

## Coming to Age as a Feminist Scientist: Ethnographic Readings of Life History Writing

Panel: [Affective Accounts of Scientific Rationality](#)

**Short Abstract:** This paper examines life history writings of feminist scientists to argue that they have leveraged specific affective and relational moves in response to contradictory pressures of scientific subjectivity, and have reconstructed responsibility towards science by participating in political critique.

### Introduction

I started my dissertation research, guided by a simple question: How do people historically and systemically driven out of science maintain attachment to it, so much so that they desire to transform it? I also became interested in the question of pedagogy at the same time. Many scholars have argued that pedagogy plays an important role in constituting the scientist as a knowing subject (Traweek 1988, Kaiser et al. 2005, Fortun 2021, Vora et al. 2022) by reproducing, and unsettling, ideas of what counts as good science, who counts as a good scientist, what ideas are worth following through, working through, or discarding altogether. It followed, I surmised, that people who maintained a profound attachment to science in spite of their exclusion from it, would have something to say about this, given the discursive risk that pedagogy presents: that is, it can be immensely reproductive *and* it can be incredibly transformative.

Nudged by my advisors, I also started immersing myself in the literature about the relationship between critical consciousness, psychoanalysis, and pedagogy<sup>1</sup>. How did radical educators like

---

<sup>1</sup>Mayes (2009) notes the many resonances and convergences between psychoanalysis and pedagogy that arise when one desires to understand the emotional situations of teaching and learning. He notes that despite much promise and early work, teacher education in the US has remained influenced with behaviorism, cognitivism, social constructionism, and humanism, with psychoanalytic influences suppressed as controversial, unscientific, or inappropriate. One only has to look at Deborah Britzman's oeuvre to express frustration at the exclusion. From her earliest works like *Lost subjects, contested objects: toward a psychoanalytic inquiry of learning* (1998) to her most recent *Anticipating Education: Concepts for imagining pedagogy with psychoanalysis* (2021), Britzman has consistently advanced concepts, such as "difficult knowledge", that have proven very useful to pedagogical thinkers who work towards anti-racist and queer pedagogies that pose the double demand of urgency and difficulty. Besides Britzman's nine books, Shosanna Felman's essay 'Psychoanalysis and Education: Teaching Terminable and Interminable' (1982) also comments on why it's difficult to learn and what might get in the way, besides other people. A salient reminder from this literature is that the participants in pedagogical situations are humans with deep internalizations and expansive projections, some of which make rather surprising appearances in those situations. As for the relationship between critical consciousness and psychoanalysis, Gaztambide (2019) has studied how psychoanalytic literature influenced Latin American liberation theology scholars, such as Paulo Freire. However, the relationship between critical consciousness, pedagogy, and psychoanalysis needs to be more adequately theorized, to account for the difficulties and successes of programs and mechanisms meant to engage (and even elevate) consciousness, such as pedagogy.

Paulo Freire conceive critical consciousness as a radical humanization of the oppressor-oppressed dynamic (Freire, 1970) and what can that say, if anything, about how feminist, or other types of political consciousness, can be reconstructed in science?

I was drawn towards autobiographical writing by feminist scientists. As Mike Fischer notes (1991) life histories can be opened up to display their aporias and contradictory pressures, he suggests—and one way to do that is by being attentive to psychodramas—symptoms of transference, displacement, identification, resistance, deferral, and so on. Who are the figures in science, I wondered, who represent social and cultural transformations, who critique their own traditions, in the psychodramas that mark their life?

### **Some biographical similarities—and differences**

The feminist scientists I comment upon are theoretical biologist Evelyn Fox Keller and theoretical cosmologist Chanda Prescod-Weinstein. Fox-Keller, who died last year, published her memoir *Making Sense of My Life in Science* (2023) shortly before her death. Prescod-Weinstein, who is very much alive, published *The Disordered Cosmos* in 2021. While Fox Keller's text is a traditional memoir chronologically ordered, Prescod-Weinstein's text is an ode to what liberatory practice in the sciences might look like.

