
Interview

Feminist science and technology studies: A patchwork of moving subjectivities. An interview with Geoffrey Bowker, Sandra Harding, Anne Marie Mol, Susan Leigh Star and Banu Subramaniam

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With multiple voices interrogating, displacing and rethinking subjectivity within feminist science and technology studies (STS), we were intrigued with how to provide space in this special issue to more than just the authors of the articles. Conscious of the limits of this ambition, and of potentially reductionist consequences, we proposed a modest inquiry addressed to this thought collective. We asked a sample of scholars, whose work has contributed in different directions to research on science and technology, to share short statements on the relation between feminism, social studies of science and subjectivity. We proposed a series of open-ended questions to think about feminist contributions to the field of STS. In particular, we inquired about the politics of knowledge that render visible dismissed subjectivities and create new ones in the hope of fostering promising situated knowledges. We ended by looking to the future and asking them to identify issues that feminist approaches in STS need to address further. This ‘patchwork’ puts together their ‘pieces’, which show a diversity of concerns,

inheritances and engagements. It is a small provisory gathering that contributes, in relation to the articles included in this issue, to a better understanding of the proliferating paths of research and burgeoning effects of interventions moved by feminist concerns within STS.

Susan's piece

Weaving as method in feminist science studies: The subjective collective

SLS: As an undergraduate, I worked as a research assistant to Mary Daly, the feminist philosopher and theologian. For her, doing good feminist research meant resisting 'methodolotry,' that is, the adherence to old-fashioned methods without understanding how they were intermingled with our lives. Feminist research and theory was based on a different ontology of methods, a process she called 'spooking, sparking and spinning' (Daly, [1978] 1990). *Spooking* means finding those things that 'haunt' forms of knowledge and representation – the absence of women, for example, the deletion of female agency in talking about work done in and around the home, or sexist representations of women. (I would add, then as now, the complexities of race, physical ability and age as inextricably central to this analysis (Star, 1979).) To *spark* is to restore meaning creatively, making those same absences or silences collide, ironicize, and creatively work together. And *spinning* elaborates those new meanings, moving away from critique of patriarchal approaches, and instead 'hearing forth' (Morton, 1985) new insights. To spin is to stretch, to co-develop our imaginations and thus build and weave new ways of knowing. This methodological approach also creates our communities of practice. A critical component of this kind of distributed cognition means finding new paths for citing each other's conversations, insights, novel use of artifacts, and animal allies. Long before science studies began to turn to the analysis of 'non-humans' in the late 1980s, Daly's model included citing the natural world – in some ways to call critical attention to the nature of citation practices – trees, spiders and her cat. We learned to cite each other's conversations, our own dreams and actions. Citing each other's conversations becomes very interesting as a subversive action. It validates, at a much earlier stage than a published article, or even conference paper, insights that historically women have been shamed out of speaking aloud. Following Tillie Olsen's groundbreaking work on how women have often had to stutter things out and write in fragments (1978), because we are busy and ashamed. Daly taught we students to bring those stutters into academic discourse and let them be named and made important. In this, she aligns epistemologically with the work of Dorothy Smith on documentary reality (1987) and Donna Haraway's work on companion species (2008).

In STS, feminist scholars fought for our stutters to be heard, helping each other to build a continuing social world within STS. We helped each other bear the frequent omissions of citation to our work, as well as the appropriation of it by non-feminist scholars – something Adele Clarke and I called ‘the silence of the footnotes.’ We helped feminist scholarship as well as the work of women, and, increasingly, men of color, become mainstream STS. Pushing into the future, I would love to see us both remember our earlier roots and community-building, and also to take more methodological chances.

Patti Lather’s work, for example, has been seminal for feminist methodology, on subjects not usually seen as part of STS. She (along with anthropologists and qualitative sociologists) struggles to write her own research participation and politics, the voices of her respondents and methodologically novel ways of representing these processes. In *Troubling the Angels*, a book about women with AIDS/HIV+, she writes the book with three separate bands on the page, so that visually you can read both in the traditional chronological fashion, but also see the layering of different sorts of experience and analysis on every page (Lather and Smithies, 1997). A companion methodological book, *Getting Lost* (Lather, 2007), spells out more distinctly how one would go about this research. It would be fascinating, as a community-building exercise, to compare Lather’s work with that of Steven Woolgar, Trevor Pinch, Lucy Suchman and Michael Lynch (among others) on reflexivity in doing STS.

