Towards a Feminist HCI Methodology: Social Science, Feminism, and HCI

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ABSTRACT
With substantial efforts in ubiquitous computing, ICT4D, and sustainable interaction design, among others, HCI is increasingly engaging with matters of social change that go beyond the immediate qualities of interaction. In doing so, HCI takes on scientific and moral concerns. This paper explores the potential for feminist social science to contribute to and potentially benefit from HCI's rising interest in social change. It describes how feminist contributions to debates in the philosophy of science have helped clarify relationships among objectivity, values, data collection and interpretation, and social consequences. Feminists have proposed and implemented strategies to pursue scientific and moral agendas together and with equal rigor. In this paper, we assess the epistemologies, methodologies, and methods of feminist social science relative to prior and ongoing research efforts in HCI. We conclude by proposing an outline of a feminist HCI methodology.

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Feminism, design, theory, user research, feminist HCI, methodology, philosophy of science, post-positivism

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Design, Theory

INTRODUCTION
HCI's move out of the workplace and into everyday life has had a host of profound implications. Technologies, evaluation criteria, user research and scientific paradigms have all rushed to keep up with this change. In areas as diverse as affective computing, experience design, and domestic technologies, yesterday's preoccupations with productivity and efficiency seem quaint. Today, HCI is increasingly sensitive to its own influence on the broadest range of possible stakeholders, exemplified, for example, by sustainable interaction design.

In responding to these needs, HCI has turned to a wide range of cultural theories, from philosophical pragmatism to literary theory. A recent example of this trend is the notion of "feminist HCI," which [3] characterizes as the integration of feminist theory in HCI practice. Yet as promising as feminist HCI seems, beyond clearing a space for feminist HCI and introducing a set of qualities that characterize feminist interaction, [3] leaves open what exactly such an approach might look like in practice.

Feminism seems well positioned to support HCI's increasing awareness and accountability for its own social and cultural consequences, so developing feminist HCI is worthwhile. A particularly promising source is feminist social science, where researchers have practiced, theorized about, and debated scientific approaches committed to social progress. For example, feminist researchers Hanmer and Saunder [22] used community-based, at home interviews to study domestic violence in order to develop new forms of self-help and mutual aid among women. Naples [43] researched women on welfare and in college to reveal the problematic construction of welfare recipients as lacking work motivation. At its core, feminist social science research advocates for the integration of knowledge and responsible action, with a mandate for both individual and social change, reflecting a core value of feminism: critiquing and resisting the status quo [50]. However, feminist social science is not directed specifically at HCI, and any appropriation of this kind of research into HCI will take some work, though some work in HCI, including participatory design and other works that exhibit the values of feminist social science [10, 15, 36] are already working in this direction.

This paper explores the dynamic relations between values and different formulations of objectivity in the wake of post-positivist philosophy of science, stressing feminist contributions to these debates and arguing for their applicability to HCI today.

KNOWING TRUTH AND/OR DOING GOOD
At stake is the tension between traditional science (e.g., the logical positivism of Carnap and even much of contemporary post-positivism) and a science that sees itself as social-

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ly and politically engaged. Whereas traditional science champions the pursuit of truth and places values out of bounds, the latter argues that socio-cultural values are inevitably bound up in scientific practice and moreover that that's how it *ought* to be. To be responsive to this tension, science must negotiate between the Scylla and Charybdis of a nihilistic fetish for pure truth (the unwanted extreme of traditionalism) and an ideological battle where positions precede and determine facts (the unwanted extreme of politically oriented science). At the heart of this problem is the nature and implications of the intellectual value or ideal of *objectivity*.

Contemporary philosopher of science Harold Kincaid characterizes scientific objectivity as a "virtue" and a "symptom of good science," defining it as follows:

> [T]he ideal of an unbiased, disinterested pursuit of the truth is the hallmark of science. Science is objective when our beliefs reliably indicate the way the world is rather than the way we want it to be. [33]

Key to this definition of objectivity is the scientist's bracketing of the self, that is, excluding from scientific analysis one's values, goals, fears, and hopes—in short, one's perspective as a living individual. Accordingly, the scientist is able to assert "proposition *p*" and not "proposition *p*, in my opinion." In a recent philosophical essay on objectivity in science, ethics, and aesthetics, Richard Miller offers a two-pronged definition of an objective scientific truth claim, writing that it both (a) is perspective-independent and also (b) features data sufficient to compel agreement from qualified and rational others [42]. On this view, truth claims come from data, not from individuals, and the only question is whether the data is compelling enough to force assent to the claims they imply. Many of HCI's scientific claims are framed in this way: e.g., the performance increases of a new interface [e.g., 32], the features and organization of team-based collaboration [e.g., 45], and measurable aspects of the users' affective response to interaction [e.g., 48].

