

## Matter in the Shadows

### *Feminist New Materialism and the Practices of Colonialism*

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In a culture seemingly ruled by technologies of hypervisibility, we are led to believe not only that everything can be seen, but also that everything is available and accessible for our consumption. In a culture seemingly ruled by technologies of hypervisibility, we are led to believe that neither repression nor the return of the repressed, in the form of either improperly buried bodies or countervailing system of value or difference, occurs with any meaningful result.

—Avery Gordon, *Ghostly Matters*, 1997: 16

This work focuses on the “body” and its materiality. What is it? How should we study it? Who should study it? The answers to these questions produce an unsurprisingly complicated and contentious narrative. We are interested in the debates within the feminist studies of science around the materiality of the body, in particular biological bodies, and the “body” of recent work that has emerged as “new materialism.” What, we wish to ask, is feminist about this developing field and how is it new? We argue that while feminist new materialism draws on a specific reading of poststructuralism’s influence on feminist theory and feminist theory’s consequent “flight from nature” (Alaimo 2000), it has perhaps improperly and too quickly buried many of feminism’s old “bodies” and exhumed a new “body” that is not entirely feminist or even particularly new. We are interested in examining the matter that lurks in the deep, dark shadows of the “old” feminist critiques of science of earlier feminisms, the silhouettes of matter being brought forward in the feminist new materialisms, and the glints of attention to matter that have

recently surfaced in postcolonial science studies, to argue that while each encounter is valuable, none are sufficient on their own for the project of feminist science studies.

Early feminist scholars of science were centrally focused on biology, primarily on human bodies, and in particular women's bodies.<sup>1</sup> They explored and documented the scientific emergence of "difference" in material bodies and their biological conceptions. These scholars systematically analyzed how the scientific enterprise through experiments, and anatomical, physiological, and behavioral studies came to understand "difference" as being located and originating in the material body. Central to their claims is that scientific institutions have translated *political and cultural* privilege into *biological* privilege. In several cases, this emphasis on the political and cultural was also accompanied by efforts to redefine feminism's relationships to the study of biology and health (Our Bodies Our Selves 1973; Rose 1983; Birke 2000; Murphy 2012). Furthermore, work from this era persuasively shows that hierarchical understandings of bodies were central not only to the colonial project but also to the evolution of science, scientific inquiry, and technologies themselves (Stepan 1986; Schiebinger 1989; Philip 2004; Hammonds and Herzig 2009; Harding 2011). Scientific racism may have served as a building block for the formation and even birth of certain disciplines such as anatomy, physiology, neuroscience, and behavioral sciences. Power, these scholars have argued, is central to the project of science. Given the history of science, we cannot talk about the biological body without science or science without the biological body, and the circulation of power is deeply implicated in both.

Early feminist work on the "biological" body is therefore largely read as a political intervention. By using the disciplinary tools of biology, philosophy, history, literature, anthropology, and sociology, feminist scholars attempted to *trace* and make partially visible the ontological, epistemological, and methodological assumptions and frameworks that were operating in the production of bodies and our understandings of difference. They explored and documented the scientific emergence of multiple and different bodies shaped by the politics of race, nation, gender, class, sexualities, abilities, etc. This early work in women's studies is often read as a "critique" of the sciences or the feminist critiques of science. For many reasons (that we won't go into here), the (inter)discipline of women's studies has largely remained within the realms of humanities

