while meeting expectations for middle-class domesticity (Williams, 2001). These expectations include being in a dual-income family unit, and for some in a partnership with a higher earner to make up for salaries that were well below a competitive rate for science PhDs.

Thus, the radar is a perceived mechanism of surveillance. Flying *under the radar*, she has the feeling of evading institutional surveillance, yet she is self-surveilling. So, flexibility is also a source of anxiety, as reflected by Dr Welles' question "isn't it terrible?". She is sensitive to appearing to have taken advantage of the system by evading the radar. Dr Smith says she is *under the radar*, but is actually self-monitoring because she is "just trying not to make too many mistakes". In the face of neoliberal academia's "carelessness" (Ivancheva et al., 2019), she takes it upon herself to be extra careful, because she does not want to be without paid work even though she is also responsible for the second shift (Hochschild & Machung, 2012) of domestic work. Thus, expectations for women to fill their time with socially

responsible, communal activities (Diekman et al., 2010) are twice met, because as teachers they are also, as Dr Welles said, “impacting lives and making a difference” (interview, winter 2018). Engaging in carework, both paid and unpaid, validates middle-class women’s explanation of why they *fly under the radar*.

3.1.1 | Judged for being a mom first

Dr Hollins’ experience nuances flying under the radar, because she was forthright about the time that she would devote to work and home. As a colleague explained:

[Dr Hollins’s] a mom. She’s mom first, she’s made that very clear. So, she works after her kids are asleep, she works in the morning, but between 2 and about 8, she’s not on the clock. But she’s clear about that, and she gets the job done.

(Dr Scripps, interview, winter 2018)

My own experience of participant-observation with Dr Hollins supported this account. I spent a semester attending her classes and participating in workday routines of meetings and office hours. If we ate lunch in her office together, she was always working on lesson plans or sending emails. Often she just ate an apple and granola bar while walking from one appointment to another. In fact, she was so busy that she could never sit with me for an audiorecorded interview. The only time she had to talk was on the go.

Dr Hollins’ clarity about her home obligations elicited negative reactions from some of her peers, who complained to me and to each other that she replied very late at night to emails they had sent in the afternoon, or that she was inflexible on finding times to meet because she needed to pick up her child from school. By clearly being a mom first rather than *flying under the radar* and doing work-life balance, Dr Hollins is judged more harshly for simply doing her work.

These CTF discipline their bodies to “extract, from time, ever more available moments” (Foucault, 1977, p. 154). They are avoiding recognition for their productive labor in the wage economy so they can engage in reproductive labor in the non-wage economy. Perceived flexibility lets them stay in academic science while meeting expectations that women also are responsible for household labor. The institution benefits by paying a relatively low salary because these women are married to higher earners. It even periodically recognizes their pedagogical contributions—Dr Smith and Dr Welles had both won teaching awards in years past. Yet, as Dr Welles remarked: “I didn’t even know anyone knew who I was! They must have just gone on teaching evaluations. No one had observed me, they just let me do my thing” (interview, Fall 2017). Doing their own thing results in award-winning educators who are self-surveilling and self-regulating. They fulfill the institution’s teaching mission with minimal resources devoted to managing them.

3.2 | Trying to develop a career

As their children grew up and their domestic obligations lessened, Dr Smith and Dr Welles wanted to develop in their careers. Dr Smith wanted to become involved in education research but was in nascent stage, where she was still deciding “if I am more interested in looking at the students, or looking at some other facets” (Dr Smith, interview, winter 2017). But because she was not on the research track, she had to carve out her own path because the job had no formal provisions for research activities. Dr Welles wanted to develop curriculum, and perhaps even move into the administration. When she took on curriculum projects, however, she experienced difficulty in multiple instances. One project involved developing a curriculum for preservice elementary teachers to learn science pedagogy. She spent 3 years coming up with an idea, writing a proposal and co-chairing a committee with a tenured male professor. She recounted:

in terms of getting the credit, though, I was so naive. It was part of Associate Professor M's grand plan to stop doing his research and go into the administration [...] We wrote a grant together and he kind of iced me out of it. It was crazy because he needed to be the one to advance his career.