Feminist research in general, especially during the early years of the second wave, meant the inclusion of political action, poetry, art, social science research and consciousness raising as a *soup sui generis* to feminist subjectivity. We still struggle back to this and forward with this in contemporary STS work that includes art and aesthetics, for example, both as an integral part of doing science or technology, as well as a part of STS in facilitating, translating and including this perspective. Let’s be brave and funny and pushy about this part of the future of feminist STS – if we can stretch to really open up academic writing and other forms of representation, how much more usable, relevant and responsible to our multiple communities shall we become? (Balka *et al*, 2007)

This constitutes a kind of methodological weaving, and the metaphor is important. There are distinct genres in weaving (a scarf is not a wall hanging); there are different colored threads and patterns that are both distinct and enmeshed; there is both artisanal skill and issues of domestic work/hobbies *vs* art and its markets and makings. It is both individual and collective, solitary and group-oriented (quilting, too, has these qualities, and has been central to the subjective collective knowledges of poor and/or African American women). What is unique about feminist STS, to me, is the continual evolution of our knowledge-weaving, as well as a critical involvement remaking its meanings.

Sandra's piece

WB, MPB: *What is the most significant contribution of feminist STS to the field of STS?*

SH: The claim that the subjects, the speakers, of scientific and technological sentences are gendered has certainly been one of the most significant, and controversial, contributions of feminists to STS. The claim that the subjects of STS itself also are gendered is at least as important to STS, not to mention as controversial. Prior to the women's movements of the late twentieth century, few scientists, engineers or scholars of science and technology could have imagined that anyone should take seriously the claim that the sciences' 'integrity with their historical era' (Thomas S. Kuhn) includes an integration with the gender relations of their particular era. Gender relations were private and natural while science and technology were part of the public sphere of social relations.

Two further shocks are created by, first, the claim that this issue is about the subjectivity of the male eighteenth century scientific voyagers to the Americas (Mary Terrall), not just of Maria Sibylla Merian (Natalie Zeman Davis); it is about the subjectivity of the inventors and users of Viagra, not just of birth control. Yet another shock for feminists ourselves comes with the recognition that our own claims do not represent timeless truths, but are themselves inevitably made plausible, meaningful, and part of the 'realm of the true' only by distinctive features of our own local, historical environments.

WB, MPB: *Is there a recognizable politics of knowledge that marks the field of Feminist STS?*

SH: There have to be many different and sometimes conflicting feminist politics of knowledge in STS since women are located in many different institutional, cultural and political sites where STS is carried on. Most interesting are the contradictions and tensions in feminist STS politics of knowledge that are created by gendered conditions, needs and desires arising from such different locations.

WB, MPB: *Does Feminist STS have a particular stake in rendering visible dismissed subjectivities, creating new subjectivities and contributing to promising situated knowledges?*

SH: Feminist STS stakes in recognizing and transforming subjectivities are huge, in my opinion. One interesting way to understand this is suggested by a recent study of the relation between epistemological and ethical regulative ideals in the sciences. Lorraine Daston and Peter Galison (2007) have masterfully demonstrated how the concept of objectivity shifted over time, beginning with the 'mechanical objectivity' that revealed the inadequacies of the earlier commitments to 'truth to life' atlas representations. Subsequently, a notion of

objectivity as trained judgment revealed the limitations of its predecessors. Today, further transformations are underway. Daston and Galison point out how such epistemological ideals are always also ethical ones: scientists sense of self-worth is grounded in a fierce commitment to represent the world accurately. Each transformation of such a regulative ideal changes also the ethical status of scientists, turning those committed to older ideals into persons not as fully admirable as those who commit to the new ideal. Daston and Galison do not provide a gender analysis. But their account suggests how and why feminist epistemological commitments have been so disturbing to well-intentioned scientists and scholars who adhere to the standard conceptions of objectivity, rationality and good method.

Our diverse feminist epistemological commitments deeply undermine scientists' and our STS colleagues senses of who they are and the value of their work. After all, these individuals often have struggled heroically, often in the face of severe political resistance, to produce and gain acceptance for their accounts. This is why those 'contributions' mentioned earlier are so strongly resisted. It is not just that scientists and our STS colleagues do not want to be caught out as wrong; they find it intolerable to be positioned by feminist transformations of regulative ideals as less than fully ethically admirable.