and social science departments, and the vast majority of scholars come from these fields. Therefore, while the critiques revealed the deeply political nature of science's construction of the "body," the project of imagining an account of the "body" using feminist biological insights has been underdeveloped (Wilson 1998; Barad 2003; Roy 2007). Biological inquiry and the natural and hard sciences in general, conceived as hegemonic and oppressive forces, have remained marginal to the field of women's studies through most of its history. The "body" however, especially the female body and the materiality of reproduction, have served as central points of inquiry in feminist studies. We want to suggest, however, that this body, which has been a critical point of departure, when addressed in biological terms, was treated as an object of analysis in very particular ways. For example, the early invention of the term "gender" separated the idea of a biological body or "sex" from the social body or "gender." Although this separation would now likely be read as indicative of feminist theory's incapability of directly accessing nature or matter, it has been deeply influential. We propose that the separation between sex and gender has been productive in its own right, generating enormous growth in the understanding of a "socially constructed body," through its objectification and commodification, and by examining the ways in which bodies and matter are implicated and imbricated in complex social and political networks of representation, commerce, labor, reproduction, sexual violence, and medicalization. In the meantime, feminist scholars of science continued to build an engaged and robust critique (often done by feminist biologists with intimate knowledge of their disciplines) of the accounts of the body produced by the biological sciences, particularly aimed at countering the pervasive claims of biological determinism in fields such as genetics, neuroscience, and endocrinology. This body of work has provided a complementary narrative to the canonical narrative of the social constructions of the female and male bodies.

Over the last two decades, however, some scholars have noted several common approaches or tendencies in feminist engagements with biology and science and have in turn launched a critique of the feminist critiques of science through the new feminist materialism, material feminisms, neo-materialism, or the new sciences. Three main issues animate this critique. First, that feminist scholars have entirely margin-

alized, even excluded, the sciences from a central focus of the field of feminist studies and from the development of feminist theory. Their claim is that if the sciences exist within the field of feminist studies, they are largely treated as a body of oppressive and hegemonic work to be critiqued. Second, some new materialists claim that feminists influenced by poststructuralist theory have transformed the material body into a “text” that is only to be read, seen, and studied in the abstract, thus creating a lack of critical engagement with the actual “matter” of the body. When the material body did emerge in feminist scholarship, it was most often treated as a “primordial” body—that is pre-language and pre-social—on which society and culture went to work to “socially construct” gendered humans. What therefore emerges centrally within feminist scholarship is a systematic analysis of the social world only, and more specifically, analyses of the ways in which this social world constructs and exploits the female body. Third, scholars of new materialisms note that feminists have extended the sex/gender, male/female binaries in unproductive ways to create new binaries—nature/culture, science/feminism, and matter/text. They argue that the latter are not binaries—nature and culture are not separate, feminism need not be opposed to science, and matter is not the binary opposite of text. They argue that feminists have created fundamentally flawed theoretical tools and methods that reinforce these binaries in unhelpful, unproductive, and intellectually regressive ways.

Scholars working in the tradition of new feminist materialisms are fundamentally interested in producing different kinds of engagements with science, biology, and matter. These scholars have called for and begun an exciting area of work that seeks to redress the fundamental critiques they raised. First, the work engages centrally with science and scientific knowledge. For example, in her book *Meeting the Universe Halfway* (2007), Karen Barad establishes the new ontological, epistemological, and ethical framework of agential realism for thinking through our involvement and relationship to matter by drawing on her expertise in quantum physics. By deploying her theoretical contributions of intra-actions, and new understandings of entanglements and phenomena, Barad’s work has enlivened our engagements with matter. In another example, Elizabeth Wilson in her book *Psychosomatic* (2004) argues that the soma and the psyche are not different “realities” of the

body, but rather that psychic and somatic forces are co-constituted and co-produced. Her new work on “gut feminism” is precisely blurring the boundaries between nature/culture and emphasizing how a feminist understanding of the material body is important, indeed central, for feminist and critical theory. Second, by refusing to relegate the material body to science and the social to feminism, new materialisms attempt to build accounts that do not privilege one over the other. Finally, new materialists have created new ontological frameworks to engage with the sciences and build a body of work that refuses the binaries of sex/gender, nature/culture, and science/feminism.

