

You Keep Using That Word: Ways of Thinking about Gender in Computing Research

OS KEYES, University of Washington, United States

CHANDLER MAY, Johns Hopkins University, United States

ANNABELLE CARRELL, Johns Hopkins University, United States

CSCW researchers have long inquired into the ways that identity informs, and is informed by, the design of technological systems. Gender is a regularly considered aspect of identity, with extensive work documenting and exploring gendered experiences and designs with the aim of addressing inequalities in, or through, design. Recent work has questioned the way that we conceptualise and ‘measure’ gender, advocating more nuanced classificatory schemes to avoid silencing or obscuring trans and/or non-binary experiences. Building on and extending this research, our work examines how gender is conceptualised more broadly. Drawing from a range of theoretical perspectives in gender studies, feminist and postcolonial theory, we argue for the treatment of gender as “multiplicitous” when we conceptualise and interpret research, in order to avoid unintentionally perpetuating silencing and inequality even as we work to tackle it. Illustrating our argument with examples from both within and without CSCW, we suggest both new research directions for CSCW scholars inquiring into gender, and sensitising questions that scholars can use when constructing and evaluating studies.

CCS Concepts: • **Human-centered computing** → **Collaborative and social computing theory, concepts and paradigms; Collaborative and social computing design and evaluation methods; HCI theory, concepts and models**; • **Social and professional topics** → **Gender**.

Additional Key Words and Phrases: gender, methodological design, multiplicity

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1 INTRODUCTION

“Operational decisions have real consequences. They shape our common sense understanding of the world, justifying existing structural conditions and influencing the distribution of resources. Seemingly small operational decisions can significantly influence research findings, and thus shape policy interventions and policy impacts, intended and otherwise...assumptions and decisions made during the operationalization process should be subject to the same types of critical discussion as other steps in the research process.” [136, p.9]

Authors’ addresses: Os Keyes, University of Washington, 428 Sieg Hall, Box 352315, Seattle, WA, 98195-2315, United States, okeyes@uw.edu; Chandler May, Johns Hopkins University, 3400 N. Charles Street, Baltimore, MD, 21218, United States, ccmay@jhu.edu; Annabelle Carrell, Johns Hopkins University, 3400 N. Charles Street, Baltimore, MD, 21218, United States, acarrel3@jhu.edu.

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Social computing researchers, and those working in Human-Computer Interaction more broadly, have a longstanding interest in mapping how gender, race, disability and other aspects of identity are treated in sociotechnical spaces: the perils, and the *promises*, of technology for those othered by society. This work includes inquiries into inequalities in access to spaces or treatment within them, the ways in which technological spaces serve as sources of safety and community for vulnerable communities, and work to understand how aspects of identity and difference are themselves co-created with technology [119].

Gender has been a particular focus of much of this work. Over the last few years, several researchers have engaged in *meta*-analysis, critically considering and proposing changes to the ways in which we undertake research into gender: the design of and categories represented in surveys is a key example. This vital and necessary work is often positioned as contributing to the inclusivity of the discipline, and avoiding the harms that result when our understanding of technologies does not allow space for perspectives and lives outside of a (rigid, essentialised) binary of gender [133].

In this paper we seek to expand on this work by critically attending not simply to how we ask about gender, but what we mean by “gender” at all: how researchers operationalise gender, the tensions and contradictions this produces, and alternate ways of considering the concept in how we undertake our research. In particular, we draw from literature in postcolonial studies, gender studies, trans studies and feminist theory, situating it within the research we undertake and (we hope) making it accessible to a CSCW audience.

Informed and indebted to prior scholars, particularly Maria Lugones, Vivian M. May, and Jennifer Nash [85, 90, 102], we argue that researchers should treat gender as fundamentally *multiplicitous*: as a concept with many meanings and relations to individuals and communities. These meanings vary depending on the type of research question, the places that work is undertaken, and the participants in those places. From this, we suggest both new lenses through which gender can be understood and researched, and sensitising questions that researchers interested in studying gender can apply to ensure that their framing *of* gender both serves their needs and attends to the ethico-political implications of inquiring into identity and community.