Both texts are autobiographical reflections on what it means and how it feels to think while being on the margins. Fox Keller, a beneficiary of second-wave feminism, and Prescod-Weinstein, a beneficiary of Black queer feminism, reflect on the questions that have been possible to ask in their respective fields, and questions that have been denied recognition, even language. For Fox-Keller, it meant interrogating the “master molecule theories” in genetics and developmental biology: Why is it that DNA became thought of as a master code that produces its environment? Why not the other way around? For Prescod-Weinstein, it meant interrogating the prominence of string theory as the master candidate for quantum gravity—that is, integrating general relativity with quantum mechanics—why not other theories, such as loop quantum gravity that do not rely on the Standard Model of Physics?

These questions in part turned both scientists towards reimagining scientific epistemology, and towards the field of feminist science studies<sup>2</sup>. Fox-Keller's writings were one of the earliest to demonstrate that gendered and sexualised metaphors regulate what questions can be asked in science (Keller, 1996). In her memoir, she retroactively frames her life project as that of "relational epistemology"; in her words, "I mean a way of looking at the world that starts with interaction and relationality and proceeds by observing how parts, units, and individuals grow and take shape out of those interactions." (Keller, 2023, p. 197).

Prescod-Weinstein's turn to science studies is more recent, with an essay in the feminist philosophy journal *Signs* about the racialization of epistemology in physics (Prescod-Weinstein, 2021). How is it that students in physics can perform extremely complex mathematics to detect distortions in spacetime that enables them to know how many galaxies there are in the universe—and yet the pattern recognition of racism, mundane and otherwise, is denied? She calls this systemic doublethink "white empiricism".

I am convinced by their arguments, taking pleasure in the unmasking of normative gendered and racialized epistemologies of science. When they named their projects, I felt what bell hooks said when she found Freire's work, pointing to the power of subversive resignification— "I came to

---

<sup>2</sup> Longino & Hammonds (1990) provide a useful overview of feminist critiques of science at the turn of the 20th century. Longino reviews the works of Fausto-Sterling, Keller, Harding, and Haraway as a philosopher of science, noting that their purported differences are not so much metaphysical and epistemological as they are political. The reason that their differences are read as philosophically different demonstrates an inadequacy within traditional philosophy of science to turn towards feminism. Hammonds reviews the perspectives of working women scientists as a physicist herself, noting that feminist critiques of science have not been received as desired by working women scientists, who see feminist science studies scholars as merely reproducing sexist stereotypes. Hammonds finds it curious that feminist criticism of science is read by scientists as statements about women rather than about gender or science. Longino and Hammonds' analysis should be read around what was going on in their world. Multiple currents flowed at this time between political movements and academic institutions; feminist critiques of science being one of them. Two developments of this time are notable for this paper, both are also remarked upon by Keller in her memoir. First, at the same time that scholars in feminist theory were finding institutional homes and developing educational programs (in women's studies, for example), the success of conservative American politicians meant that many university and department administrators differed ideologically from the scholars trying to advance new academic programs. Second, feminist critiques of science had to be increasingly accountable to the charges of anti-science bias coming both from conservative administrators and politicians, and from scientists (some of them women) who had entered scientific work through inclusive educational programs and entrepreneurial strategies. Longino & Hammonds end at this note, concluding that women scientists are not adequately trained in reflexive and historical thinking to understand their own biographical and career orientations. An unstated contradiction in their analysis (and many consciousness-raising theories) is their assumption about people's access to knowledge about themselves. On one hand, they state that people's knowledge about themselves is situated and accessible, but on the other, they point to inadequacies in people's training and socialization that prevent them from truly understanding themselves as historical and political authors. This contradiction, I argue, is constitutive of the *educative* impulse of theory, that advances both intimacies and distances between the object-subject. The hidden curriculum of such educative impulses is rather the cultivation of taste, interest, or aesthetic to distinguish appropriately and to intermingle tastefully and carefully, between intimacy and distance.

theory because I was hurting— the pain within me was so intense that I could not go on living. I came to theory desperate, wanting to comprehend— to grasp what was happening around and within me. Most importantly, I wanted to make the hurt go away. I saw in theory a location for healing.” (hooks, p. 1994).

Again, the questions coming back to me: How did Fox-Keller and Prescod-Weinstein come to their reimagination of scientific epistemology? What feeling participated in this knowing? What did they have to learn and unlearn?