Yet one of the most valorized outcomes of scientific research in HCI is its implications for design. But design is an intervention, an intentional effort to create change. As design theorist Papanek defines it, design's job is "to transform man's environment and tools and, by extension, man himself," [47]. Papanek's definition here seems to foreground the very concerns—human values and intentions to bring about social change—that are backgrounded by scientific objectivity. Designs are consitituents of our artificial world, which we have made in the hopes of improving human quality of life and even protecting and developing our potential "futures" [19]. We can see this thread in HCI as well: these include ubiquitous computing [e.g., 51, 8], information communication technology for development (ICT4D) [e.g., 31], intimate interaction [46], sustainable interaction design [e.g., 6,14], HCI has shown a strong interest in recent years to participate in large-scale social change.

This tension between the disinterested pursuit of truth and the role of human social perspectives and values in science has been a major issue in the history and philosophy of science since the early 1950s, when Quine launched a series of eventually decisive attacks against logical positivism. Briefly, Quine argued that scientific theories are always underdetermined by any data and demonstrated that social and pragmatic concerns were inextricably tied up with science [58]. Building on Quine, other thinkers subsequently explored ways that values interact with science [e.g., 52, 41] and scientific practices emerge within social processes [e.g., 34]. Operating within this post-Quinean tradition, feminist science has demonstrated that gender has significantly influenced both scientific processes and products and feminists developed their own analyses of the roles of values in science as well as in the social nature of scientific practice.

As an applied scientific field, HCI inherits these tensions from the social and natural sciences as well. In recent years, work in HCI has increasingly raised concerns about the role of interaction designers' commitments to values and socio-political change, that is, the kinds of concerns that have, as we have argued, a complex relationship with good science. Lest such commitments lead interaction designers to imposing their own perspectives and values on others, designers have an ethical obligation to aspire toward a moral equivalent of scientific objectivity. *Moral objectivity*, as described by [42], involves both perspective-independent (moral) truth claims and truth-enhancing moral reasoning processes. Making perspective-independent truth claims about just or virtuous action must, for Miller, be based on "certain fundamental assumptions" (e.g., that "justice requires equal concern and respect for everyone willing to show equal concern and respect for all"), and these assumptions are comparable to the fundamental assumptions of science (e.g., that sense perception is basically reliable). By "certain processes [that are] truth-enhancing," Miller means that some processes of moral reasoning are more likely than others to lead to moral objectivity, such as maintaining standards for justice. The ideals or symptoms of good scientific versus good moral reasoning only partly overlap, however, so any scientist's integration of scientific and moral rationality is recognized as a non-trivial problem.

Inasmuch as HCI is to pursue a socially conscious agenda, it will need to develop its own strategies for achieving both scientific and moral objectivities, conflicts between the two notwithstanding. HCI has many resources on which to draw for this work: critical theory, philosophy, as well as design and design theory among them. We focus on the feminist philosophy of science, not only because it has grappled with these issues in ways that are recognized as "astonishingly complex and worthwhile" [30] even by non-feminist philosophers of science, but also because feminist philosophy of science, unlike much of critical theory, has been applied and developed in conjunction primarily with empirical science, bringing decades of case studies and examples with it.

FEMINISM AND SOCIAL SCIENCE

We explore feminist social science in detail below, but a brief overview should help orient readers new to this material. Perhaps most importantly, feminist social science research is not a monolithic unity, that is, a tight and coherent set of methodologies or a common set of domains [49]. It is often characterized as a family of loosely related approaches with some shared features [26,11,50,40,49]. Three philosophical commitments are common to feminist research. First is a categorical rejection of the notion that science is value-free. This rejection contradicts a key doctrine of logical positivism and remains controversial within post-positivism today [33]. We return to this concern below. The second commitment is to empirical accounts of human experience: "the experience of all human beings is valid and must not be excluded from our understandings," [50], a position compatible with HCI, which has been increasingly experience-oriented and broad-minded about what constitutes a stakeholder. Third is feminism's commitment to gender. It should be noted that this commitment is more than advancing the position of women; it is a commitment to ensure that gender remains, in Helen Longino's words, "a relevant axis of investigation," that gender is not "being disappeared" any more in science [cited in 44].

In addition to these three philosophical positions are methodological considerations, including a more transparent and reflexive relationship between researchers and research subjects, pluralist strategies to access and represent different ways of knowing, and a special emphasis on accounting for female voices. More recently, many feminist researchers have increasingly looked beyond women to other underprivileged groups as well, such as minorities, immigrants, children, homosexuals, and so forth. Finally, most feminist social science includes a reflexive dimension, which considers among other things whether and how it is itself "feminist."