2 BACKGROUND

2.1 Social Computing and Social Inequality

For good and ill, social computing systems play a vital role in many people’s experiences of modern life, serving as a site of community formation, alienation and knowledge production. Early examinations of the social and communicative possibilities of computing pictured computer-mediated spaces as almost utopian, reducing inequalities and differences between people.¹ Computer-mediated spaces were spaces where gender, race, disability, poverty and every other source and consequence of differentiation would vanish into the aether [89, 137, 139, 140].

In practice, of course, nothing of the sort happened. At this point we have a vast array of both theoretical and empirical works demonstrating the profound inequalities in access to and experience of online spaces. While social computing has *altered* inequalities, this is less a simple reduction or increase in harm and more a complex collection of risks, opportunities, and *alterations* to people’s experiences of life and the very attributes we associate with identity labels and categories [17, 63, 89, 100, 145].

Researchers have thus turned their attention to identifying persisting inequalities, and the way that inequality and difference shape the design and experience of technology. Choosing gender (the focus of this paper) as an example, we can point to a wide array of literature that

¹The idea of uniformity as utopian is, of course, its own dangerous idea with its own history [78].

examines inequalities and different experiences from both observational and intervention-oriented perspectives. CSCW has long served as a hub of work into questions of inequality and identity, due in part to the fact that, as Sarah Fox, Jill Dimond and collaborators note, “the study of power and oppression is and has always been integral to CSCW research” [47], and so it is unsurprising to see much of it appear at CSCW itself, and in overlapping venues. Examples include studies into gender differences and inequalities in online marketplaces, social computing platforms and collaborative learning systems [46, 65, 147], inquiries into the ways gender is understood and manifested in the design of technologies [59, 76, 123], and explorations of how trans and/or non-binary users appropriate and use technological spaces (along with exercises in *designing* such spaces)[55, 56, 122, 135]. Even when gender is not the direct subject of *inquiry*, researchers often surface it in describing participant populations [88, 153].

2.2 Measuring Gender

Each of the studies we highlight above—particularly, but not exclusively, those that are observational—require the identification and classification of people’s identity. Correspondingly, there is also extensive work being undertaken into new and different techniques for inferring and identifying gender. One line of work—motivated by the potential that social media platforms open up for large-scale data collection and observation—has focused on “big data,” seeking new methodological approaches to identifying users’ gender when faced with millions of possible participants [148].

Another line of work stems from a range of critiques and concerns about the practices that surround this measurement: the way that categories of gender are constructed by researchers [76, 126], the criteria used to determine membership [38], and the way that researchers think about “gender” in the first place [7, 76, 81, 126]. As Samantha Breslin and Bimlesh Wadhwa note, the field largely has “only limited understanding of what gender is and how it can be approached in design” [20]. A prominent area of concern has been the frequent construction of gender as a binary variable taking values of “woman” and “man” (or “female” and “male”, conflating gender with sex) in the design of computing research, a practice that risks silencing the voices of both those who fall outside that binary and minority groups within it [76, 127, 133]. As a consequence of this silencing, the experiences of those people and communities are often either unknown, or actively “written out” of the way systems are designed.

Perhaps in response, a number of researchers, particularly Oliver Haimson and Katta Spiel, have (over multiple works) sought to articulate a more inclusive way to frame measurement instruments for gender [69, 132]. Looking specifically at survey design, they advocate a five-category approach, including “prefer to self-describe”, an option accompanied by a free-form field enabling self-description. The proposed design is described as “suitable for most Western contexts with which [the authors] are familiar” [132], and is a drastic improvement in participant inclusion over more essentialising approaches.