### **Love and Loss in Science Worlds**

In recounting their graduate school experiences, both scientists describe their attachment to science as falling in love, as an intoxication for science that makes it hard to see their surrounds. But they cannot escape their surrounds for long. There is eventually loss—for Fox Keller, the very fact of her being a smart woman in the Harvard physics department in the 1960s generates suspicion and ridicule—even though she is at the top of her class. 50 years later, Prescod-Weinstein’s capacity as a knower of physics was not denied—her capacity as a knower of racism was, and she could not keep those worlds apart for long. Loneliness engulfed both of them. How could I make sense of this double affective register of love and loneliness as an accompaniment of knowing?

In my presentation at 4S last year in Hawaii (Srigyan 2023), I leveraged psychoanalytic theories of learning, particularly Deborah Britzman’s juxtaposition of the theories advanced by Anna Freud and Melanie Klein (Britzman 2003). In psychoanalysis, the differences between Anna Freud and Klein have been flagged by many as a disagreement about psychoanalysis of children: Should children and their teachers undergo psychoanalysis so that they both can learn to tolerate the loss of love and the anxiety that is constitutive of learning? Rather than reproduce their differences, Britzman is able to convene a shared project: both Klein and Anna Freud converged when it came to theorizing loneliness.

Klein follows loneliness with what can happen after the glamor of idealization has gone, suggesting loneliness as a counter to idealization. For Anna Freud, loneliness resides in the loss of history, or the fate of being a stranger. Identification with the lost object of love can bring the comfort that there is always another.

In her memoir, Fox Keller mourns the loss of the affections of “great men” who had initially mentored her and taken an *interest* in her<sup>3</sup>. Many years later, when she is at the precipice of turning to feminist science studies, she has recurring nightmares about these great men trying to kill her.

Prescod-Weinstein mourns the loss of the generations of children who could not have access to the night sky. Their mourning is definitely not the same—one locates her grief in the loss of intersubjective relations, the other locates her grief in a collective relationship that never could be—but we can also not say that one kind of grief is necessarily more evocative than the other, or more acutely leverages theory for reparation. Indeed, performing such a comparison would strongly undercut the promise of affective accounts of scientific epistemologies—it would rob life histories of their political import and deny the mutual constitution of intersubjective and collective grief.

### **Between Hermeneutic of Suspicion and Repair: Reconstructed Responsibilities**

I argued last year that one reason why feminist scientists like Chanda Prescod-Weinstein and Evelyn Fox Keller could maintain their affective investment in science in the face of loneliness was that they had learned to locate their love of science as less of an intoxication and more as an asymmetry of relations that is the work of loving. Somewhere along the way, love for justice,

---

<sup>3</sup>Frank & Wilson (2020) note that for Silvan Tomkins, “interest-excitement” is a constitutive *affect* for human beings (and maybe other creatures) that produces a thinking and feeling subject, an inner life, and a sense of self. Affects do not replace drives or emotions. They are the underlying neuro-physical-aesthetic responses that make drives operational as we interact with the world and each other. In turn, emotions are alloys of many types of affects. Fortun (2023) and Schaefer (2022) have demonstrated that Tomkins’ theory of affects can be deeply meaningful for an analysis of how scientists make, relate, and *care* for the worlds that they find themselves. One reason for the uptake of affect theory, particularly in science studies (I need to mention Eve Sedgwick here too), is that it counters the antibiologism present in purely constructivist explanations, and accounts for the creative ways that theory in the humanities and social sciences can be inflected by new research in cognitive, biological, and neurological sciences (and more). When Keller notes that she has been of *interest* to influential men in the sciences, she points to how that affect of *interest-excitement* has shaped her drive for physics. Indeed, she needed to teach herself feminist theory and be a participant in feminist philosophy of science, to re-signify her drive. For Prescod-Weinstein, too, Black feminism is a route to resignification of the acute experiences of love and loss (in her case, towards the broader *community* of scientists). Where they do differ, as I have tried to show in this paper, however, is in their continued relation towards the feminist movements of their times. Keller managed to maintain a distance by changing her project from “gender and science” to “language and science”, anxious to be in conversation with scientists (especially women scientists who supposedly felt alienated by feminist theory). Prescod-Weinstein cannot maintain a distance, for her audience is the scientist of the future for whom a Black child dreaming of quarks is not an anomaly, but a rather mundane thing.

in the sense of anticipating symmetry and reciprocity in psychical and political life, is exchanged as love for an object that could not be destroyed despite repeated attempts at persecution.