From our vantage point as feminist postcolonial STS scholars, both trained as biologists, we view the development of new materialisms and critiques of feminist critiques of science with interest and irony because the preceding, now canonical reading of the historical development of feminist thought, also reveals to us the blind spots of disciplinary thought. We wonder, as in the opening quote from Avery Gordon, what can be seen and recognized in this new genealogy that is relevant to feminist science and technology studies? Some of the theoretical gestures of new feminist materialisms have us simultaneously looking back to see what bodies of work have and have not been included in these conversations, and also looking forward to see whether this call to engage with materiality is being followed up with an influx of feminists entering into labs to practice the science they are describing, getting their hands dirty with the matter they wish to know, and participating in scientific knowledge production themselves. An uncritical embrace of modern science that ignores science’s imbrication in systems of power that early feminists raised seems hardly worth celebrating. However, we want to approach the different and previous generations of feminist entanglements with materiality with an openness or what Cecilia Åsberg suggests as being the posthumanist ethic of learning “to re-vision, meet up with and *inhabit well* the continuums of naturecultures” and “how we organize ourselves scholarly” (2013, 6). These claims of “new” and “feminist” in new feminist materialisms have forced us to reflect on the ways in which disciplines construct their disciplinary objects and analyses, and especially on how the critiques also take particular forms. Therefore, in this piece, we wish to take up two main questions that for us are hovering closely in the shadows, namely (i) how we understand and

## 'Bios,' 'logy,' and the Improperly Buried Bodies of Biology

And yet, there is a politics to how we distribute our attention.

—Sara Ahmed (2008, 30)

In her article "Imaginary Prohibitions: Some Preliminary Remarks on the Founding Gestures of the 'New Materialism'" (2008), Sara Ahmed suggests that *some* (not all) of the impetus of new materialisms is based on a logic that previous feminist engagements with biology, including those enacted by early feminist biologists, have not only placed too much value on the social and constructed the material body simply into a text, but, quoting Wilson, that they "retain, and encourage, the fierce antibiologism that marked the emergence of second wave feminism" (Wilson 2004, cited in Ahmed 2008, 24). Ahmed claims that the general-ogy traced by these gestures is curious as they actively attempt to draw the disciplinary boundaries of feminist science studies, pointing out that what is also at stake here is what has been included as "theory" in feminist scholarship. Ahmed states,

What is clear then is that the gesture of pointing to feminist anti-biologism either excludes feminist work on the biological from what counts as theory; forgets feminist work on the biological by arguing that we have forgotten the biological; or recalls that work by reading it as a symptom of anti-biologism. (2008, 31)

New materialist Iris van der Tuin (2008) has responded to Ahmed's piece suggesting that by drawing so heavily on the work of a limited number of early feminist biologists and feminist critiques of biology, Ahmed herself is drawing boundaries around what counts as feminist science studies. She claims that Ahmed's analysis of feminist science studies places it in the position of becoming a "neo-discipline" (*ibid.*, 412). Van der Tuin however agrees with Ahmed regarding the positioning of previous feminist engagements with biology. She states,

I could not agree more with the politics of feminist generation laid out here. The effect of ascribing an anti-biological stance to second-wave feminists is analogous with readings of second-wave feminism as simply

essentialist or universalist. A stance Ahmed explains as anti-biological deterministic instead. However, if one goes back to second-wave sources, you will find their arguments to be much more complex. The post-feminist move to discard second-wave feminisms may be described as a narcissistic move (i.e. a celebration of the—post-feminist—present). In my work on new materialism, I argue against narcissism and nostalgia. (412)

Indeed, van der Tuin suggests that in her articulation, she views new materialisms "as the inheritor of feminist standpoint theory, and as such, as an epistemic strand that engages with historical materialism but not solely so" (414).

In a similar vein, a voice has emerged from within postcolonial STS that shares the same desire and drive as new materialism for a turn to materiality and to the natural and hard sciences, and is also accompanied by a castigation of previous modes of engagements with the sciences. While describing the collection of essays published in *Postcolonial Studies* as a special issue on "Postcolonial Science Studies," Suman Seth describes the set of papers in the issue as a:

(Modest) attempt at an answer for a question Anderson had posed in earlier programmatic statements concerning postcolonial technoscience, namely: what an infusion of materialist science studies might do for post-colonial theory. (2009, 381)

In reference to dealing with materiality and in a reflective moment that could very well have originated from some feminist theorists of new materialism, Warwick Anderson states,

(M)ost postcolonial theorists, perhaps displaying lingering effects of a British imperial education in which humanities students are taught to breathe science, have flocked instead to the analysis of literary texts. (2009, 300)

