Embodiment and Women in STEM: A Proposal

Abstract

We advocate that change programs aimed at faculty women's advancement in STEM fields engage with embodied knowledge both because lived bodies are at the heart of such projects and because embodiment is not. We discuss two challenges for centering the material body in such intervention programs. The first challenge is overturning a paradigmatic research bias that marginalizes embodied knowing. The second challenge is the integration of embodied knowledge into programs that seek to transform advancement practices and policies. To this end, we make several suggestions for pragmatic approaches that draw on our own experiences working on gender equity in academe.

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In the award-winning documentary, *Picture a Scientist* (Shattuck & Cheney, 2020), geomorphologist Dr. Jane Willenbring, then a postdoc, is shown in footage taken during a field project in Antarctica. The project supervisor, a world-renowned professor, is taunting her from atop an ice hill as she tries to climb up but continually slips down. Eventually she huddles at the bottom, exhausted and humiliated. The scene captures two issues that we highlight in this paper: the struggles that women in STEM experience as they try to advance in their disciplines and the embodiment of those struggles. We ask why decades of change programs designed to enable women's advancement in the STEM disciplines have had only modest success. While there are undoubtedly many contributing reasons, we note that most of these programs fail to acknowledge that both struggle and change are embodied. We suggest that there is much to be learned from what the bodies involved can know and do.

After all, change is encountered through the body. Embodied preparations, reactions, and resets are integral to workplace change. Yet the change management literature makes little reference to embodiment or ways to embody change. Instead, change is addressed as cognitive involving planning, interpretation, learning, or rewards and penalties. Emotional issues, when they are addressed at all, are largely focused on the need for emotion management in conflict charged change situations, that is, on keeping emotions in check by abstracting them from embodied responses. Baruch and Lambert (2006) considered individual anxiety produced by change, for example, which one would expect to be embodied; however, the proposed solutions centered on individuals *regaining control* over their anxiety through cognitive techniques such as

cognitive behavioral therapy and reframing. Yet organizational change entails embodied sensations, feelings, and physical relations as much as disembodied cognitions, emotions, and abstract learning processes. We advocate adopting embodied research and research agendas to make bodies central to change programs.

We take as our focal case the ongoing efforts to facilitate the advancement of faculty women in university STEM positions. Notably the NSF ADVANCE grant program, active for the past twenty years, has awarded hundreds of millions of dollars in grant funding to university teams committed to implementing change programs at universities around the country. Since 2001, NSF's ADVANCE program has been instrumental in inspiring and supporting institutional policies that have led to increased representation of women in STEM disciplines in the 100+ funded institutions (Bilimoria & Liang, 2012). Despite such concerted efforts, there remain systemic disparities in the ways STEM women are recognized, supported, rewarded, and promoted (Stepan-Norris & Kerrissey, 2015; Mitchneck et al., 2016). While we have robust theories about biases, pipelines, obstacles, inequities, and trainings at all levels of the university, there remain entrenched issues that are both subtle and explicit. Although we certainly know more now than we did twenty years ago about the conditions and issues of, and interventions for, this problem, there remains a persistent lack of women in STEM fields. What are we missing? Again, while this is a daunting question, it is clear that there hasn't been much attention to what bodies as bodies can tell us.

Certainly, there has been recognition of the differences among the bodies most central to the STEM disparities. Much has been written about the hegemonic status of able-bodied, heteronormative, elite intellectual, mid- to upper-class, white men—their experiences, their ideas, their legacies, their bodies—and the marginalization of all other groups. Feminists have

long argued that this institutionalized power imbalance is premised in corporeal differences. As Acker (1990) pointed out decades ago, organizations are gendered in ways that privilege the disembodiment of hegemonic bodies. For example, women's bodies "leak," notably blood and milk, and both pregnancy and menopause resist organizational preferences for disembodiment (Ashcraft & Mumby, 2004; Ferguson, 1984; Levitt & Barnack-Tavlaris, 2020; Trethewey, 1999). Advancement biases against pregnancy and motherhood in STEM are well documented (Buzzanell & Liu, 2007; Ward & Wolf-Wendal, 2012) and there are many autobiographical accounts of what must be acknowledged as extreme disregard and intolerance for reproductive and maternal demands on the bodies of those working and learning in academe (Elidrissi & Courpasson, 2021; Silverman & Baglia, 2014; Townsley & Broadfoot, 2008; Willer, et al., 2020). Of course, women's embodied differences are not just rendered invisible, discounted, or disciplined; these very differences make them targets of sexual harassment, marginalization, stigma, and normative standards disciplining professional appearance and comportment. These examples indicate that women's success in STEM fields cannot be divorced from what bodies do and the biopolitics of academic life.