What happened along the way? Well, a lot. First, both scientists had to recognize their own tokenism. Both are beneficiaries of feminist theories, yes, but they are also beneficiaries of decades of science education reform that opened up windows for more recruitment of women in science and engineering professions. The problem is often framed as that women, especially minoritized women, have difficulty identifying with the figure of a scientist. Prescod-Weinstein, however, contests this, arguing that there is something deeply wrong about not recognizing Black people as an audience.

Both scientists also had to recognize their naivety—feminist hermeneutics helped. At different points in time, both write about their inability to see their surrounds—perhaps because of the buy-in that their own tokenism supported.

For Fox Keller, participation in the feminist movement of the 1970s, including consciousness-raising groups and feminist theory reading groups, that would eventually give rise to departments of women's studies in the 1980s, were powerful teachers. The mood of the moment is perhaps best captured by the 1977 essay collection by feminist writers, *Working it Out*. Nearly all 23 women writers, including Fox Keller, felt that they were part of a movement, and that movement gave them language, and the language they were given formed a way of knowing.

Reading Marx, Nietzsche, and Freud, Paul Ricoeur has called interpretations that unmask and unearth oppressive systems as “hermeneutics of suspicion” (Ricoeur 1969). Queer studies theorist Eve Sedgwick, however, suggests that deploying a suspicious hermeneutics is in fact a defense against encountering surprise and strangeness—if we are always looking for what's wrong, other feelings might pass us by (Sedgwick 1997). They offer a hermeneutics of *repair* that desires surprise rather than an immediate grasp of knowledge. And, as Donovan Schafer suggests in his book *Wild Experiment* (Schafer 2022) we need not put these modes of reading as oppositional—for a full accompaniment of feeling and knowing, one cannot be erased over the other; as that erasure would itself be suspicious.

I conclude by giving two examples of how Fox Keller and Prescod-Weinstein moved between hermeneutics of suspicion and repair; in fact, it is hard to separate the two in their narration of their coming to feminist consciousness. The first is Fox Keller's discomfort with total identification with feminist theory and second is Prescod-Weinstein's construction of a reparative ancestry.

Fox Keller expresses that it was difficult for her to feel the presence of a movement within her and it felt like she was "flying solo". A persistent problem came from her identification as a scientist, which many feminists, who had already demarcated science as a highly problematic endeavor, had trouble with. Of course, Fox Keller did maintain active correspondence and friendship with feminist science studies scholars of her time, such as Helen Longino and Sandra Harding. However, she was loath to identify herself as a disciplinarian, and felt frustration whenever she was asked to do so.

This contributed to her feeling of loneliness in the feminist movement, which was both disciplinary and demanded a certain discipline, a certain hermeneutics of suspicion, that Fox Keller did not feel completely aligned with. Instead, she began asking why feminists *and* scientists of her time privately slipped between many meanings of sex and gender—even as they publicly undermined such slippages. This led her to formulate a new research project on language and science, arguing that it is unfair for scientists to expect from themselves certainty in what they say, saying that meaning is a goal of scientific research, not it's pre-given. This is what she came to call "relational epistemology".

Prescod-Weinstein's conception of physics as a liberatory practice is aligned with Black queer feminisms, that on one hand, have re-conceived the hermeneutics of suspicion as a survival strategy (Smith, 2008, for example) and on the other, have made a hermeneutics of repair responsive to epistemic oppression, an infringement on knowers that undermines their recognition as knowers (Prescod-Weinstein, 2020). When she arrives at the concept of "white empiricism", she names it as such to point to the racialization of epistemology that produces epistemic oppression, especially under the guise of inclusivity and representation. The beneficiary of this analysis, however, is not someone like her, but a long-dead white woman, Caroline Herschel.