Preliminary Notes Concerning Feminism and HCI

Before proceeding, it is also worth making the following points to preempt a number of common misconceptions.

There is no feminism but rather feminisms. As with any other field of its age and size, feminism has no shortage of internal factions, historical paradigms, and so forth. This paper focuses on the work of feminist philosophers of science and feminist methodologists (it is not concerned with, e.g., feminist literary critics or political activists). Feminist methodologists are a subgroup within feminism that began in feminism's second wave and gained momentum in its third.[1]

Feminism is not the investigation of gender. Or, restating as applies to our field, feminist HCI is not the same thing as gender and computing. Gender and computing is a domain of inquiry, but we have already shown that feminist social science is characterized more by a body of theories and methodologies—which, to be sure were historically achieved through interrogations of women's experiences—than it is by an overriding concern for offering traditional scientific representations of gendered states of affairs. As Star suggests, echoing feminist science's post-Quinean roots, "feminism does not have to have gender at its ground zero.… [i]t was about reclaiming a certain holistic way of looking at things" [60].

Feminist theory does not favor qualitative over quantitative approaches. Feminism is concerned with representing people on their own terms, as opposed to representing them from the unacknowledged (and even denied via the rhetoric of "objectivity") perspective of dominant social classes. Both quantitative and qualitative approaches can be used in distortive or unjust ways, and both can also be used with rigor and reflexivity to reveal salient aspects of gendered and/or social life [50, 55]. Indeed, some feminist social scientists have proposed a "critical quantitative methodology" to support quantitative research [56].

*Feminism and HCI are not in conflict; HCI is not inherently "sexist" or "antifeminist"; and feminism does not operate in a privileged space over and above HCI***.** Indeed, we are committed to the position that placing feminism and HCI into a dialogue is mutually beneficial to both disciplines, as HCI and psychology, HCI and sociology, and HCI and design have all likewise enjoyed two-way relationships.

Epistemology, Methodology, and Methods

Thinking philosophically about science, one can identify different levels of theory and method and position them along a spectrum. Throughout this paper, we will refer to epistemology, methodology, and methods as constituting key levels of any approach to data gathering (in this, we are following [26, 55], and in HCI, [17, 7]). Feminist philosophers of science, along with many other post-positivist philosophers of science since Quine, have focused on this distinction as a way of demonstrating that data collection methods are tied to intellectual positions, that is, that methods are not simply tools found in the world that neutrally reveal data as it is. The focus found in many social science textbooks on the technicalities of particular methods often comes at the expense of reflection on the positions—philosophical, social, and political—embedded in our selection and use of such methods. Feminists' emphasis on this distinction helps expose the relationships between data collection and such positions, facilitating transparency and self-criticality in science.

At the most abstract and general end of the spectrum is an *epistemology*, which is a theory of knowledge, including to whom, by what means, and under what circumstances knowledge is produced. At the most concrete and particular end of this spectrum are individual data collection methods themselves. A *method* is "a technique for gathering and

[1] Second-wave feminism might be briefly characterized as emancipatory feminism, i.e., liberating women from informal forms of oppression (peaking in the 1960s and 70s); third-wave feminism includes postmodern, postcolonial, and/or multicultural feminism (peaking in the 1990s).

analyzing information," [55] such as observation, interview, survey, and so forth. Methods can be highly technical in nature, and social science textbooks are loaded with descriptions of them. In between and connecting these two extremes are methodologies. A *methodology* implements an epistemology by selecting and configuring methods in particular ways; methodology is "the terrain where philosophy and action meet, where the implications for what we believe for how we should proceed get worked out" [55]. Methodologies rely on implicit or explicit assumptions, often pointing back to an epistemology, and they can provide a coherent basis on which to decide on and explain the use of a given set of methods in a given research situation.

If, as Quine argued, theories are under-determined by data, then the *choice* of which theory to use becomes a vital concern to science. This 3-part distinction provides a normative model that clarifies the relationships among data, methods, holistic conceptual systems, and the socio-cultural value systems in which all of the above participate. The resulting clarity among these key aspects of scientific research provides a way of linking scientific and moral objectivities, hopefully supporting better reasoning in research design and better tools for evaluating the scientific and moral reasoning undergirding a given project.

Feminism's Critiques of Social Science

Feminist social science has in part developed an identity by defining itself in relation to traditional social science. That activity has involved both a philosophical critique of social science and it has also led to contributions to social science. We synthesize both the critique and the contributions in this paper, beginning with the critique.