Many feminist and/or postcolonial STS scholars who have attempted to train and work in the natural sciences and pure sciences, or engage in the materiality of the biological body either as social scientists or cultural theorists, will no doubt be puzzled by these indictments of

theorize biology and specific biological bodies; and (ii) how we understand and theorize the materiality of sex, gender, race, sexuality, disability, class, and more. Indeed, each of the three bodies of work—feminist critiques of science, feminist new materialisms, and postcolonial science studies—is rich and has much to offer us. But each given its own historical blind spots and disciplinary development has failed to offer an account that takes science, biology, matter, power, politics, gender, feminism, and history seriously. The project we are interested in pursuing is one that can benefit from making connections between the earlier feminist critiques of science, new materialisms, and postcolonial STS.

Three sets of arguments inform our intervention. First, a different body of work within feminist thought is important here. Feminists of color, third world feminists, lesbian feminists, and working-class feminists among other groups, have, over the last three decades, called into question the notion of the “universal woman” that animates and dominates much of feminist thought. They conclude that the generic woman is usually a western, white, upper-class, heterosexual, and able-bodied woman. By extension, we would like to argue here that if there is no generic “universal woman,” then there can also be no universal or generic “biological body” or “matter.” It is interesting to us that much of the work of new materialisms (although by no means all) recovers an abstract and generic material body, one that is often nonhuman, microbial, molecular, or atomic. As biologists, we recognize the importance of this posthuman turn, yet the hidden and shadowy matters of feminist thought reemerge in these critiques. To us, there can be no decontextualized generic body or matter, be it human or nonhuman, organic or inorganic. Second, colonial and postcolonial studies remind us about the very material bodies of colonialism, in all their contradictory and violent histories. Postcolonial studies of science particularly illustrate how western scientific knowledge was not just a tool, mechanism, or logic, but developed alongside and was thus co-constituted with colonialism, and deeply invested and imbricated in colonial governance and expansion. For example, Evelyn Hammonds, in writing about the origins of gynecology, reminds us how black women’s bodies were deemed similar enough to white women’s bodies and therefore worthy of experimentation, yet different enough that they did not need anesthesia during sur-

gery because black women’s bodies were different and did not feel pain (Hammonds 1999). The history of racial colonial science and medicine forcefully reminds us that we must not “decontextualize” matter from natural and cultural contexts because it is the “context” that is central to the shaping of “science” as well as to the shaping of the material “body” (Prakash 1999; Hammonds and Herzog 2009; Seth 2009). Context and histories must be central to building new feminist materialisms. To simply incorporate popular scientific theories, paradigms, and data into feminist theory is not a sign of progress, but rather can be read as a convenient sidestep away from the very difficult work of contextualizing the process and techniques of scientific inquiry—work that has been attempted and addressed by several previous feminist scientists, feminist empiricists, and feminist philosophers of science. Colonialism also involved disciplining and controlling the colonized “body,” and the field has emphasized “the corporeality of the quotidian practices of colonialism” (Seth 2009). Indeed, these histories suggest that we should understand the history of almost all modern science as “science in a colonial context” (ibid.). It would seem then that the question of “matter” is very much up in the air. Paralleling the development of new materialisms in feminist scholarship, there has been a similar call to pay attention to materiality in postcolonial studies (Anderson 2009; Seth 2009). Finally, we follow Nivedita Menon’s call to take seriously non-individualist modes of identity formation (Menon 2015). She argues that in many non-western contexts such as India, national identities have long been constructed not around individual citizenship but through those of communities, be they caste, religious, or ethnic groups. She reminds us that women’s movements in the global South have always located the identity of women both in the nation and in communities. Such a mode of analysis refuses not only a notion of a universal “woman,” but even the possibility of an unproblematic individual “woman.” Exploring such alternate modes of scale and identity is critical for any project interested in theorizing the material body in its global complexities. We see our work as a fruitful and productive conversation between feminist and postcolonial studies of science, and in our contribution to understanding the materiality of bodies, it is a contextual and situated materialism that we wish to develop.