When Prescod-Weinstein visits an exhibition at the National Air and Space Museum, she sees that Caroline Herschel is only included as an assistant of her brother rather than a knower in her own right. Prescod-Weinstein feels the injustice of this deep in her bones, and in this feeling, there is both suspicion and repair. Suspicion, because she surmises that Herschel would probably not have even seen her as a human; repair, because, in spite of this, she understands her defense of Herschel as necessary solidarity. “The erasure of her role in history is a threat to all of us, and we must hold the line against it”.

How could these affective alloys—of love and loss, of suspicion and repair, of dis-identification and solidarity—constitute ethics in feminist science studies? To Re-frame Esha Shah’s (2018) question, *Who is a feminist scientific subject, and how do they come to envision a relationship between feminist consciousness and scientific epistemology?* Moreover, how can psychoanalysis, or other affect theories, be re-envisioned and leveraged for science so that they do not reproduce normative unconscious processes? One response, I have suggested, is reading feminist object relations theory with psychoanalytic theories of learning.

## REFERENCES

- Deborah P. Britzman. *Lost Subjects, Contested Objects*. SUNY Press, 1998. <https://sunypress.edu/Books/L/Lost-Subjects-Contested-Objects>.
- Britzman, Deborah. *Anticipating Education: Concepts for Imagining Pedagogy with Psychoanalysis*. Myers Education Press, 2021.
- Felman, Shoshana. “Psychoanalysis and Education: Teaching Terminable and Interminable.” *Yale French Studies* 63 (1982): 21–44.
- Fischer, M. M. J. (1991). The Uses of Life Histories. *Anthropology and Humanism Quarterly*, 16(1), 24–27. <https://doi.org/10.1525/ahu.1991.16.1.24>.
- Fortun, K. (2021, April 16). Teaching Tomorrow’s Environmental Teachers. Great Transition Initiative. <https://greattransition.org/gti-forum/pedagogy-transition-fortun/>
- Fortun, M. (2023). *Genomics with Care: Minding the Double Binds of Science*. Duke University Press.
- Frank, A., & Wilson, E. (2020). *A Silvan Tomkins Handbook: Foundations for Affect Theory*. University of Minnesota Press.
- Freire, P. (1968). *Pedagogy of the Oppressed*.
- Gaztambide, Daniel Jose. *A People’s History of Psychoanalysis: From Freud to Liberation Psychology*. Rowman & Littlefield, 2019.
- Kaiser, D. (Ed.). (2005). *Pedagogy and the Practice of Science: Historical and Contemporary Perspectives*. MIT Press.
- Keller, E. F. (1985). *Reflections on Gender & Science*.
- Keller, E. F. (2023). *Making Sense of My Life in Science*. Modern Memoirs, Inc.
- Longino, Helen E., and Evelyn Hammonds. “Conflicts and Tensions in the Feminist Study of Gender and Science.” In *Conflicts in Feminism*. Routledge, 1990.



Mayes, Clifford. "The Psychoanalytic View of Teaching and Learning, 1922–2002." *Journal of Curriculum Studies* 41, no. 4 (August 1, 2009): 539–67. <https://doi.org/10.1080/00220270802056674>.

Prescod-Weinstein, C. (2021). *The Disordered Cosmos: A Journey into Dark Matter, Spacetime, and Dreams Deferred*. Bold Type Books.

Prescod-Weinstein, Chanda. "Making Black Women Scientists under White Empiricism: The Racialization of Epistemology in Physics." *Signs: Journal of Women in Culture and Society* 45, no. 2 (January 2020): 421–47. <https://doi.org/10.1086/704991>.

Schaefer, D. (2022). *Wild Experiment: Feeling Science & Secularism after Darwin*. Duke University Press.

Shah, E. (2018). *Who is the scientist-subject? Affective History of the Gene*. Routledge.

Smith, Yolanda. "Womanist Theology: Empowering Black Women through Christian Education." *Black Theology* 6, no. 2 (December 6, 2008): 200–220. <https://doi.org/10.1558/blth2008v6i2.200>.

Traweek, S. (1988). *Beamtimes and Lifetimes: The World of High Energy Physicists*. Harvard University Press.

Vora, K., McCullough, S., & Giordano, S. (2022). Asking Different Questions in STEM Research: Feminist STS Approaches to STEM Pedagogy. *ADVANCE Journal*, 3(1), 33675. <https://doi.org/10.5399/osu/ADVJRNL.3.1.10>