Despite the corporeal turn in the social sciences, managerial studies have only reluctantly acknowledged the important role of corporeal knowledge, such as in leadership (Ropo & Parviainen, 2001) and learning in organizations (Gherardi, 2001). The body as a site of learning and change in itself is not only conspicuously absent from research on women's advancement in academe but embodied research and knowledge inspires skepticism and suspicions of subjective and non-rational investigation (Thanem & Knights, 2020, p. xi). Nonetheless, we urge that research on women faculty in STEM should be embodied research that includes rather than excludes bodily experiences. Any number of accounts by those intersectionally-marginalized and

oppressed in faculty careers document that such experiences are embodied. For example, the stories by women faculty of color in *Presumed Incompetent* include a plethora of assumptions, stereotypes, and harassment provoked by the color, shape, size, smell, and comportment of their bodies as well as the detrimental impact of untoward demands and work conditions on the health and safety of their bodies (Gutiérrez y Muhs, et al., 2012).

We discuss two challenges for centering the material body in change programs aimed at women's advancement in STEM. The first challenge is overturning a postpostivist research bias that marginalizes embodied knowing. The second challenge is the integration of embodied knowledge into programs that seek to transform advancement practices and policies. To this end, we make several suggestions for pragmatic approaches that emphasize embodied knowing. When appropriate, we draw on our own experiences working on gender equity in academe to illustrate our discussion.

A Paradigmatic Bias

It has become somewhat customary to decry the Cartesian mind/body split as an entrenched standard in academic work extolling abstraction, rationalism, and objectification (Ellingson, 2017). In this paradigm, the body is reduced to an object of study while the body of the researcher and the embodied labor of academic work is erased or disparaged. In other words, academic labor is disembodied and dominant paradigms essentialize the body and privilege the mind as the source of understanding and agency. Despite a recent corporeal turn, the body in and of itself is not ascribed epistemological authority. As Evans, et al. (2009), put it, in most social scientific research:

> The body's presence as a flesh and blood, thinking, feeling, sentient, species being, a 'body with organs' whose very presence - moving, growing, changing over time - is

> generative of a meaning potential to which both the self and others must respond, has remained rather a shadowy presence. (p. 392)

To be fair, embodiment has become a major focus of thought and research in social theory, for example, work following Marxist materialism (Braverman, 1998), Foucault's thinking about biopolitics (1995), Butler's arguments about embodied performativity (1990), and feminist explorations of bodies and difference (Conboy, et al., 1997; Hurtado, 2020). And yet, in much grant-funded research, such approaches have been subsumed by the demand for data as measurable quantifications tied to solutionist claims and backed by suppositions that what really matters are (scientistic) ways of thinking, dominant discursive regimes, psychosocial constructions, and the rigor of academic protocols.

Consider the work funded by NSF ADVANCE. In the main, this work has been informed by a reliance on mental abstractions like gender schema, implicit bias, and social attributions. The current "data-driven" paradigm dictates both scientistic methodologies and measurable solutions, thus a focus on numbers of bodies rather than embodied experiences and contextualized embodiment. While mandating structural change, the emphasis on reporting immediate results encourages a focus on delivering (measurable) services and the short funding allocation (generally 1-3 years) requires concerns over institutionalization that are against the grain of structural change—after all, who is going to institutionalize a program intent on restructuring the institution? Finally, and tellingly, NSF ADVANCE programs have addressed embodied issues like harassment, maternity, and childcare but the award emphasis is on changing cultural and systemic intersectional inequities (ADVANCE).

The irony is that while these research projects are dedicated to giving voice to those who are marginalized and to changing inequitable practices, systems, and structures, the failure

to engage with life as embodied forestalls these commitments. For example, researchers may acknowledge but not foreground embodiment in itself—as when people are asked in interviews about their embodied experiences, thereby reducing those experiences to disembodied speech or text—or quite frequently, researchers include bodies as evidence based on bodily markers such as gender, age, or disease symptoms, and thereby uncritically reduce the body to essentialized features (e.g., Connell, 2012). Thus, embodied differences become intellectualized categories rather than lived exigences.

We defer to Minow's classic points warning researchers to avoid the common habits of mind that reduce lived differences to such categorical abstractions: 1) assume differences are intrinsic rather than expressions of comparisons among groups based on particular traits; 2) adopt an implicit (hegemonic) norm as a basis for determining who/what is normal/deviant; 3) assume your judgments can be made objectively, without perspective, rather than from a situated perspective; 4) assume the perspectives of those who are different are taken into account through these categories; 5) assume that existing arrangements are or can be made to be neutral and natural (1990, pp. 50-52).

A chilling example of how such assumptions might shape critical health research and practices appeared in the *New England Journal of Medicine* recently. The authors found that medical school curricular readings and lectures systematically perpetuated race-based misconceptions under the assumption of essential biologic differences, leading to both misinterpretation of health issues and inequitable, often discriminatory clinical approaches (see Amutah, et al., 2021). In contrast, neuroscience researchers have begun to adopt the concept of intersectionality, not as multiple categories but as entanglements among lived oppressions drawn on racism, ageism, sexism, and so on. Feminist neuroscientist Pitts-Taylor (2016) argues

that the embodied mind and the "embrained" body are mutually implicated and must be engaged as such in neuroscience research which still tends to treat demographic categories as distinct and unproblematic.