Perhaps the most fundamental contribution of feminist philosophers of science has been their development of the critique (and its implications) of traditional science's aspirations to be value-free. Feminists offer two objections to the notion that science is value-free or neutral. First, feminists criticize scientists for performing the "God trick," that is, of speaking authoritatively and from nowhere [23, p4, the term "God trick" is from Haraway]. Harding notes that in performing the God trick, social scientists fail to disclose whose interests they are working in, typically in the name of powerful institutions, such as policy centers, schools, hospitals, unions, immigration services, law enforcement, etc. Yet these institutions, historically administered in the West by white men, have extraordinary control over the lives of all people: women, minorities, children, immigrants, and so forth. Yet most of these populations have no authorial voice in the scientific research about them and the resulting social policy used to manage them [23, 55]. The applicability of this critique to HCI is quite obvious: if interaction designers doing user research are not careful—e.g., they conflate "user experience" with "brand"—they similarly will contribute to an undemocratic and unjust state of affairs by framing their research to meet the needs of those powerful enough to pay for their services, rather than the needs of the users and stakeholders broadly conceived who will be affected by the system, as explored in e.g., [5].

A related issue is feminists' challenge to the idea of disembodied rationalism, as if scientists are purely rational beings, who are sexually indifferent, "a mind unlocated in space, time" [21]. Part of this critique is that disembodied rationalism overlooks two vital aspects of human life that are traditionally assigned to women: the care of our bodies and emotional labor. This oversight has implications for HCI: given the rise of embodiment as a theoretical orientation to interaction design [16], and the rise of affective computing as well as the role of emotion in user experience design [48, 35], failing to investigate women's perspectives in these areas, in service of an ungendered construction of "the user" [3], is problematic. Another critique of disembodied rationalism can be found in [23], which observes that underprivileged never asked for social research to be disembodied and purely rational; it is not hard to see, in fact, that any knowledge production divorced from everyday existence itself is more compatible for a group whose needs are already met, as opposed to underpriveleged groups, for whom such needs have not been met. As Harding puts it, "the questions an oppressed group wants answered are rarely requests for so-called pure truth. Instead, they are queries about how to change conditions."

The second objection to the neutrality claim is that it cuts science off from a productive source of good science: politically engaged research. In other words, whereas traditional science regards the political as an impediment to good science, feminists like Harding [23] argue that engaging in politics *directs* research and offers new avenues of insight:

> Hilary Rose argues that women's responsibility for their bodies and for emotional labor gives women a distinctive perspective on their own bodies and on the sciences. Patricia Hill Collins argues that Black women's distinctive activities in slavery, in the kinds of work Black women are assigned today, and in their ongoing struggles to support their families and communities gives them powerful critical perspectives on the limitations of mainstream sociology and the social institutions it services.

In these examples, turning to the experiences of the marginal is not only ethical, in the sense that it empowers a comparatively powerless population to participate in processes of social control, but it is also *good science*, because it introduces the potential for empirically derived insights harder to acquire by other means. Taken to an extreme, such an approach could lead to *essentialism*, i.e., the doctrine that women's experience is fundamentally different from men's, which implies that some insights are only available to women. Rejecting such essentialism is one of the central positions of third-wave feminism; however, it seems possible to promote the empirical study of marginal voices without committing to a strong essentialism.

Another critique feminists make against traditional science is that its framing of problem spaces is that it has often been neither politically neutral nor empirically justified. For example, [55] notes that social science research questions

> tend to be framed in terms of what is wrong with the person who is experiencing the problem, rather than in terms of what it is about the current social order that makes the problem likely. For example, a list of common research questions in the social sciences reads: What kind of people are likely to abuse drugs? … Why is the working class so weak and disorganized? … What is the influence of families and peers on discouraging African American children from succeeding in school? How can we teach people with developmental disabilities to have more self-determination?

Such framings seem to be a practical outcome of the voicelessness of the disenfranchised, because each of these framings reflects and perpetuates an outsider perspective on their lifeworlds.

The feminist alternative, turning to the disenfranchised as a source and guide of scientific inquiry, may lead to more benevolent framings. We can see this dynamic in a contemporary discourse surrounding women in Computer Science. This debate often frames the problem as one inhering in the women themselves: how can we raise girls' (deficient) confidence, (deficient) math competence, or (deficient) interest in technology so that they'll enroll in Computer Science? Underlying such conversations is what Harding calls an "add women" approach, in which traditional problems are addressed simply by adding data about women to the calculus, while leaving the traditional framing intact. So, "how can we raise undergraduate enrollments?" becomes "how can we raise undergraduate enrollments by adding more women?" The feminist alternative is to create knowledge about women *for women*, that is, answering questions to promote agendas that women care about (and one could apply this argument applies to any underprivileged group). Thus, if we want more women in computing, the feminist approach would suggest that rather than transforming women in primary and secondary education to better prepare them for undergraduate CS, we might also consider transforming undergraduate CS so that it more clearly relates to undergraduate women's own intellectual agendas.