“antibiologism” and “loathing.” However, it takes little time to realize that it is the stance against essentialism within biology or “against a specific model of biology” (Ahmed 2008, 28) that has been brought to us over the last four decades by feminist critiques of science, that is regretfully being misinterpreted either as an unwillingness to consider the role of biology, or as a stance against the scientific discipline of biology itself. In a recent article aimed at developing a queer feminist materialist approach in science studies and advancing a theory of “biopossibility,” Angela Wiley also attends to the debates (Ahmed 2008; Davis 2009) surrounding the founding gestures of new materialism. Wiley carefully delineates the confusion and slippages on both sides of the debate between “biology as the study of the body—or the body produced within the context of scientific inquiry—and biology as ‘the body itself’” (Wiley 2016). The feminist critiques of science have not been of the stem word “bios,” but of the suffix “logy.” Issue has been taken with the “study of” or “knowledge of” bios, and with processes related to the meaning of the Greek verb “legein” from which the suffix “logy” is derived, such as to gather, to select, to speak, and to say (Greek Word Study Tool). To be critical of these processes does not mean that one rejects matter, bios, the body, or repudiates a field entirely.

We think it is prudent here to consider more carefully the terms biologism and antibiologism, and to do so, we return to an earlier piece written by Elizabeth Grosz. In her essay “Conclusion: A Note on Essentialism and Difference” written in 1990, she develops an argument about the role of “essentialism and its cognates” in feminist work. She states,

Feminists have developed a range of terms and criteria of intellectual assessment over the last twenty years or so years which aim to affirm, consolidate, and explain the political goals and ambitions of feminist struggles. These terms have tended to act as unquestioned values and as intellectual guidelines in assessing both male-dominated and feminist-oriented theories. Among the most frequent and powerful of these terms are those centred around the question of the nature of women (and men)—essentialism, biologism, naturalism, and universalism. While these terms are closely related to each other, sharing a common concern for the fixity and limits definitionally imposed on women, it is important

to be aware of the sometimes subtle differences between them in order to appreciate the ways in which they have been used by and against feminists. (1990, 333)

More specifically, she defines the term “biologism” in the following way:

Biologism is a particular form of essentialism in which women’s essence is defined in terms of their biological capacities. Biologism is usually based on some form of reductionism: social and cultural factors are regarded as the effects of biologically given causes. In particular, biologism usually ties women closely to the functions of reproduction and nurturance, although it may also limit women’s social possibilities through the use of evidence from neurology, neurophysiology, and endocrinology. Biologism is thus an attempt to limit women’s social and psychological capacities according to biologically established limits: it asserts, for example, that women are weaker in physical strength than men, that women are, by their biological natures, more emotional than men, and so on. In so far as biology is assumed to constitute an unalterable bedrock of identity, the attribution of biologicistic characteristics amounts to a permanent form of social containment for women. (334)

Keeping in mind Åsberg’s posthumanist ethics and van der Tuin’s attention to the politics of feminist generation, we can see why feminist engagements with the “logy” of bios have involved challenging concepts of fixity, the overreliance on reductionism, and claims to limited capacities. It is, however, also fair to say that these struggles have taken a great deal of energy and time away from the work of reimagining *how* we as feminists can think about biology differently, and *what* that biology could teach us. We want to emphasize that many different generations of feminist and postcolonial thought have made it possible for us at this moment to try to think differently about bodies, biology, and matter. For instance, moving from Haraway’s use of the term “material-semiotic” (1988) to her conceptualization of “naturecultures” (2003) alone, we can see that feminist work spanning over several decades has prepared us to consider new ontological, epistemological, and ethical frameworks to think with and about the organisms and elements of which we are a part. These reorientations to nature/nurture, sex/gender, and biology/culture

divides are indicative, we hope, of a new “logy” for “bios” and of a future where we gather, select, and speak differently to redefine ourselves.