Of course we already knew this. We knew that feminism was fundamentally a moral and ethical issue. Daston and Galison point the way toward a fuller appreciation of the ethical implications of our epistemologies. A focus on transforming subjectivities through scientific and epistemological work as scientific and epistemological projects emerge from already transforming subjectivities – the possibility of this kind of overt link between epistemologies of science and ethics opens up new possibilities for valuable feminist STS projects.

WB, MPB: What specific questions should feminist STS address in the future?

SH: Valuable contributions to understanding science and technology in the world today can be contributed by feminists who focus on two additional under analyzed issues. One is the question of how science and technology agendas, and STS ones, starting off from Western lives could and should interact with those projects that often have conflicting assumptions and goals as they emerge from the lives of other peoples around the globe. What would 'mutt' feminist STS look like, to borrow a wonderful word from the new US President? Another is to examine further at both macro and micro levels how gender issues can be articulated in and about the scientific and technological agendas within globalization projects and their effects. Pursing each of these issues requires far greater familiarity with historical and current social processes and literatures, ones that have been relatively neglected in the larger field of STS.

Banu's piece

WB, MPB: *What is the most significant contribution of feminist STS to the field of STS?*

The Lesson

And after the Emperor had appeared naked and no one had disturbed the solemn occasion, one little girl went home in silence, and took off her clothes. Then she said to her mother, 'Look at me, please, I am an Emperor.' To which her mother replied, 'Don't be silly, darling. Only little boys grow up to be Emperors. As for little girls, they marry Emperors; and they learn to hold their tongues, particularly on the subject of the Emperor's clothes. (Suniti Namjoshi, *Feminist Fables*)

BS: Feminist STS showed how putting gender and a gendered analysis front and center fundamentally reshaped how we saw the history, sociology and philosophy of science – almost every aspect of STS. The best thinkers have used an intersectional idea of gender – locating it in the complexities of race, class, sexuality and nationality. I think feminist STS has had an important contribution to make in our understanding on almost all aspects of science and technology – its culture, its practices, its practitioners, its philosophies, its politics and the knowledge it produces.

If I had to name one significant contribution of FSTS it would be demonstrating the critical role science has played and continues to play in scientizing/biologizing human differences – sex, gender, race, class, nation, etc.

WB, MPB: *Is there a recognizable politics of knowledge that marks the field of Feminist STS?*

Scientists do not begin life as scientists after all, but as social beings immersed in a family, a state, a productive structure, and they view nature through a lens that has been molded by their social experience. (Richard Lewontin, *Biology as Ideology*)

BS: Undoubtedly! Putting gender at the center of analysis has revealed a lot about science and its cultural practices. The biggest contribution, I think, has been tracing the tautological circulations of gender. Challenging biologically determinist ideas, feminists document – all too convincingly – how cultural norms of gender shape scientific ideas of sex/gender which in turn reinforce cultural norms. This circularity has been consistent and profoundly consequential. However the tentacles of biological determinism have proven hydra like – constantly regenerating in new bodily locations – skull, brain, skeleton, hormones or DNA. This body of feminist work convinces us that 'It is the politics, stupid!' – that

scientific conclusions on sex, gender, racial, class or sexuality differences always support the *status quo* and reinforce the superiority of those in power and with profound material consequences to us all. Yet, each day the newspapers unveil a new study of differences as a new revelation – Always a truly wonderful coincidence! Feminists, in turn, can only groan and say ‘Not another one!’ and pick up their tools to take apart another problematic and methodologically suspect study. What astonishes me is the relentless nature of it all.

WB, MPB: Does Feminist STS have a particular stake in rendering visible dismissed subjectivities, creating new subjectivities and contributing to promising situated knowledges?