(interview, autumn 2017)

A few years later, she wanted to lead a course for high school students seeing college credit, but again was "iced out" and a different male professor was put in charge. She was very angry when she heard that he planned to use the curriculum that she developed, and felt that he was "basically taking credit for her work" (fieldnotes).

For Dr Welles, attempts to contribute to the university beyond her own classroom and raise her visibility were met with mixed results. Her pedagogical expertise was clearly of value, especially because others took credit. Her presence was not welcome, however. Once she had done the useful work and even though credit was due, she was "iced out" - pushed back *under the radar*. And postfeminism's focus on the individual blocked her from blaming an unfair system. Just after my fieldwork concluded, Dr Welles left the physical science department and became CTF in the life science department, where she hoped people would be "less toxic" (fieldnotes, spring 2019).

3.3 | Being visible imagining multiple selves

Postfeminist self-surveillance was also demonstrated by Dr Scripps. Dr Scripps is about 30 years old, and she considered taking a job in the industrial sector after her PhD. That meant moving to another part of the country, but her husband worked in the tech industry in this city. So, she stayed and took a position as teaching faculty. In addition to teaching two courses, she was responsible for coordinating the department's science demonstrations, which paid her a supplement. Dr Scripps remarked:

I am willing to put career before family [...]. I show up to every faculty meeting. I'm the only CTF that does that. I go every single time. Dr Welles tries to go, but she has to go home for her dog and stuff like that.

(interview, winter 2017)

In contrast to many of her female peers, Dr Scripps wanted to be *on the radar*. She even acted as a radar by evaluating the other CTF's attendance there. Moreover, she perceived that she was on the radar of the research faculty:

when they are talking about research [...] I remind them that I am a PhD scientist and then I can absolutely go toe-to-toe with them [...] I really believe that you are going to be judged by the way you present yourself, especially as a woman.

(interview, winter 2017)

Even though Dr Scripps believes she is the scientific peer of the nearly all-male research faculty, she needed to remind them, because they will judge her as a woman rather than as a scientist. As such, she dressed and behaved to command attention, saying "I wear skirts and heels, and I March in" (fieldnotes, spring 2019).

Dr Scripps's lean-in style of postfeminism was not a guarantee of equality. This was evident in pay negotiations:

At CTF meetings, [the department business manager] will go around and put your contract in front of you in an envelope and say "Just go ahead and sign it, and give it back to us" and he like stands right there. I am such a bitch. I'll take the contract but I won't open it. I'll put it in my bag and I maintain eye contact the whole time. Then I lean back and I just sit there. He's like "Dr Scripps don't you want to do

that, like the rest of them?" and I'm like "Nope, I will look at it tonight". So he knows that I will always battle him tooth and nail.

(interview, winter 2018)

When Dr Scripps pushed back on pressure to take the first contract she is offered, this challenge to hegemonic femininity (Schipper, 2007) positions her as someone who will fight, a "bitch". These competing subjectivities of masculine and feminine were especially evident when Dr Scripps imagined becoming a mother in the future:

Honestly really, and this is so weird. I would like someone, like a nanny, who was just with me all the time, all day every day, and with the kid. The kid is there and near me, but [the nanny] can take care of the basic needs. But I'm there to be the mom, because the thought of my kid being at home with a nanny, and growing attached to someone else being there and doing what I feel like is my job. Like you know, a good mom takes care of their kid.

(interview, winter 2018)

Dr Scripps could conceptualize work-life balance through the lens of choice rhetoric (Williams, 2001) when childcare is not a factor. However, when she imagined children she had to mentally clone herself to be able to care for her child and attend to her job. Dr Scripps described a sort of dual consciousness, with the subject positions of scientist and mother in conflict. Although being her job that is purportedly structured to teach and do the duties of a housewife, she imagined these roles as separate because in her experience of constantly self-surveilling makes it feel impossible for one person to do both well.