2.3 The complexity of gender

As Haimson and collaborators note, however, questions of participant inclusion versus exclusion only scrape the surface of issues surrounding the measurement of gender [69]. Classification and measurement are inherently power-laden activities [108, 134], and how we conceptualise and approach gender thus has implications not only for who is included within our work, but for what research questions can be asked, how answers can be contextualised, and the ethics of asking at all.

Given this complexity and these issues of power, we want to take up what Haimson describes as the “starting point” of more-inclusive categories and continue moving forward in critically delving into and reflecting on how we understand gender in our research. In the absence of doing so, we worry that these questions of complexity and power will be pushed aside: that the proposed

expanded category system will be adopted, but in a way that treats it as a full, not partial solution, by researchers seeking a view of gender that is stable, simple, and in the words of Berlant “ontological, dead to history, not in any play or danger of representation, anxiety, improvisation, desire or panic” [14, p.72]. Such an approach risks simultaneously continuing the pattern of silencing those whose experiences fall outside that frame, and more-generally failing to attend to the power-laden nature of gender and research into it.

Correspondingly, it is vital to continue attending to the nuances and multiplicities of gender. If gender is “culturally and historically specific, internally contradictory, and amenable to change” [66, p.59], then expanding categories *alone* is insufficient to capture the complexity and nuance of what gender means, or can mean. Further, as Condit notes, “categories will necessarily be fragmentary and context-bound” [31, p.97]; the utility of a single suggested category set will vary in time and space. Eliding this, and treating expanded categories as a self-contained solution, risks stabilising our idea of gender in a way that does not reflect how people live, or the changes in notions of gender produced with time.

What we suggest instead, then, is an approach that includes a critical and reflective examination of how we are operationalising gender in practice and what questions we ask in doing so. With that in mind, we have written this paper in order to unpack various ways in which gender might be considered “multiplicitous”, and the applicability of this to the design—and consequences—of social computing research. Drawing from a range of theoretical perspectives in the social sciences, we contrast and illustrate them with examples from computing research in order to situate the theoretical frames within our work.

Our work is heavily informed by both intersectional and transnational feminist perspectives on gender, although (as discussed below; see 4.3) we are not confident classifying this work entirely within those frames of thought. But we would be remiss if we did not point to and credit the scholars *inside* the CSCW community who have worked to make these frames available, and have already brought them into the discipline’s scholarship; we work to do so below. Further, it is worth noting that there are already works attempting to broaden the community’s practices around gender beyond labels alone—see, for example, the “HCI guidelines for gender equity and inclusivity” and Burtscher & Spiel’s recent work on “developing (gender) sensitivity in HCI research and practice” [23, 125]. Our work is not *de novo*, and our contribution does not claim to be some novel, universal panacea. Our hope in this paper is simply to fill in some of the gaps; to expand, in long-form, the range of considerations and questions about gender that researchers engage with, and in doing so, ensure computing research about gender—as Samantha Breslin and Bimlesh Wadhwa put it—“[maintains] complexity: complexity in users’ experiences, complexity in the types of feminist or gender theory being used and considered, complexity and diversity in the designs and uses being created” [20, p.51].

3 MULTIPLE FACETS OF GENDER MEASUREMENT

In order to deepen the field’s consideration of gender’s complexity and nuances, we suggest that researchers should look outside it—that we should look to disciplines and perspectives still in the process of being related to computing by much of our work. To this end, we draw from a range of feminist, critical and postcolonial scholars in exploring the fundamental *multiplicity* of gender, and the way this challenges (and is challenged by) research approaches which assume simplicity. In particular, we highlight:

- (1) Multiple *concepts* of gender: the different components of identity, society and embodiment that researchers may (or may not) be referring to when we say “gender”;

- (2) Multiple **configurations** of gender: the way that race, disability and other aspects of identity are fundamentally intertwined with how gender is understood, and;
- (3) Multiple **contexts** of gender: the ways in which gender’s meaning(s) vary and differ in small and large ways in different contexts, and the implications this has for how researchers approach studying gender in any particular space.