Just as troubling as treating embodiment through essentialized categories, researchers themselves have the privilege of remaining disembodied; indeed, this is the hallmark of "disinterested" research. Yet some researchers cannot easily disown unruly bodies. As Ellingson (2017) points out: "Scholars with queer disabled nonwhite Third World/Global South, and otherwise marked bodies encounter resistance to claims of disembodied prose and the privilege of objectivity" (p. 6). The "disembodied researcher" is a position/identity that is enshrined in criteria of objectivity and disinterested research but that reproduces the privileges of a "voice from nowhere." In contrast, Ellingson advocates for embodied research as "an unbounded set of flexible embodied practices—cognitive, emotional, physical, reflexive, engaged—that researchers can do" (p. 6). Accordingly, we hold that embodied research practices are necessary to counter the "somatophobic" traditions and current protocols informing ADVANCE and similar programs.

It is not just a matter of discursively "situating" the researcher in terms of claimed identities and histories, despite the importance of admitting that research perspectives are always partial, problematic, and partisan. Rather, research proposals, practices, and publishing must include and acknowledge embodied ways of knowing. For example, sterile accounts of field or lab research erase the "messiness" and physicality of this work despite the integral role of embodied hardships, disruptions, and self-discipline (Tracy, 2012). Embodiment was implicated in the 2015 Twitter protests #TooSexyfortheLab and #DistractinglySexy, prompted by the remarks of a Nobel prize-winning STEM researcher that women's bodies are (sexual)

distractions in the lab and given to emotional expression. His now infamous joke during an international conference for science journalists was, “Three things happen when they [women] are in the lab; you fall in love with them, they fall in love with you and when you criticize them, they cry” (Greenberg, 2015). Women scientists posted hundreds of selfies showing themselves doing the work of research in “unsexy” clothing (protective suits and goggles), activities (sampling dung), and poses (huddled over a microscope). While there has been a disavowal of this Twitter shaming campaign, a defense of the researcher’s character, and feminist denouncements of the original journalists who reported the remark (see Mensch, 2015), we bring this incident up because the Twitter posts offer desexualized images, confirming the idea that bodies and affects are troublesome in scientific work. Yet scientists, just like everyone else, are embodied and passion is taken to be a positive, even critical, element in commitments to scientific work. Indeed, biographical accounts indicate that a childhood affinity for STEM subjects is often the basis for pursuing STEM career tracks (e.g., Jackson, 2019). In addition, STEM dual career statistics indicate that couples are likely to both be academics, often in STEM fields (Schiebinger, et al., 2008). We cannot make much of these correspondences except to suggest that passion for research is an embodied affective force. Along with addressing sexism and harassment and urging researchers to ignore their bodies, we need to be more nuanced and responsive about the ways bodies matter in research and for researchers.

Integrating Embodied Knowledge In/As Interventions

These considerations frame the second challenge of integrating embodied knowledge into programs aimed at intervening in status quo practices and commonplace ways of understanding the obstacles and issues that limit the advancement of women in STEM. We propose that programs for advancing women in STEM fields must take embodied knowing into account. The

point is not to privilege body over mind but to complicate a well-entrenched dichotomy in order to engage in "a way of making sense of knowing that includes the mind without making it the center of knowledge production and utilization" (Ellingson, 2017, p. 16).

However, it must be recognized that the role of the body in change programs is largely unaddressed. Programmatic interventions focus for the most part on changing disembodied minds. One seeming exception is the role of emotions in the face of impending changes. And yet, this exception is not one: literature addresses muting negative emotions, managing emotions that arise in conflict situations, and encouraging positive emotions that support preferred changes. Emotions in organizations are typically managed to meet the implicit or explicit emotional display rules for the organization or job (e.g., Hochschild, 1983). Such emotion labor and the labor of emotion management is hard on the body; yet the body itself is not taken as the basis for knowing about these experiences but as the object of efforts to moderate and control such experiences. Further, change often entails material rearrangements and temporal shifts in working contexts and relations. The very materiality of work may be altered and in this, the vibrancy of matter (Bennet, 2010) and the materiality of the body come to matter.

We turn first to the connections among emotions and change interventions. As we noted above, emotion management remains a well-accepted standard. But suppose that this seemingly commonsensical approach to curtail negative emotions in the face of change—fear, anxiety, anger, disappointment—suppresses what the body knows? The phenomenological philosopher, Merleau-Ponty, argued that we live as "body-subjects" who perceive a sensuous world through corporeal encounters: "The body as a moving, thinking, feeling, pulsing, body; the lived body as a mindful, intentional site of ongoing experience, a spontaneous synthesis of powers, and the very basis of our understanding of the world" (Williams 2006, p. 10). Thanem and Knights

(2020) suggest that a pragmatic embodied reasoning takes place through such corporeal encounters and embodied emotions. For example, when confronted by new or unexpected information: "Do we feel defensive, triumphant, angry, or perhaps relieved?" (p. 139). Rather than managing or suspending such feelings, they suggest that the body's emotive-expressive orientations are in themselves ways of being and acting in the world. In this sense, feelings about change are somatic engagements meaningful in themselves and not merely reactions to external realities or messages about internal states and reactions.