As feminist biologists we are therefore indeed interested in seeing for instance the outcomes of this renewed call for a “return” to biology. If, as a result, new materialism opens up previously unattended avenues of engagement with biology, this will be of great benefit. To our knowledge, however, the biological referents of new materialist projects have thus far been too limited. In many of these works, organisms such as bacteria are treated as abstract models of biological curiosity rather than with a recognition that “we are in a knot of species coshaping one another in layers of reciprocating complexities all the way down. Response and respect are possible only in those knots, with actual animals and people looking back at each other, sticky with all their muddled histories” (Haraway 2008, 42). Two curious points of interest come to mind here. First of all, despite running the risk of being called out on harboring anti-biologistic tendencies ourselves, we are indeed interested in asking the question, why pay attention to this particular knowledge and why return to this particular body of scientific scholarship now? It is important to look for any openings or radical potentials in scientific research, but it is almost as if under the aegis of new materialism, one now has the license to return to dominant and sometimes highly problematic scientific theories, research, and data and appreciate the science for “what it is.” Second, while we are not arguing for the centrality of the human in new materialism, we are curious about the choices of particular referents. We are made aware of how the scholarly attention in new materialism is being distributed. What is interesting in the choice of these referents is that the curiously disembodied nature of this work is coming to light. While we support the idea that learning more about bacteria (Hird 2004, 2009; Kirby 2008) for instance is important for feminists, we must also realize that these analytic practices make it much more possible (though also problematic) to think about birds, lizards, and bacteria in evolutionary and aesthetic terms without having to refer to the embodied materialities effected through their contact with political systems of power such as gender, class, race, or colonialism. The posthumanist slant under which this work is proceeding is quite interesting, but we wonder—does this also signal an inability to deal with the biologies and embodied materialities *in* their political and historical contexts?

### Situated Materialities of Sex, Gender, and Sexuality

We must ask who speaks for nature, why and what political economic networks they are caught up in.

—Kavita Philip (2004, 194)

We join recent scholars in the nature versus nurture debates that all binary formulations of nature/nurture or nature/culture—whether it is nature *and* nurture, nature *through* nurture, nature *via* nurture etc.—are all insufficient (Ridley 2003; Keller 2010; Longino 2013). It is not as though there is a primordial material body that exists *before* nature on which nurture acts to produce the material body. Rather, we need to reject the nature/nurture and nature/culture binaries to develop an account of materiality that is simultaneously an account of power and privilege—as a co-constituted co-production. If there is no nature without nurture and no nurture without nature, how then do we account for the “body”?

To address our concern of decontextualization as mentioned earlier, we wish to draw the attention of feminist science studies scholars who are interested in theories of new materialism to several critical modes of analysis posited within postcolonial STS, including the recognition of situatedness, the articulation of local points of interest within larger networks, the detection of contact zones of empire, and the destabilization of the central to become another local. We believe that an exploration of the relation between the two fields is rich and can help us to develop a situated, molecular, material account of the body *and* of power. Such an analysis helps us to better theorize the body. While this is too brief a chapter to elaborate, we have elsewhere explored how these frameworks help us to analyze the overlapping genealogies of such cases as the chemical devastation of methyl isocyanate in Bhopal and the recent technological de-surrogacy in India (Roy and Subramaniam 2013). We have aimed to share more than just scientific and decontextualized knowledge about the molecular “properties” of methyl isocyanate. We have attempted to create knowledge about the materiality and molecular properties of a “phenomena” (as Barad might say), brought to us by many agents including a malfunctioning valve, a southeasterly wind, 40 tons of methyl isocyanate gas, and an unfortunate number of organic substrates in the

form of mucous membranes and ovarian tissues belonging to the victims of the Bhopal Gas Tragedy. The emphasis on situatedness and engagement with local points of interest is most useful for us in the context of exploring the materiality of chemical damage or the consequences of a peculiarly medicalized pregnancy on the bodies of surrogate mothers, particularly in the Indian context where the legacies of colonialism still linger in the form of gender and class structures in contemporary Indian societies. This is evident when we see that certain classes and castes of women have been differentially affected by the chemical devastation of the Bhopal gas plant leak. We also see that compensation for surrogate mothers, or women's access to compensation, and medical treatment after the gas leak are also severely stratified. Similarly, legacies of colonialism still shape which women are being recruited to become surrogate mothers, and how the material and indeed molecular conditions of their pregnancy are imagined, and structured.