3.1 Multiple concepts

One prominent area of multiplicity, previously discussed by Morgan Klaus Scheuerman and collaborators [124], is around what precisely we *mean* when we say “gender”. In methodological terms, gender is a *proxy variable*, a term that stands in for multiple, more complex and more precise concepts.² There are many ways of decomposing this multiplicity of gender [52, 75, 84]; one way of breaking down how researchers use the term is to see “gender” as referring to one of:

- (1) *bodily attributes (sex)*: genital anatomy [3], experiences with menstruation [42], experiences with pregnancy [35];³
- (2) *gender identity*: a person’s “felt, desired or intended identity” [52, p.2];
- (3) *perceived gender*: the way in which a person is *gendered* and perceived by others [86], and;
- (4) *gender roles*: the (often gendered) behaviours and roles a person occupies [45].

These concepts are frequently intertwined, with multiple concepts in play at any given time [75]. Gender inequality in online spaces, for example, is likely to involve differences in how users are perceived by each other, how users desire to express themselves and *be* perceived, and any incongruence between them. As feminist scholars have argued with regards to “cultural” versus “embodied” ideas of gender, the answer is frequently not one or another, but both interweaving and materialising together [62, 118].

But while often overlapping, different conceptions of gender are (quite clearly) not identical—and a reductionist approach of treating “gender” as encompassing several or all of them can substantially hinder research. For example, consider a recent study of the informational and emotional support users receive in online discussion forums. In this study, researchers Wang and Jurgens hypothesise that a gender disparity in the degree to which people experience anti-social behaviour online, demonstrated in prior work, also exists in the degree to which people receive support online [149]. Wang & Jurgens train binary classifiers to predict the gender of a user’s display name and (separately) that of their post content [149]. This approach measures how a user’s gender is *perceived*, approximating how users replying to a post might interpret the poster’s name and post content as containing information about gender. The analysis by Wang & Jurgens is not lacking in nuance: in particular, the gender of *names* is modelled alongside (rather than as part of) the gender of individual *posts*. However, the prior work motivating their hypothesis does not specify which concepts of gender are in use [39], frustrating the synthesis of a simple theory from the two studies’ findings.⁴

The binary gender classifiers used by Wang and Jurgens reflect the potential causal relationship between a poster’s *perceived gender* and the support they receive. However, on the other side of the interaction, we might expect that a replying user’s *gender roles* and *identity* are causally related to the support they provide, while their *perceived gender* is at most correlated. For example, a replying user may believe providing the poster with support is expected in their social role or congruent with

²There is a long history of this kind of “clumping” around gender, as Jemima Repo discusses in her overview of John Money’s initial definition of gender identity [115].

³Despite an extensive search, we were unable to find examples of research at CSCW focusing on more male-associated anatomy: this reinforces our call for research into the “unmarked” aspects of gender in Section 5.2

⁴Indeed, “gender” is delineated only as a “personal characteristic” in the prior work [39] but aligned to *sex* in the subsequently preceding study [1], whereas Wang and Jurgens’s hypothesis is expressed in terms of *gender identity* [149].

their gender identity. Wang and Jurgens’s methods measure those concepts indirectly, assuming that a user’s gender expression (perception) is a performance of their identity. That assumption is complemented by their representation of replying users’ gender identities by only name-based gender predictions and not reply-content-based predictions [149]. Nonetheless, that assumption can and should be disclaimed—as Wang and Jurgens have done—and moreover, interrogated.

In this context, the interventions that researchers have made into what *set* of categories we use is, while necessary, also insufficient—as those researchers recognise. Refined techniques for categorising gender identity in a more thoughtful way are vital, but only solve some of the problems in this space when researchers are examining perceived gender, social roles, or conflicts between multiple conceptions of gender, all of which require additional nuance and methodologies. As our discussion of conflicts and nuance suggests, attending in a top-down way solely to what categories are used misses questions of power. These are questions of whose experiences are treated as legitimate enough to deserve distinct identification and what happens to those whose experiences are not—or whose experiences fall “between” multiple conceptions of gender and so are erased in analysis.