[55] also cites other systematic framing problems in the social sciences. These include logical dichotomy, abstract individuation, and objectification. A *logical dichotomy* entails the analytic use of dichotomies, e.g., between work and leisure or paid and domestic labor, that seem natural to one class while failing to apply, or apply in the same ways, to underprivileged classes. An example of a logical dichotomy in HCI might be early/late adopter, which obviously has different significance for Silicon Valley professionals than it does for rural or urban youth in low social and economic status school districts. *Abstract individuation* refers to discussions of an individual "in isolation from and unconnected with its interpersonal, historical, or physical context," effectively reifying that person as a "type." In addition to examples of abstract individuation common in sociology—women of color, people with disabilities—HCI has added an important abstract individuation of its own: the user, which as [3] notes is a genderless, ahistorical individual who only exists in front of a software application. As we have seen earlier *objectification* denies the agency and subjecthood of people under study. In HCI, quite a bit of traditional usability evaluation is objectifying, because it is more concerned with task completion time and error rates than it is with the individual agency, lifeworlds, and personal goals of users. Again, in addition to the ethical concerns one can raise about these, feminists argue that they are not rational: "we social scientists do not derive [such framings] from empirical observation" [55]. Too often, we uncritically bring these framings to the data.

FEMINIST CONTRIBUTIONS TO SOCIAL SCIENCE

Feminist social scientists do not simply offer critiques from the sidelines; rather, they have distinctively contributed to both the philosophy and practice of science. In this section, we explore these contributions using the 3-part distinction introduced above: epistemology, methodology, and method.

Epistemology

Perhaps the most influential epistemological contribution of feminist social science has been standpoint theory. Feminist standpoint theory develops the idea that all knowledge is socially situated, as opposed to neutral and purely disinterested, into an epistemology. To move from the mere idea that knowledge is socially situated to an epistemology entails the fleshing out and structuring of that idea into theory, which is precisely what standpoint theory accomplishes.

It begins with a descriptive vocabulary for accounting for the situations from which scientific knowledge is produced, beginning with the researcher's unique place in and view on the world [1, 29]. In [24], Harding names the researcher's perspective a "standpoint" and continues on to identify four elements that compose it:

- **A physical location in nature**. Countering the "view from nowhere" and the "God trick," this element stresses that we are all in the physical world, and often differentially so. For example, from menstruation and lactation to their engagement with domestic labor, women inhabit a different world than men. Extending this logic, everyone, in one way or another, inhabits only certain parts/aspects of the natural and social worlds.
- **Interests in and about that location**. Because we occupy different spaces in the natural and social worlds, through natural difference and/or social segregation, we develop different interests and goals, which shape the work, including social science, that we undertake.
- **Discourses that shape sensemaking concerning the location**. To make possible understandings of locations, we use discourses, including "metaphors, models, and

narratives" [24, cited in 55] to structure our cognition and enable us to form intentions and express them to others. Such discourses are often created and maintained through powerful institutions, including universities, courts, the media, and governance.

- **A position in the social production of knowledge**. The pursuit, funding, and publication of scientific research, as well as its implications for one's reputation, tenure, etc., is also managed through institutions. People participate in these institutions differentially, from the quantity and quality of their publications, the nature of their professional networks, and so forth. Our position in the social production of knowledge shapes both what we are able to say and who hears us (and how).

Standpoint theory offers a model from which to understand articulate each scientist's "view from somewhere," providing greater transparency and accountability. Compatible approaches have been raised in HCI. For example, the "reflective HCI" series of workshops and papers [18, 53, 54] propose a more humanist, and less traditionally scientific, epistemology for HCI research and practice. Along similar lines, Star [57] warns that failing to engage seriously in the cultural context and using the facile rhetoric of user standardization should be replaced by a strong focus on "concrete situations," rather than abstract models for design.