We’re talking about whole new forms of subjectivity here. We’re talking seriously mutated worlds that never existed on this planet before. And it’s not just ideas. It’s new flesh. (Donna Haraway, Interview with Kunzru)

BS: Absolutely! At its heart, the field of women’s studies emerged out of a recognition of the erased, ignored and appropriated subjectivities of women. There are four main aspects of subjectivities that feminist STS helps us with: (1) theorizing the subjectivity of ‘science as usual’ – and revealing the particular nature of that subjectivity to be deeply grounded in the politics of gender, race, class, sexuality and nationality; (2) exploring how multiple subjectivities already exist in science, but are rarely acknowledged; (3) demonstrating how all scientists (irrespective of gender, race, class, sexuality, nationality) are enculturated into a common culture (making the politics of identity problematic); and (4) insisting on the inescapability of subjectivity. In such an insistence, feminists have begun to re-theorize a science and technology that seriously engages with subjectivity, to create new subjectivities and the promise of situated knowledges. This is crucially important because feminist subjectivities have been excluded from science. We must articulate and re-imagine feminist subjectivities before we can talk about developing situated understandings.

WB, MPB: What specific questions should feminist STS address in the future?

Give me a laboratory, and I will raise the world. (Bruno Latour, 1983)

BS: I think feminist STS is well poised to engage in the *production* of scientific knowledge – not as distant, objective critics grounded safely in the humanities and social sciences, but as co-producers of scientific knowledge. Feminists in almost every other discipline have re-imagined their discipline and ‘operationalized’ that critique in developing new institutional theories, methods and practices. I think one reason this has proved challenging in the sciences is that feminist STS remains grounded in the humanities and social sciences and

sometimes, resolutely so. Until we re-theorize and re-imagine (in complex and useful ways) human differences, we will continue to reinforce the old ontologies of difference and their enduring politics of sex, gender, race, class, sexuality and nationality. Moving beyond critique to practice is the next critical move. We need laboratories of our own, and journals of our own – institutional and political apparatus that can operationalize this vision.

Second, I think feminist STS needs to engage more deeply with intersectional understandings of gender – recognizing its inextricable interconnections with other processes of human differences.

Finally, feminist STS needs to push STS to deal more centrally with ‘difference’ and Women’s studies to deal more centrally with technoscience. I think the reason feminist STS remains an amorphous and heterogeneous community is, largely because it remains marginal to STS and Women’s Studies.

Anne Marie’s piece

WB, MPB: *What is the most significant contribution of feminist STS to the field of STS?*

AMM: This begs the question *where* feminist STS is. *What* it is. A long time ago, Bruno Latour and Steve Woolgar described the laboratory as if it were a kitchen rather than a site of high brow theory: that, mind you, was a feminist move. Donna Haraway showed how the ideology of the nuclear family had been literally materialized in the cages used in primate research: that, certainly, was truly feminist, too. But what else is? Take the move to *content* – the shift from analyzing the ways in which sciences are being made, to what it is they make: the objects and the subjects that emerge in the process of cutting up, dissolving, or otherwise manipulating the world so as to get to know it. The bodies enacted, the passions performed, the concerns being staged. The ontologies. To start to study those, may well be feminist – or it may just be what I happen to care about.

WB, MPB: *Is there a recognizable politics of knowledge that marks the field of feminist STS?*

AMM: The question presupposes that there is a *field*. But why would we want to delineate and even mark a field, and, worse, why with boundaries? A lot of good work in STS helps to show that there are always leaks and, more importantly, interferences. That what happens in one site, informs and helps to shape what happens elsewhere. So what might a good politics of knowledge be? Move around. Do not be concerned with your identity. It is fine to be feminist or to do STS, but it should not incite you to fix your politics. Be wild, innovative, inventive, sharp. When it comes to it, guerrilla tactics provide better models for

sex-struggle than old fashioned battles over regionally demarcated pieces of land. Move around and fluidly infiltrate just about anything, everywhere.

WB, MPB: Does Feminist STS have a particular stake in rendering visible dismissed subjectivities, creating new subjectivities and contributing to promising situated knowledges?

AMM: Can a figure of speech have a stake? Is Feminist STS a subject you would want to bring into being? Help me out here: why does this sounds so utterly *flat* to me?

The subject of the sentence. Of the child. Or of the yoghurt and the bacteria that make it. The subject position. Subjected. The subject of sex. It can all be done, worked at, shifted, played with. Who has a stake in all this? Who doesn't? And, how to think the woman-subject and then move feminism way beyond it?

Situated knowledges are great. They counter dreams of generality and generalization. But they come with questions of transport. Where might one be situated? Where are you? Which elsewhere-s emerge there? And how to not stay put but move around? Image transportation devices and modes of transport along with situatedness. Trains. Cold chains. The internet. Walking trails. Broken roads. Bicycles. Slow motion. The way a crow flies. And then remember that you are no crow.