We have two examples of this embodied engagement as a way of knowing and acting in the world: one a stance that assumes the dominant pose of objective (emotionless) rationalism while rejecting ideas that at a visceral level are taken to be threatening and the other a stance in which anger is a way of knowing and an energizing affective force against oppressions and injustices. As designers of our university's Diversity Literacy Workshop, we were confronted by STEM faculty who were required to complete the workshop. Their visceral reactions, particularly to the results of their (voluntarily taken) Implicit Bias Association tests as well as to the assigned diversity bias studies, was posed as "rational" and an "objective" assessment of the quality of our materials. Indeed, after reading a study on accumulated disadvantage, one male faculty member told us, "My scientific mind is not convinced" even as his tone of voice and physical stance betrayed dismissal, suspicion, and defensiveness (Goltz & Sotirin, 2014). Similarly, Uhlmann & Cohen (2007) found that faculty who were primed to adopt a sense of personal objectivity—as our faculty were by the challenge of reading diversity studies—were more likely to endorse discriminatory stereotypes under the presumption that "If I think it, then it's [objectively] true." In other words, the embrained body may resist contrary information under the guise of holding to "objective" scientific criteria.

Far from denying anger, feminist scholars have made the argument that anger is a critical force in reorienting those who are marginalized and subordinated (Ahmed, 2017). Anger is an intense emotion that can erupt into rage, can infect a collective, can displace reason. But anger is also a vital force in itself; consider the material "anger" of a major storm, the psycho-physiological "fight" part of fight or flight impulses, the flows of adrenaline that network through the organic world. Feminist anger has been a contentious issue: while Ahmed (2014) insists that feminism moves from injury and pain to anger to the will for political change, Brown (1995) has warned that feminist politics may become mired in ressentiment and the "wounded attachments" of oppressive relations. Certainly, expressing anger is socially and interpersonally risky for women. For example, expressing anger during group deliberations can decrease women's influence but increase men's influence (Salerno & Peter-Hagene, 2015; cited in Baker, 2020, p. 164). More insidiously, URM women's anger can be perceived by colleagues and supervisors in ways that are career-damaging (Leggett-Robinson, 2020, p. 61; Scott, 2017). Nonetheless, the recent hashtag movement against sexual violence, #MeToo, evidences a moment of women's public anger that has been taken up in popular treatises like *Rage Becomes Her: The Power of Women's Anger* (2018) in which Soraya Chemaly argues that anger is the expression of hope and *Good and Mad: The Revolutionary Power of Women's Anger* (2019) in which Rebecca Traister argues that anger is about an urgent demand for change against injustice. Holmes (2004) holds the embodied power of anger to be potentially world-changing:

> If the discomforting properties of anger can help produce situations for attending to feeling beyond rules, it can bring positive change in both material situations and relations between people. To do this anger must be more than resentment that motivates actors to

> redress injustice. Anger is sensational; it continues to move people and situations into new formations. (p. 224)

We are not condoning anger per se; our point is that approaching change programs as exercises in rational decision-making or as a cognitive reframing based on new information fails to acknowledge "the vibrant, untidy and fleshed relations through which we live in the social world" (Thanem & Knights, p. 113).

Clearly, embodied engagements are integral to change programs. And here we want to dispense with the myth of the singular body. Bodies are multiple, diverse, situated, contingent, and indeterminate and this in itself is a politically charged observation. Consider the assumption of a singular, normative body that for most of the Twentieth Century served as the default body in medical trials or automotive tests in which a singular body has been assumed:

> The myth of a singular body privileges those bodies upon whom the status quo confers the most privilege—white, male, heterosexual, affluent, First World citizen, able-bodied—by generalizing the experiences of the elite as stable, normative, and as the ideal to which fixed notions of nonwhite, female, LGBTQ, poor, Third World and disabled bodies will inevitably be found to fail to conform (Ellingson, 2017, p. 27).

That there is not a singular faculty body has been made dramatically more evident during the COVID-19 pandemic. Among the many ways that differing bodies matter are the disparities in underlying health conditions and death rates that have been especially relevant for URM faculty who are more likely to be in risk groups themselves or have family members affected by both the virus and the devastating consequences of the economic downturn (Settles & Linderman, 2020, p. 5).

We have encountered this myth of monolithic bodies in our own ADVANCE programming. The Advocates and Allies (A&A) program recruits majority members of the academic community (i.e., white men) to educate themselves about the experiences and problems faced by those in minority groups in order to use their privilege to advocate for changes or to serve as allies. In its original conception as part of North Dakota State University's ADVANCE Transformation grant (Bilen-Green, et al., 2015), only two kinds of bodies were recognized: male and female. In our own adaptation of this program, we have attempted to dismantle this dichotomous and essentializing model. For example, rather than holding two break-out discussion sessions following the initial large training workshop—one for "men" and the other for "women"—we began to reframe the dynamics of the program around those who wished to identify with groups in the majority on campus and those who identified with under-represented groups. We attempted to do this in ways that did not "out" any particular person—your choice of which breakout discussion to attend was voluntary and not dependent on labels. Thus, bodies in a room are not representative of particular identities but may become variously situated in relation to differing situations, relations, and exigencies—now a trans pretenure faculty member, now a parent of biracial children, now an international STEM researcher. How well do our change programs respond to such intersectionally-complicated and embodied becomings?