So what might this analysis of materiality look like, one that combines cells, molecules, gases, chemical plants, sex, gender, sexuality, class, race, and more? What kinds of questions would a contextualized and situated materiality allow us to pursue? Our research involves the materiality of a specific group of women in India, but in foregrounding this particular figuration, our intention is not to look or speak for the suppressed voices of Indian surrogate mothers, thereby painting an idealized or essentialized voice of this other. Nor is it to recuperate and romanticize a method of "indigenous scientific knowledge" of women's bodies in India. But rather, in the spirit of engaging with new materialism in what we consider to be a more contextualized way, we are interested in examining some of the technologies that are shaping the bodies of certain women in India, in a specific time, and in a specific place. If however we are to engage with this new materialism and also try to combine it with the tools of contextualization derived from postcolonial studies of science and technology, we may then have to argue that we are not merely interested in the material bodies of Indian surrogate mothers. We must look at the "situatedness," "local effects," and the "contact zones of empire" expressed in the material bodies not only of certain Indian surrogate mothers, but also in the compound methyl isocyanate upon its encounter with water, in insects exposed to carbamate pesticides such as Sevin, in the Union Carbide plant and its workers in Bhopal, in plants

and animals surrounding the immediate area of the chemical disaster, in the use of new reproductive and genetic technologies in IVF clinics, in the export of highly coveted Dutch sperm to India, and much more. As a joint analytic framework, we can begin to inquire into the global inequalities mounted by global circuits of capital, or practices of reproductive tourism, and examine the local articulations of these practices that become manifested in the materiality of sex, gender, sexuality, and the body. With the analytic tools of postcolonial STS, we can learn that in attempting to analyze the devastation of the gas leak on women's bodies or the materiality of surrogate mothers in India, it is not just the contemporary body and their biology that we must think about, but also the historical constructions and disciplining of Indian bodies as gendered and raced bodies.

We end here by bringing to your attention a growing number of clinical studies in epidemiology, social neuroscience, and epigenetics that are providing evidence for the physiological effects of cumulative oppressions such as sexism and racism over one's life. These studies show us that politics, both local and global, are inscribed into our bodies—bodies that in some way already exist, circulate, and express themselves in transnational bioeconomies. A recent surge of interest in epigenetics is demonstrating the ways in which material conditions can fundamentally reshape bodies in subsequent generations. The field of environmental epigenetics attempts to get at these intersections (Guthman 2012). These findings remind us that the nature versus nurture paradigm is too simplistic a formulation and that we need to attend to questions of power and social justice as central frames in order to understand the matter of the body (Guthman 2014). Some findings emerging from research in social neuroendocrinology for example have also revealed both short-term and long-term effects of sexism on the levels of stress hormones in women's bodies. "Race," as a social category, and social classifications that follow, could be "responsible for generating important biological differences" (Kaplan 2010, 288) and may be contributing causes of health disparities observed for example between white and black Americans. Many of these studies have been chronicled in an excellent PBS documentary series called "Unnatural Causes: Is Inequality Making Us Sick" (Adelman and Smith 2008). We suggest that these studies provide an exciting possibility for designing new scientific



inquiries into the body and materiality. In our specific case, they help us to frame questions regarding the chemical devastation of women's bodies and surrogacy in India that have been shaped by a joint analytic of new materialism, feminist science studies, and postcolonial technoscience studies. For instance, can we start designing ways to measure the physiological effects not only of methyl isocyanate gas, but also of the political economies of capitalism that are running through the flesh of surrogate mothers? Can we begin to analyze the immune response in surrogate mothers that is elicited by methyl isocyanate as well as the mutual reorganization of global and local economies of eggs, sperm, and wombs? Can we begin to know the hormonal fluxes in bodily fluids that serve as substrates for not only methyl isocyanate but also the transnational trafficking of people and technologies? The questions we learn how to ask will bear different epistemological weights. Which questions we ask will make a difference in our pursuit of social justice and situated understandings of materiality.