3.4 | Gender norms, in different ways

Dr Newnham, who completed her PhD in this department and had been CTF for about 10 years, also challenged gender hegemony through a unique gender performativity (Butler, 1990). One of her colleagues described her to me as "an interesting person, maybe on the spectrum", which they clarified as seeming neuroatypical. At work, Dr Newnham clad her nearly six-foot body (180 cm) in work boots, cargo pants, and an untucked flannel shirt. Her long hair back in a ponytail, she accessorized with dangly earrings and necklaces. This was a contrast to Dr Scripps, described in Section 3.3, but also to the other female participants, who dressed in more uniformly feminine styles. Dr Newnham lived in the country with her husband and what "amounts to our kids - our furry family". They did not have human children because she has "never felt maternal, I'm not sure why, I'm just not. Give me a kitten and I want to cuddle it and take care of it, though" (interview, December 2018). In addition to tending their large garden and pets, Dr Newnham and her husband were volunteer firefighters. Dr Newnham was only on campus for her classes, office hours, and meetings. She looked forward to breaks as time to "go home and cocoon" herself, not to "be seen again on campus until the spring semester" (interview, Dr Newnham, winter 2018). Despite this desire to be *under the radar*, Dr Newnham's disruption of hegemonic gender norms seemed to attract its attention.

In recent semesters, Dr Newnham's students had given her relative low scores on their course evaluations. When I was in participant-observation with her, she was the object of external surveillance. This came in the form of being paired with one of the few male CTF, Dr Mason, who was supposed to share his teaching resources and have extra meetings with Dr Newnham about pedagogy. I sat in on a few of their meetings and attended both Dr Newnham and Dr Mason's classes throughout a semester. Like Dr Mason, Dr Newnham's teaching style was lecture-based, writing notes onto pre-made slides while solving example problems. Dr Newnham had an enthusiasm for doing science demonstrations, but cut those back after Dr Mason urged her to spend more time "just covering content" (fieldnotes, autumn 2018). In my observations, it appeared that Dr Newnham was doing just what the institution asked of her—to follow Dr Mason's teaching model. In contrast, many of her female colleagues used a more student-centered, active

learning style. Thus, in addition to having a more masculine style of dress, Dr Newnham also taught more like Dr Mason than like her female peers.

Being closely scrutinized was stressful for Dr Newnham, who spoke often about being confused about why her evaluations were so much lower than Dr Mason's. She thought it had something to do with their test scores, so she put extra effort into test review:

Dr Newnham checked her email while eating lunch at her desk and gave a little cry of happiness when she noted that her class's average was 67% and Dr Mason's class average was 66%: "I am so happy, because now no-one can say I am not teaching well".

(fieldnotes, autumn 2018)

By being neither normatively masculine nor normatively feminine, Dr Newnham's gender performativities are less categorical than her colleagues'. This diminishes Dr Newnham's gender intelligibility, a concept Judith Butler theorizes as "the coherence or continuity of the person [which are] socially instituted or maintained norms" (1990, p. 23). Dr Newnham's style of dress and eccentric scientist mannerisms were a normatively masculine performativity, making her less intelligible as a teacher, especially because her pedagogy was dissimilar to her female colleagues. Simultaneously, her female body worked against her, making her less intelligible as a physical scientist. This unintelligibility then leads to heightened scrutiny—from colleagues, students, and the institution. She is *on the radar*, visible though she does not want to be.

4 | DISCUSSION

The results of this study illustrate how postfeminist discourses amongst the CTF contribute in significant ways to reproducing inequity. All the participants have PhDs in physical science. It is well-established that the culture of STEM views itself as meritocratic (Cech & Blair-Loy, 2010; Doerr et al., 2021). Carrying the myth of the meritocracy (Zheng, 2018) into their work lives, inasmuch as the female faculty are aware that they are in a lower-status job, they also expect that this role will eventually offer some career progression. For some, it is a role that allows them to be in a low gear when they have young children while not completely opting out of the academic or scientific workforce (Herman, 2015; Nielsen, 2017). As they continue to develop their skills sets as educators, there is also a hope they can later pursue opportunities for advancement.