During the 2020 COVID-19 pandemic, we suspended the large workshops associated with the A&A program, first because bodies transmit the virus and also because there is very much a commitment to in-person interactions as critical to the success of the workshops. Regarding the latter reason, we might have continued these workshops in Zoom or on some other large meeting platform if discussion and cognitive change were our goals. Instead, the

importance of embodied engagement was deemed critical—not just talking with others but being bodily present with one another as well as monitoring and responding to nonverbal signs of resistance to anti-bias training. As an aside, we note that this concern was largely about men in the workshop—ironically, this reproduces the inattention to women's nonverbal cues and the tendency to silence women that characterize too many organizational meetings (see Cullinan, 2016; Nelson, 2018). Isaac, et al. (2016) found that nonverbal cues differentiated male and female participants in their diversity literacy workshops:

> Diversity discussions evoke strong emotional reactions including shame, shock, guilt, self-blame, confusion, powerlessness, defensiveness, fear, anger, and sadness. . . . Responses such as blame-the-messenger or challenge-the evidence (Adams, 2007) create complex situations for both presenters and participants. (Isaac, et al., p. 1250)

Unfortunately, their research design replicated the male/female dichotomy we have tried to displace and the conception of nonverbal cues was somewhat cartoonish—head nods as affirmative and crossed arms as defensive. Yet the point is that embodiment matters in the change processes integral to the A&A program.

We suggest that it is not just making sure that presenters monitor nonverbal cues among participants for signs of agreement or dissent although the sense that resistance can be controlled in this way is reassuring. Just as important are the often imperceptible somatic rhythms of tension and relaxation, energy and lethargy, arousal and placidity that pulse through a large group of people in close proximity. Emotional contagion might occur on the level of conscious awareness of embodied tensions in which participants begin to mirror the embodied tensions of others (Barsade, et al, 2018; Hatfield, et al, 2014).

The initial reason for canceling our planned 2020 A&A sessions was due to the viral contagion itself and here embodiment holds a different though equally as critical significance. The spread of the virus is as much a social contagion as a biological one. The patterns of our social lives have been altered, not just for the time being but possibly as a future state (Sotirin, 2020). Certainly, the structures and practices of academe have come under scrutiny and the virus has rendered visible entrenched fault lines of privilege and struggle.[1] For us, the boundaries among bodies, viral agents, social institutions, and historical relations have become permeable.

Notably, those domains of social life that we like to keep separate have infected each other in ways that have particularly disadvantaged parenting faculty and women in STEM. Yet this is not a disadvantage specific to the COVID pandemic. In the STEM fields particularly, motherhood and family caregiving impede successful career progression. National research shows that women with children in tenure-track jobs in sciences are 27% less likely than male counterparts to achieve tenure (Goulden et al, 2009). Female faculty members in astronomy, physics, and biology tend to have fewer children than their male counterpart (1.2 vs. 1.5, on average), and have fewer children than they desire (40% vs. 25% of men) (Ecklund & Lincoln, 2011; 2016). Chronic stress was common among mothering faculty long before the 2020 pandemic (Singer et al, 2001), exacerbated by inadequate childcare resources for many parents, especially in non-urban settings.

During the 2020 pandemic when universities across the U.S. and indeed around the world went online, these issues came to the fore as parenting faculty struggled to meet their teaching, research, and family responsibilities under duress. Universities responded sluggishly to the sudden demand on parenting faculty to manage their teaching as well as their own children's

schooling or early childcare: while the University of Chicago created a virtual daycare and tutoring program, a Dean at the University of Alabama at Tuscaloosa's Capstone College of Nursing emailed faculty to say replacements would be found for parenting faculty who would not be able to return to teaching because they couldn't find childcare (Flaherty, 2020, Aug 11). Around the country, a general recognition emerged that at-home childcare and online instructional responsibilities cannot be deemed mutually exclusive. The irony is that even as we have become "disembodied" onscreen images, the co-presence of various bodies inhabiting residential spaces has become an incessant and irrepressible feature of the work world for parenting faculty (Myers et al., 2020). The impact on mothers has been particularly pernicious, with women reporting more time and energy devoted to not only routine caring and domestic tasks but helping with online schooling and keeping children occupied otherwise (Myers et al., 2020; Sevilla, 2020). Moreover, there is some evidence that women in STEM fields did not submit as many journal articles or grant proposals as men during 2020 (Flaherty, 2020, Apr 21; Krukowski, et al., 2020). In response, many universities stopped tenure clocks for all junior faculty for one year (Oleschuk, 2020).