Which promises to make? Not too many, they'd all too easily turn out to be false. To be promising – or then again: to let go of all too heroic hopes. Let us face a limit or two. Incorporate the tragic in what we seek to know. What might be a good *tone* for knowledges?

WB, MPB: What specific questions should feminist STS address in the future?

AMM: Truly, it is not modesty if I back away from answering that question. It has to do with situatedness. Interesting knowledge comes from somewhere and in most places 'I' am not. How can I know from here, here where I am, what is relevant there, where you are, a little further along? Feminist STS also better be *surprising*. Like other feminist work, and other STS for that matter – it is at its best if it surprises. 'Me' but of course not just me. All of us, or many.

We might ask questions of money. Of how it is made and unmade.

We might ask questions of food. Of who eats and who gets eaten.

We might ask questions of hate. Or love. Or their alternatives.

We might ask questions about mundane surgery. As it happens, this is not easy. It is a lot easier to get paid to ask questions about nanotechnology, than to get paid to study surgery for varicose veins or enlarged prostates. A lot of such surgeries are being done. Unstudied.

We might ask questions about cooking (rather than sex change – sorry, but cooking is far more relevant to far more women than telling, but by now over-studied practices that regulate whether one is one sex or the other.) Where

to get the fire wood – how to cook corn if it is rice you want – when to kill the chickens?

Or, then again, we might ask questions of statistics. For that is where, when it comes to it, the overwhelming majority of the socially most relevant ‘sex-differences’ are made. Not in the operation theatre, but on spread sheets. Not by cutting or pasting organs or injecting hormones, but by juggling with percentages.

We might ask questions about how to make knowledge that does not confirm how bad things are, but that contributes to making socio-material inventions.

Geoff's piece

GB: I was in a men's group in the 1970s where we were trying to raise our consciousness in the ways we saw similar women's groups working – we were all reading the same feminist literature – Dale Spender, Mary Daly and Andrea Dworkin, including for me a little later Ruth Hubbard's edited collection (with a chapter by Leigh Star) on women looking at biology looking at women (Hubbard *et al*, 1979). Now this group did not quite work as any of us had hoped. We labored and labored, but after about four month's meetings we found that one of our group had had a painful break-up, one had had questions about his gender identity and a third had been through a period of severe depression – none of which had come up as we collectively raised our consciousness. What we had talked about was abstractions about gender representations, our support for feminism and all that good stuff; we just hadn't grocked that the personal had a place in all of this. We dissolved the following week.

So there we were – we knew the personal was political, but only in an abstract sort of a way. Feminist science studies has changed my ways of understanding myself and the world – in an integrally theoretical and personal way. A single term for it is ‘strange assemblages’. When Lynn Margulis and later Donna Haraway started talking about the human body itself in non-Cartesian terms as a federation of beings in complex parasitic/symbiotic relationships, then I could start to see myself not as a talking head with body unfortunately attached but as partaking of and entering into the radical heterogeneity of the world. I could not separate mind from body, self from diversity. With the *Cyborg Manifesto* (Haraway, 1991), I began to see that the separation of myself from technology was not only a helpless quest but a bad idea. Personally, this all really helped me see myself as distributed in time and space – not a person behind a wall but already necessarily social and natural. When you see yourself in this constitutive and constituting form, there's much less need to hide behind the abstractions.

There is for me a deep politics to these moves. Roger Bacon wrote *The Masculine Birth of Time* in 1602 or 1603 and for a long time since then we've had many screeds of phallogocentric flavor. The new subjectivities pointed

to above profoundly shape the way we conceive the scientific endeavor and political work on issues such as biodiversity (where there is still work to be done to convince the species specificists to learn about relationships), on living in a heterogeneous world (where the divide human/ecosystem gets dissolved) and on understanding the nature of our selves as natural/technical assemblages, embracing these latter so as to infuse them with our politics, values, selves.

Or, in the words of Adrienne Rich's *Cartographies of Silence* – a poet introduced to me by Leigh Star:

for the return to the concrete and everlasting world
what in fact I keep choosing
are these words, these whispers, conversations
from which time after time the truth breaks moist and green.

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