Therefore, as we begin to devote our energy and time to reimagining how we can “do” biology differently, we must keep in mind that the tasks for a new materialist and feminist postcolonial STS approach to the world are: (i) to develop an approach where we recognize the natural and cultural worlds, science and society and politics as being inextricably interconnected—co-constituted and co-produced. We want to develop a feminist practice that does not approach matter through the binaries of natures and cultures, but also proceeds with a recognition of the “uneven epistemological weight” of certain ways of knowings; (ii) to recognize how colonialism and patriarchy (and categories of sex, gender, race, class, sexuality, ability, nation) are imbricated in the development of dominant western sciences and thus in its theories, methods, and institutions; (iii) to resist the urge for any easy translation between privileged western knowledge practices and those deemed unscientific, incoherent, or incommensurable. This is not to say these are all equivalent or equally important knowledges—only that we need to pay close attention to them; (iv) to take seriously theories, ideas, concepts from the non-west as legitimate, valuable, and relevant resources for understanding western and global contexts (Menon 2015); (v) to trace the transnational circuits of power that attempt to extract knowledge and resources into increasingly global hegemonic institutions and sys-

tems; and (vi) to develop a situated materialist account of the world, one that is cognizant of matter across scales. Since one of us is a molecular biologist and the other an organismal biologist, we want to keep different kinds and levels of matter always in view—from the molecules, molecular bonds, and interstitial cellularity to its embodied global and local political, economic, cultural, and social contexts in which matter resides, enacts, and evolves.

Materiality should be understood as a “process” rather than a product—matter makes, is made, and remade. We need to foster greater interdisciplinarity across fields and generations to draw on the insights and wisdom that multiple fields have to offer. Drawing on analyses from multiple locations sheds light on the shadows within our disciplines, rendering more perceptible the complexity of how matter and biologies come to be. We urgently need to develop models of a situated materiality and by doing so, turn to improperly buried bodies that perhaps still matter.

#### NOTES

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<sup>2</sup> Here we are thinking of scholars such as Ruth Bleier (1984), Brighton Women and Science Group (1980), Anne Fausto Sterling (1985), Evelyn Hammonds (1994), Donna Haraway (1990), Sandra Harding (1991), Ruth Hubbard (1990), Evelyn Fox Keller (1985), Helen Longino (1989, 1993), Emily Martin (1992), Carolyn Merchant (1980), Hilary Rose (1994), Sue Rosser (1992), Londa Schiebinger (1989), and Nancy Tuana (1989, 1993) (listed in alphabetical order).

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## New Material Feminisms and Historical Materialism

### A Diffractive Reading of Two (Ostensibly) Unrelated Perspectives

HANNA MEISNER

A specific interest in materiality is the focus of many recent debates in feminist theory. Glossed as "material turn" (Alaimo & Heckman 2008) or "new materialism" (Coole & Frost 2010), the founding move of these debates is a "turn" away from tendencies of social determinism seen as inherent to constructionist perspectives. The focus on social structures, discourse, culture, and human agency as explanatory factors for the specific formation of our historical reality is criticized for its lack of attentiveness to the agency and historicity of the material. As a sociologist with a background in feminist engagements with the historical materialism of Karl Marx, I am very interested in these debates on materiality. The attention to the agentic dynamism of matter, and the critical reflection that the becoming of the world is not exclusively an effect of cultural inscriptions or human activity, represent important challenges to the notion of emancipation as it is implied in the traditions of historical materialism.

I am intrigued, however, by the apparent lack of communication between the recent debates about *new material* feminism and the traditions of *materialist* (Marxist) feminism. Stacy Alaimo and Susan Hekman even state that it is important to distinguish "material feminism" from (Marxist) "materialist feminism" (Alaimo & Hekman 2008: 18). A discussion of the possible reasons and implications of such gestures of distinction would go beyond the scope of this chapter; my argument here focuses on the assumption that there is much to be learned from an engagement that tries to put these perspectives in touch with each other.<sup>1</sup> Framing this assumption in terms of considering two "perspectives" obviously implies problematic simplifications. First of all, there is