Hidden behind the uneven productivity statistics are embodied experiences and priorities that are just as responsive to the contingencies of the pandemic as to the inexorabilities of the tenure process. Accordingly, rather than taking the experiences of parenting faculty as problems, we find them to be embodied change agencies with the potential to alter commonplace relations within academe and perhaps even to draw on embodied re-orientations in ways that dismantle the lock-step of tenure. For example, Raygoza, et al. (2020) declared themselves to be "parentscholar activists" whose pandemic experiences offer "living curriculums" (and we add, embodied lessons) for transforming the neoliberal university around the "critical relationship

between decolonizing and caregiving." In their op-ed essay for *Inside Higher Ed*, Khamis-Dakwar and Hiller (2020) warn that contingent faculty, women faculty, and URM faculty are most likely to suffer financial and professional setbacks for pausing the tenure clock and they urge reworking existing systems rather than offering immediate fixes that "exacerbate already existing inequalities":

> Times of crisis can usher in revolutionary change and if we owe these faculty and the communities they serve anything, it is the reimagining and enactment of a more equitable tenure review process. (Online)

We urge beginning with more expansive and empathetic considerations of the embodied lives that all faculty live, not only those privileged enough to put life aside for the sake of career demands.

Another initiative in our ADVANCE program is the Advanced Career Management (ACM) initiative. This is a co-mentoring program for associate-level faculty that aims to enhance career success for all mid-career faculty but particularly for women and URM faculty. Mid-career faculty are often stymied by ambitions to move into new career trajectories and/or additional teaching and service responsibilities—especially women faculty (Babcock, et al,, 2017; Baldwin, et al, 2008; Neumann & Terosky, 2007). Women faculty in particular report being drawn into what have been called "institutional housekeeping" tasks (Bird, 2004; Terosky et al, 2014) and academic "care-taking" roles (Guarino & Borden, 2017). The time between promotion to tenure and application for promotion to full professor is considerably longer for mid-career women faculty in STEM than for men (1-3-1/2 years according to a 2009 MLA survey) and the number of women in full professor positions (just 33% of all full professors in the U.S. according to the NCES, 2017), endowed chair positions, and formal leadership roles is

lower (AAUP, 2006; Cadwalader, et al., 2014; Kim & Cook, 2013; Lincoln, et al., 2011; Lopez, et al., 2018; MLA, 2009; Stout, et al, 2007; Ward & Wolf-Wendall, 2012). Further, a range of norms and practices delineating the "ideal" academic and "prescriptions for legitimacy" subtly disadvantage women and URM faculty in academic careers (Gonzales, 2013). For example, women's progress may not meet the expectation of an undistracted focus on research and publishing that lends itself to unencumbered career progress (Williams, 2000). For URM, institutional racism may significantly hinder career success. In a study of URM faculty's experiences of inequity, Zambrano et al. (2017) observe that respondents reported embodied responses to persistent racism including "daily vigilance and anticipatory stress":

> Respondents experience anger, frustration, doubt, guilt, or sadness when they encounter microaggressions, as well as feelings of distress when relaying their stories (Sue et al. 2008). . . . We argue that these experiences create a productivity taxation due to the emotional labor required to sustain racialized assault with disciplined or no response. These racialized experiences impact productivity and the ability to navigate academic demands and may be associated with lower retention rates. (227)

Unlike the denial of emotion in the performance of objectivity by (white) faculty resisting bias literature, URM faculty are well aware of their corporeal dis-ease. The embodied toll of racism is a reality for URM faculty; intervention programs should not overlook the emotional labor and knowledge involved.

While mentoring programs often take a "fix the individual" approach that focuses on giving women and URM faculty the knowledge and skills necessary to conform to normative expectations and criteria, ACM is organized around what might be called an embodied "apprenticeship" in the practices of mentoring. Learning new skills and adjusting to changed

conditions and demands are embodied encounters as much as cognitive exercises. We draw on a Community of Practice co-mentoring model that emphasizes collaborative engagements focused on shared practices and community-building (Smith, et al., 2016). As Smith, et al., explain:

> Members deepen their knowledge and expertise as they jointly engage in the community's practices, such as discussing teaching dilemmas or coauthoring manuscripts, making practices that were once completed in isolation observable to others (Gourlay, 2011; Lea, 2005; Morgan, 2014). Expert-novice roles are fluid as members draw on their varied experiences and knowledge to discuss and work through issues of their practice. (Smith, et al.)

In ACM, mid-career faculty groups are formed on the basis of career track affinities. There are three to five members along with one full professor who serves as what we call a "senior guide" whose role is not to impart wisdom but rather to facilitate the group's discussion. The group members hail from differing disciplines and units and this has proven to stimulate both cross-campus connections and insights drawn on comparisons and contrasts. In the pilot year of this program, three affinity groups were formed but only two met more than once and only one continued into the second year. Part of the difficulty was that the university went fully online during the Spring semester of the pilot year so that groups could no longer meet in person but had to rely on Zoom meetings. In the second academic year of the program (2020-21), seven groups are meeting by Zoom. One of us has served as a "senior guide" for one group and both of us have done brief check-ins with each of the groups during their second meeting.