Standpoint theory does more than flesh out what a standpoint is; it actually proposes a new strategy to achieve objectivity. Haraway [28, cited in 40] proposes "feminist versions of objectivity"; that is, limited knowledges that make explicit their positioning, their construction of power, and that seek to make visible the claims of the less powerful. Harding proposes such a strategy in [25]. There, she introduces what she calls a "strong objectivity," which engages the marginal in two independent ways. First, the experiences of marginal, rather than dominant, groups are the subject of research. As noted earlier, when privileged groups (such as academic, government, and corporate scientists) understand marginal experiences, a dialectic is staged that gives scientists a more heterogeneous view of the world. Second, Harding argues that the marginal should participate actively in setting the agenda for the scientific research, that is, answering the question, "what is this research *for*?" A second dialectic is thus staged between the moral interests (i.e., practical values and predispositions) of two groups. Foregrounding, rather than backgrounding, the moral perspectives of the participants makes this double dialectic possible, and it is this dialectic that prevents the unconscious encroachment of the assumptions and values of the privileged onto the whole project.

We note that the first of these strategies—the focus on the experiences of the marginal—is compatible with traditional scientific objectivity. The second of the strategies—the collaborative effort to decide what this research is for—is directed at moral objectivity. In other words, Harding's "strong objectivity" can be seen as an instantiation of a "scientific-moral objectivity," and as such is directly responsive to HCI's present dilemma to maintain scientific rigor while taking social issues more seriously. Such a double dialectic could serve as a template for empirical research in HCI, e.g., in ICT4D research.

Feminist Methodologies

"A *methodology* is a theory and analysis of how research does or should proceed…. For example, discussions of how functionalism (or Marxist political economy or phenomenology) should be or is applied in particular research areas are methodological analyses" [26, p3]. Methodologies are the glue that tie together our epistemologies and our methods: they help us choose which methods to use, and they become our tacit or explicit rationale for doing so. Feminist methodologies, therefore, should be seen not as a just-add-water procedure, but rather as loosely organized collection of compatible values, perspectives, and positions (many of which are not exclusively feminist). This collection in turn can inform reasoning about the selection and deployment of particular data collection methods as well as reasoning about what constitutes appropriate or desirable data sources.

We offer here a critical synthesis of issues common among the range of feminist methodologies. To lay out this synthesis, we describe these common issues using the four interrelated categories of intellectual positions, moral values, features and characteristics, and domains of inquiry. We note again that not all feminist methodologies avail themselves equally (or at all) of each of these issues and that moreover many of them are shared by other scientific and critical schools of thought.

Intellectual positions refer to normative research assumptions and goals common to many feminist social scientists. These intellectual positions have great range, and yet they also generally cohere with each other. Perhaps the most basic is that feminist methodologies are guided by feminist theory [50], that is, they are informed by "a normative framework that interrelates 'injustice,' a politics for 'women,' (however these categories are understood), ethical practices that eschew the 'unjust' exercise of power, and theory that conceptualizes gendered power within this normative framework" [49]. Research itself is implicated in power dynamics, and feminist methodologies generally seek to deal with that in some way: e.g., the injunction to be reflexive about the exercise of power [49], the importance of researchers being held morally, not merely intellectually, accountable for their practice [49], and the tendency of feminist researchers to cultivate relationships with their subjects [50].

Moral values are the positions feminists take that explicitly express their interestedness in the world. A commitment to a particular understanding of "justice," for example, is a moral value (known as a "non-epistemic value," because it is external to the "pure" pursuit of truth) that feminists argue should shape research. Such a value would be excluded from and stand in contrast to the sorts of values (known as "epistemic values") embraced by traditional science, such

as a fit between data and theories, fruitfulness, predictability, reliability, etc. In a general sense, feminist methodologies are oriented toward the production "of knowledge that will be useful for the effective transformation of gendered injustice and subordination" [49]. This value is also formulated in terms of benefits for women, from establishing shelters for battered women to raising consciousness to women's issues [13, cited in 11]. Instrumental to commitments to social change are a number of other non-epistemic values: feminist methodologies seek to represent human diversity [50] and to shift social science knowledge production away from managing people to nurturing them [55]. Given the role of information systems in managing people today, this perspective is especially urgent.

Features and characteristics of feminist methodologies offer common ways to implement the positions and values just described into actual scientific practices. Feminist methodologies often embed a self-critique of their research [13, cited in 11; 50], one example being Harding's call for a stronger objectivity than that found in traditional social science [25]. Reinharz [50] notes that feminist methodologies tend to be multi-, inter-, and transdisciplinary, in part because feminism falls outside of traditional disciplines and because it leverages so many disciplines to pursue its goals. The use of multiple disciplines and the goal of being inclusive of marginal voices means that feminist methodologies often involve a multiplicity of methods [50]. These methods often include participatory methods, because these help implement the value of empowering research subjects to shape the research [13, cited in 11]. Implementing the goal of reflexivity often means that feminist methodologies include the researcher as a person [50]. Finally, Longino observes that because the critique and development of theory is a social process, heterogeneous scientific communities, with access to broader background assumptions, are likely to identify bad assumptions more quickly than homogeneous ones [37].