A more nuanced (and we would argue, better) approach is for researchers to decompose their use of “gender” and seek out ways of measuring the multiple concepts relevant to their research that underlie the term. In our previous example, Wang and Jurgens already disentangle two subconcepts of a user’s perceived gender [149]; we argue for further disentangling other concepts of gender. One source of tools here is social psychology and gender studies, both disciplines which have long been interested in and wrestling with the complexity of gender. Results of this investment include questionnaires and measurement tools for not simply gender identity, but also a user’s perceived gender [86], perceived conformity with gender roles [151], and internal model of gender [94], along with (for example) measures of gender expression designed specifically for lesbian and bisexual women [83]. Such approaches have already been taken on *occasion* in computing research—for example in Rubin *et al.*’s work on online harassment, which examines not simply gender but adherence to and security in norms around masculinity [121]—but could be adopted far more widely.

Taking such an approach not only enables researchers to examine gender with more nuance but—as a result—allows new stories, experiences and perspectives to come to the surface. As discussed above, simple, conventional measurements of gender as a monolithic and universally agreed-upon concept cannot aid us in seeing or understanding (amongst other things) the experiences of those who do not fit such a frame; whose masculinity does not fit their society; whose femininity fits their society but not their community; who are not congruent with gendered expectations, expectations far more complex than can be summarised in a single, categorical variable. Those who do not fit are, in many respects, those who most torque with and are unequal under gendered power—and so those whose experiences must be made most visible in efforts to identify or *address* that inequality [92].

3.2 Configurations of gender

An additional level of complexity is added when we consider the ways that different concepts of identity are, or can be, factors in gendered behaviour and expectations—and the complicated history of research into relationships between gender and identity. In normative social computing research, it is standard to distinguish “gender” (or: whatever concept of gender is being investigated) from sexuality, race, disability, and other aspects of identity. To a certain degree this makes sense, both pragmatically and politically. To use one example, the assumption that gender and sexual orientation can or should be conflated has been heavily criticised [52], and has often led to researchers making problematic assumptions about the gender expression or identity of sexual minority participants—assumptions with dangerous consequences [144]. Conversely, the assumption that heterosexual

people are comfortably gendered obscures and leaves uninvestigated the complexity of “normative” experiences.

But precisely *because* of the ways that axes of identity operate as axes of social power, there are often interactions: ways in which a participant’s experience of gender (on large or small scales) is heavily informed by other aspects of their identity or perception [117]. The correct “doing” of gender often involves adopting heterosexual norms, something that has been observed in online spaces [116], while (inversely) there are often gendered conventions within and dividing LGBTQIA communities [68]. Indeed, Butler and many other scholars argue that the regulation of gender as a normative and binary concept often involves “the institution of a compulsory and naturalized heterosexuality” [24, pp.22-23], embroiling efforts to disentangle the relationship between gender and sexuality in social interaction. There is already some existing work in social computing looking at this; a particularly good example is the research of Freeman *et al.* into gender and sexuality in online games’ “marriage” components, which treats both gender and sexuality as co-constructed societally and through engagement with the platform in question [48]. Similarly, the interweavings of gender and disability are well-established: particular disabilities are culturally gendered [93], alter the gendered expectations placed upon individuals [50], and (from the perspective of, say, a disabled person evaluating their sense of gender) often interact in complex ways in articulating identity [29]. More broadly, the construction of disability versus ability has itself been compared to the matrix of gender and sexuality [96]. There are a few papers within social computing, participatory design and HCI that deploy this understanding, particularly the work of Emeline Brule and Katta Spiel [22], but these are few and far between: by and large, inquiries are into gender *or* disability, not both.