Literature on mentoring mid-career faculty, especially women and URM, emphasize the importance of relational as well as instrumental activities. We do not want to underplay the need for strategic planning, SWOT analyses, marshalling funding and other organizational resources,

and savvy time and energy management (Baldwin & Chang, 2006). However, given that many mid-career faculty experience a loss of career momentum and no longer enjoy pre-tenure forms of support (Neumann, 2009; Shapiro, 2001) and that women and URM faculty often feel isolated, subject to presumptions of incompetence, "prove it again" biases, tokenism, and microaggressions (Gutiérrez & Muhs, et al., 2012; Leggett-Robinson, 2020) and are often called on to do diversity-related service work (Baker, 2020; Misra et al., 2011), it is critical that mentoring relationships offer relational support (Hammer, et al., 2014). Relational support in mentoring interactions includes leveling power differences, enacting mutuality, encouraging authenticity, listening to vulnerabilities and enabling voice, and building a sense of community and connection (Hammer, et al). Among the embodied skills that enact these practices are active listening, using paralinguistics and nonverbal cues interactively and responsively, and literally offering a shoulder to cry on (Baker, 2020, p. 151).

It may seem nonsensical to argue that digitally-mediated Zoom meetings entail an apprenticeship in embodied co-mentoring practices. Yet, these technological mediations affect co-presence in ways that disregard corporeal integrity and instead animate refigurations of embodied collegiality and intimacy. Our experiences with ACM mentoring meetings on the now-ubiquitous meeting app Zoom suggest that while it is often assumed that these are "disembodied" encounters, in fact bodies are very much in evidence and impactful. For example, Zoom participants often spend time arranging their spaces, furniture, lighting, cameras, and microphones to accommodate how their bodies or body parts are displayed in their video meetings. Participating in Zoom meetings is a physical act that requires embodied accommodations. Among the recommendations for COVID-responsive measures proposed by the University of Michigan ADVANCE is making university funds available for the

accoutrements of faculty home offices like “ergonomic chairs and desks, stable WiFi” (Settles & Linderman, 2020, p. 5).

We hold that Zoom meetings do not disembody participants so much as literally re-figure how bodies matter. For example, Zoom highlights/emphasizes bodies by distorting their appearance and disappearance during meetings:

- some people attend meetings as just a black box with a name spelled in white letters;
- some people disappear and re-appear as their screen backgrounds capture only part of their image (often, disconcertingly, abbreviating their heads);
- sometimes the face or body part of a child or another adult will appear behind or next to the attendee momentarily before disappearing, producing a kind of ghostlike apparition;
- nonhuman bodies appear and disappear along with the attendees in the meeting, for example, a dog may run through the scene or a cat may appear in front of the camera, often brushing their bodies against those of the attendee;
- sometimes other human bodies appear and disappear momentarily (e.g., spouses, children), walking through the scene or talking unseen to the muted attendee and this may happen with or without commentary;
- bodies abruptly appear and disappear in breakout rooms—when the rooms open, bodies suddenly become visible without warning and when rooms close, they just as suddenly disappear and reappear in the reassembled Zoom meeting;
- finally, and notoriously, cameras are typically trained on the top half of a body, generating memes upon memes about “pantlessness” as the new workworld norm.

The point is that Zoom affinity group meetings are not disembodied; they are embodied in ways that draw our attention to dynamic configurations of bodies, affects, communicative processes,

technical apparatuses, social relations, and historical exigencies. Such complexities alter how we do mutuality, sociality, and relational support. Watson, et al., (2020) observed family digital video meetings during the COVID-19 lockdown and reported that regular meetings among people with ongoing connections and affinities afford sensory contact and can increase intimacy and sociality:

> Layered sensory affordances and possibilities for ongoing and increased frequency of contact – where people can see and hear each other, and collectively 'check in' rather than be 'checked up on' – can work to materially heighten the intimacies and socialities which sustain these relations. (2020, p. 13)

While ACM affinity groups are quite different from family groups, the finding that video meetings can facilitate and sustain embodied relational connections is encouraging.

Yet we are not without caution about the embodied demands that such engagements entail. We note that on-screen interactions require concerted attention and emotional labor to sustain relational support and visibility. A recent Catalyst survey found that online meetings may reinforce gendered patterns that silence women and URM: "45% of women business leaders say it's difficult for women to speak up in virtual meetings and one in five women say they've felt ignored or overlooked by colleagues during video calls" (Connley, 2020; Catalyst, 2020). In serving as a senior guide, one of us experienced interruptions, discounting, and silencing by a male participant despite the overall friendliness and engagement of all the (male) participants. It occurred to us that one advantage of being made to feel invisible during a computer-mediated meeting by someone else's comments is that you can literally make yourself invisible by turning off the video—we have done that ourselves. In large meetings where the connections won't maintain mass video use, it is common to ask participants to turn off their videos and

microphones, creating a ghostly dis/embodied presence. These experiences make clear that Zoom affinity group meetings require a particular type of communicative support and emotion labor to negotiate visibility (Watson, et al., p. 12).