Domains of inquiry refer to common topic areas of research. Feminist methodologies are used in such a wide variety of domains that it is hard to identify any domains that are particularly interesting for feminist research. Obviously, gender and inequality in general remain hot topics, because exposing inequalities makes it easier to change them [13, cited in 11]. But inequalities such as these can be found throughout life and are hardly limited to any particular domain: they can be found in literature and film; in schools, hospitals, and prisons; in governments, media, and marketplaces to name a few. Another popular domain of inquiry is experience [13, cited in 11], but again, human experience is common to all areas of human life, so this too hardly pinpoints feminists to a particular domain.

This synthesis of common issues in feminist methodologies clearly does not add up to a tangible methodology, but it reveals some of the relationships among intellectual, moral, and scientific positions and practices, which can guide ways that feminist social scientists can make practical decisions about the fitness of theories and methods. The importance of methodology, as opposed to mere technical descriptions of valid methods, has come up recently in HCI, most notably in the discussion of ethnography and the use of cultural probes in the field [20, 17, 7]. This research has critiqued the application of methods in design situations in ways that lack corresponding methodologies. Growing differences in methodological dispositions is also quite evident in experience design, where some researchers (e.g., [39]) are proposing dialogic, critical frameworks to help designers interpret experience with technology, while other researchers seek to discover "valid useful user experience measurement" [35], an approach that is the genealogical descendent of the applied psychology approaches introduced into the field by [12]. Competence in UX design today surely entails more than skill with methods; practitioners also have to make practical decisions about methods that are based on their relationships to diverging UX methodologies and epistemologies.

Feminist Methods

As social scientists, feminists have often availed themselves of traditional quantitative and qualitative methods, including in-depth interviews, discourse analysis, observation, and so forth. At the same time, feminists have methodologically valorized a number of new or non-traditional methods. [50] offers a descriptive list of many of them. Over the decades, feminist-created social science methods include group diaries, dramatic role-play, (women's) genealogy and network-tracing, non-authoritative (participatory/conversational) research, studying unplanned personal experience, the talking-pictures technique (i.e., photos taken at intervals and included in an interview kit), and open-ended speech into a tape recorder and/or essay-type questionnaires.

A few aspects of this list are worth noting for HCI researchers and practitioners. First, though feminist methodologists may claim, as a matter of principle, that they are agnostic about quantitative versus qualitative methods, the actual methods they have put forward historically favor qualitative methods. This in no way invalidates their position of qualitative/quantitative agnosticism, but at the very least it suggests opportunities for feminists—including feminists in HCI—to innovate more in the area of quantitative methods.

Second, these methods are strong at collecting data about everyday experience, that is, subjectively felt life. Given feminism's emphasis on the importance of every type of human experience, this strength is not surprising. A cost of that emphasis is a move away from established scientific models and frameworks, which are treated with suspicion when it comes to facilitating the expression of authentic accounts of everyday experience, but which, to be fair, have other benefits. These feminist methods also seek to undercut the distance between the researcher and the research subject. At stake is an enhanced empathy between researcher and subject (for an HCI analogue, see [59]).

Third, many of these feminist methods are not unique to feminism; indeed, many of them already have analogues in HCI. For example, [9] introduce "pastiche scenarios," a method that bears striking resemblance to feminist dramatic role-play methods. [27] introduces a camera that subjects wear that takes pictures throughout the day, a method that is hard to distinguish from the feminist talking-pictures method. [4] uses open-ended prose essays as a method for collecting experiential reactions to viral videos. Again, feminist science has not so much invented new methods out of whole cloth, but rather situated methods within methodologies and epistemologies that enable them to work within the contexts of scientific and moral objectivities. Doing pastiche scenarios or reflective design does not make a project feminist. Thus, the opportunity for feminist scientists in HCI is to integrate these novel methods alongside traditional methods in a methodology and epistemology that is specifically feminist.

Finally, innovation in methods also has implications for the sources of data that are collected. As [50] has shown, feminists have also promoted historically marginal voices as data sources. For example, feminists have studied texts written by women and girls, who are not "important figures." Feminists have also developed a critical vocabulary that enables an analysis of artifacts to reveal the social construction of gender inscribed into them. They have also developed strategies to expose the sexism inscribed in medical textbooks, cookbooks, advertising, and scientific texts. It also clearly relates to emerging discourses surrounding interaction criticism (e.g., [2]).