Moreover, the neoliberal academy relies on female CTF who expect to be treated fairly. While we already know that the academy benefits from female faculty who have bought into neoliberalism (Davies & Bansel, 2007; Gill, 2016), CTF stay for flexibility with the expectation that they can compete fairly when they have fewer obligations at home. The university, however, is ultimately the bigger beneficiary from this flexibility because it also normalizes precarity. Thus, it can change schedules every semester, assign teaching dependent on enrollment, and easily let people go.

The participants' postfeminism means that they work hard and believe they are lucky to have a job. Like the female academic scientists in Agnes Vayreda and colleagues' (2019) study, who exact a gendered "turn on oneself" toward an appropriate scientific subjectivity, many of the participants self-surveil as they balance their paid work with their domestic obligations, whether it is reproductive or productive labor. This turn even results, for Dr Scripps, as a bifurcated consciousness (Smith, 1990) of dual selves. Thus, *the radar* might be thought of as another myth of neoliberal academia that is perpetuated by postfeminist discourse, a governmentality that comes from within, not an external governance (Zheng, 2018). They are dedicated educators who put up with precarity because it is framed as flexibility, while the university can generally ignore them and also expect they will self-surveil. While there are some examples of resistance - such as negotiating a higher salary - because these women are using postfeminist logics, their efforts are productive only on an individual level and do not result in more systemic change.

Not all female participants fit neatly into this model. Dr Newnham and Dr Scripps contest gender hegemony (Schipper, 2007) in different ways, and both are met with sanctions. Previous research on girls and women studying physics (e.g., Archer et al., 2017; Gonsalves, 2014) suggests that masculine ways of being, enacted through gender performativities, may be more intelligible and congruent with the cultural arbitrary of science. The gender norms for CTF in physical science are contradictory, because while science is male-normed, teaching is female-normed. There is space for a woman who performs femininity and *flies under the radar* because she is a mother with many domestic responsibilities. Different from some tech workplaces, where women who presented as genderfluid reported a higher sense of belonging than cis-women (Alfrey & Twine, 2017), the position is reliant on gender dichotomies. Female physical scientists are softened when they are feminine teachers and mothers, which provides a logic for women to be in a male-dominated field but not threaten its masculine norms.

The analysis suggests that when gender, science and teaching intersect in this physical science department, opportunities are limited for participants to meet their potential as scientists or to grow meaningfully in their careers. Contrary to providing an environment where those with merit are rewarded, neoliberalism obscures the systemic exploitation of this highly educated group using discourses of work-life balance to obscure gender inequity. Thus, this article contributes to a growing understanding of why, after women and non-dominant groups are given messages that they should participate in STEM, they continue to be marginalized.

This study has limitations. Importantly, the participants' racial and class privilege affected the extent of the marginalization they experience. While their whiteness is unmarked, it exists. Rather, the participants are operating as relatively privileged members of a wider university community that relies on the far-more exploited labor of support staff, many of whom are Latinx and Black. Additional research might explore how a more intersectionally diverse sample of women in academic science are affected by postfeminist discourses (e.g., Riegle-Crumb et al., 2022). Such a study may require a broader qualitative interview study, with purposive sampling of underrepresented faculty in terms of race/ethnicity, gender identity, sexual orientation, (dis)ability, and so forth.

5 | CONCLUSION

This article explored just one small corner of a physical science department, but its lessons can resonate more broadly for women in academia. The women in this study struggled through documented challenges to earn PhDs in a male-dominated discipline. They have shown they can succeed against the odds, yet they have lower access to careers commensurate with their educational level than their male peers have. Rather, their labor is exploited precisely because postfeminism and the discourse of work-life balance requires them to be responsible not just for themselves but for their families and households. If being a woman on the CTF means to fly *under the radar*, it leaves intact gender hierarchies in science where men are privileged to produce knowledge through research and women are more often consigned to interpret it. Positioning teaching as a flexible job suitable for women reinforces the ideology that women need work-life balance more than men, implying that women are ultimately responsible for society's carework.

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CONFLICT OF INTEREST

I am aware of no conflict of interest in this research study.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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