Our experiences with ACM on Zoom have convinced us of two things: first, that online co-mentoring can work and should remain an option for affinity groups beyond the current crisis; and second, that embodiment matters and cannot be equated solely with physical proximities. We suggest that there are complex interweavings of bodies, online networks, institutional spaces, and social-cultural practices that frame co-mentoring as practice whether done online or in-person. The embodied apprenticeship in mentoring that ACM affords is insinuated into these configurations and is part of their ongoing refigurations. We strongly advocate that faculty mentoring programs take embodiment as critical to designing and delivering such programs.

Summary

We are troubled by the fact that change programs often ignore what might be learned from the bodies involved. Yet change is clearly an embodied experience. ADVANCE programs on women in STEM are illustrative: while based on embodied differences and experiences of disparities, inequities, and oppressions, these programs have emphasized changing mental schemas, social rules, and discursive discipline. While we would not abandon those models, we are suggesting that the materialities and knowledge of the body itself be considered in change strategies. Might we achieve greater progress if we develop embodied strategies? We consider two challenges: overturning the paradigmatic bias against embodiment in research traditions and methods and integrating the body into intervention programs aimed at diversifying the STEM professoriate. We need embodied research perspectives and research studies, as well as embodied change programs.

Overturning the mind/body dichotomy that undergirds the dominant postpositivist paradigm and privileges intellect over corporeality entails deconstructing deep commitments to the practices and criteria dictated by bench sciences, perpetuating objectivity, rationalism, and the current data-driven solutionism. Yet such standards in and of themselves reproduce the abstractions that perpetuate essentialized research assumptions and categories and that reduce the body to its social, biological, and physiological processes and functions. Additionally, researchers are supposed to work as disembodied and disinterested intellects although this is a perspective of privilege not accorded evenly given that those whose bodies are different or unruly are disciplined for revealing the messiness of academic research. In particular, research devoted to documenting and intervening in lived inequities and oppressions must accord the body its due. We advocate starting with the body as a site of learning and knowledge rather than erasing, neglecting, or reducing bodies to categories or functions viz research and researchers.

We turned to our own experiences in gender and diversity advancement in order to consider how we might integrate embodied knowledge and learning into the practices of intervention programs. Our approach seeks to enable a pragmatic embodied reasoning by attending to corporeal encounters and the embodiment of emotions and affects. In particular, we argue that taking an objective, disinterested stance does not eliminate or mitigate corporeal orientations even if such ways of engaging the world are denied. Feminist anger as an affective force and way of being in the world offers a contrasting example especially given the intersectional complexities of women's anger. We also warned against assuming a singular (conventionally male) body or addressing bodies (usually male/female) rather than dynamic configurations of affects, corporealities, practices, spatiotemporal relations, and more that constitute embodiment as ever-changing.

While we have much work to do to integrate a corporeal sensibility into our own ADVANCE funded programs, we have offered our work to illustrate possibilities and prod further developments. The ongoing COVID-19 pandemic has been a backdrop and a spur to our current body-focused reflections. In our Advocates and Allies (A&A) program, the absence of in-person, nonverbal cues (and, of course, the embodied spread of the virus) led to the suspension of our planned large workshops. Nonetheless, we considered how nonverbals implicate embodied energies and how changing dualistic assumptions might permit more diverse embodied becomings. Suspending our program cast attention on the uneven impact of institutional measures on diverse faculty bodies and we highlight how these differences offer embodied change agencies for altering seemingly entrenched academic practices and the boundaries that segment faculty lives into school/research/family (sometimes referred to euphemistically as teaching/research/life). The pandemic has disrupted the boundaries, making it clear that embodied life traverses these distinctions. Efforts to advocate for parent scholars and to intervene in the disembodied assumptions that make faculty tenure and promotion such lockstep processes are underway.

We also considered how our mid-career co-mentoring program, Advanced Career Management (ACM), has become an apprenticeship in embodied mentoring relations despite the fact that all mentoring groups have been meeting on Zoom. We argue that, despite the commonsense view that such video meeting apps disembody participants, there is a refiguration of bodies on such platforms that involves fluid entanglements of bodies, affects, communicative processes, technical apparatuses, social relations, and historical exigencies. There is much to learn from bodies in mediated situations that can enrich relational mentoring practices.

In summary, our argument is that embodiment must become a critical consideration in academic research and programs seeking to intervene in situations of inequity and power such as those like ADVANCE. Our own moves toward embodiment in A&A and ACM have been modest and largely, we admit, reflective. Yet our intent in this paper is to catalyze further engagements that develop the potential of embodied perspectives and practices to realize inclusive equity in the academy.

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[1] We recognize that the disparities and inequities we attend to in this paper focus on faculty, a privileged group especially if we are looking at tenured and tenure-track faculty in STEM fields. In comparison, thousands are now without incomes, medical resources, food, and homes. A striking example of the desperation of intersectionally-disadvantaged communities is the immigrant Latinx community in urban U.S. areas, particularly undocumented workers (often serving as essential workers) and their families. See Page & Flores-Miller, 2020.