TOWARDS A FEMINIST HCI METHODOLOGY

Throughout this paper, we have summarized feminist social science's dialogue with traditional social science and place that into a dialogue with recent methodological trends in HCI. By teasing out epistemological foundations, methodological positions, and the philosophical and scientific implications of research methods, we are in a position to propose a simple, and provisional, feminist HCI methodology. Every methodology points back to one or more epistemologies, which identify its participants (who is involved, and in what ways), its processes (i.e., its theory of how information is acquired, constructed, transformed, and articulated), and its normative criteria (i.e., how we know whether it is good). Feminist HCI methodology clearly leans on feminist epistemology, such as standpoint theory, feminist empiricism, or and feminist postmodernism [44]. A key strand of the feminist epistemologies we have seen is the emphasis on the experiences of marginalized peoples; as noted more than once, this is both an ethical imperative and also an epistemological one, as marginalized groups may be privileged in their ability to create certain kinds of accounts.

In addition to feminist HCI methodology's affiliation with feminist epistemologies, feminist HCI methodologies also need to participate in appropriate HCI epistemologies. Design epistemologies (e.g., [38]) share many compatibilities with feminist epistemology, so opportunities for harmonization presumably abound there. One of these is the feminist orientation to change individual and social reality to improve human life, a goal shared by designers. More challenging, but worth exploring, is integrating feminist epistemologies with the epistemologies behind much of the best quantitative work in HCI to provide the intellectual grounds for a feminist HCI quantitative methodology.

In the following, we outline some of the key methodological positions that we expect to compose a feminist HCI methodology:

- **A simultaneous commitment to scientific and moral objectivities.** Feminist methodologies are guided not only by the epistemic values of traditional science, but also by non-epistemic values, such as "ontological heterogeneity, complexity of relationships, diffusion of power, applicability to current human needs, and novelty" as well as foregrounding gender as an axis of research [44].
- **Connection to feminist theory**. Feminism is a diverse and heterogeneous body of theory, but in one way or another, feminist HCI methodologies should explicitly tie themselves to some part of that body of work. This connection to feminist thought, and not to the problem domain of gender and computing, is what makes an HCI methodology feminist.
- **A commitment to methodology**. A feminist methodology will not lose sight of the fact that methods must be chosen and used based on assumptions, commitments, and goals, and that these should cohere and be acknowledged as a methodology.
- **An empathic relationship with research participants focused on understanding their experiences**. Feminist social science maintains a strong commitment to people's experiences, and we expect that to come through. A similar HCI methodology can already be found in [59], though it is not offered vis-à-vis feminism.
- **Researcher/Practitioner Self-Disclosure**. Practice should involve a disclosure of the researcher's position in the world, her or his goals, as well as the researcher's position in her or his intellectual and, to an appropriate extent, political beliefs.
- **Co-construction of the core research activities and goals**. To the extent the following are appropriate, researchers and research subjects should collaboratively frame research questions (e.g., as opportunities to nurture, rather than control, populations), choose and implement methods, analyze data, and above all decide how the data and analysis will be used in the social world (e.g., its design and policy implications).
- **Diverse and/or mixed methods to support dialectic information gathering and knowledge production**. Feminist epistemologies stress the dialectic nature of social advances (a position shared also by Marxist epistemologies). Achieving this dialectic demands a genuine heterogeneity of data sources and interpretation, and this heterogeneity often can be achieved through transdisci-

plinary and multimethod approaches. A feminist HCI methodology sets such dialectics into play.

- **Reflexivity**. Research should be characterized by ongoing self-questioning about whether the research is delivering on its ambitions to be feminist, improve human quality of life, and undermine rather than reinforce oppressive social structures, etc.

CONCLUSIONS

Obviously, HCI professionals do research in many contexts and for many different reasons. As [57] reminds us, designing in response to concrete reality is not just a slogan, but a reminder to be epistemologically and methodologically flexible. Our proposed outline of a feminist HCI methodology is anything but a prescription for how to do feminist HCI. The concrete situations in which we find ourselves may make some of the above extremely or not at all important. Likewise, methodological issues not mentioned above may be paramount. Practitioners may have insights or experience with situations that we have not imagined.

HCI practice involves a negotiation of dialectics, between scientific and moral objectivities, between guiding theories and stubborn reality; between the interpretations and goals of HCI practitioners, those of users, and those of society. The goal of any methodology is ultimately pragmatic, not dogmatic: it is worthwhile only inasmuch as it helps to guide our everyday choices as we seek to contribute to knowledge about and design for better human life experiences and a social world in which to live and share them.

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