The same is true of race and ethnicity; a range of literature has demonstrated that the ways in which a person is gendered is often strongly informed by how they are racialised [9, 19, 32, 67, 143]. But despite this, investigations of gender norms and gendered experiences frequently “remain predicated on an unremarkable whiteness” [2], producing uneven knowledge about the nature, span and interactions of gendered experiences and inequalities [37, 106]. This also leads to *inaccurate* or obfuscated knowledge, since it means that where race *is* taken into account, it is often treated as secondary to or oriented around gender. The limitations of this are illustrated in Ogbonnaya *et al.*’s “Critical Race Theory for HCI”, a paper that beautifully illustrates the potential and power of nuanced theories to improve researchers’ work to address injustice. Drawing on the long history of critical race theorists and other scholars—predominantly women of colour—confronting precisely this issue [30, 33], whether something is down to race *or* gender is the wrong question to ask [104]. Instead, the question is about the interplay of race and gender, and the way they contradict or combine—a question scholarship that treats gender as an isolated variable is not equipped to adequately answer.

These same silences often appear around other aspects of identity. As Medina argues, even while recognising the multiplicity of identity, research contexts still involve researchers assuming that “these different aspects of identity can be separated out *analytically* so that we can account for each one in abstraction from the others”, an assumption that he identifies as “distorting and politically dangerous, for it occludes relations of interdependence and it blocks paths for resistance and subversion” [97, p.657]. Examples of this are widespread in CSCW; that research which *does* inquire into both gender and race frequently treats them as literally “independent variables” [60]. If anything, we are likely understating the prevalence of this phenomenon; as a set of authors we have (taken collectively) experienced the interplay of having disabilities, sexualities and gendered trajectories that fall outside “the norm”, frequently in combination. But as a uniformly white group of collaborators, we are still training *ourselves* out of leaving race unmarked, and implicitly presuming an absence of racial dynamics in our experiences of gender.

3.3 Contexts of gender

Finally—building on our comments on the multiplicity of gender and the shifting nature of categories and identities—gender must be seen as *contextual*.

By this we mean two things; first, that notions of gender and its expression vary in different (large-scale) cultural contexts. Research frequently operates to “produce a view of women (across time and cultures) as fundamentally homogeneous...even when national and/or cultural differences are acknowledged, these are treated as second-order phenomena, so many variations on a universal theme in which gender always means the same thing” [44, p.72]. But this is not the case; the work of Oyèrónké Oyèwùmí articulates brilliantly how western notions of womanhood fail to land within African contexts [105], while postcolonial and global scholars of gender more broadly have discussed the ways in which ideas of gender are shaped in both theory and practice by cultural context and collision. Ideas of gender appear differently in different contexts, and those contexts are constantly in motion and interaction, blurring and overlapping in ways that are both dominating (as we consider the imperialism of exporting normative western ideas of gender) and synthetic. The result is new spaces: “borderlands” [6], often involving new configurations of gender and its role in structuring lives and societies. A prominent example can be seen in Katrina Roen’s work examining the gendered identities and narratives of Indigenous, gender liminal people in New Zealand. Rather than adopting either Indigenous or western narratives in *isolation*, participants—living within and between two contexts—frequently hybridised both, or selectively and contextually emphasised particular dimensions in the spaces in which they made sense [120]. The same tension is found in many other cases, such as Asian-American women articulating and being held accountable for different gender norms, with different power dynamics, in different spaces [110].

What are the implications of this for researcher practice? At one level it adds a clear caveat to standardised approaches to survey design: whether a design is “correct” or not will vary depending on context, as Spiel & Haimson implicitly note [132]. Existing research within gender studies and sociology demonstrates that even inclusively intended surveys are—when premised on a normative western understanding of gender—frequently alienating and confusing to Indigenous respondents [10]. Indeed, as Sandra Harding argues, “the tendency for Westerners...to assume that gender relations are...universal has resulted in great harm to other cultures...prevented [researchers] from grasping distinctive gender issues in different cultures” [64, p.111]. Along these lines, researchers may find a need to revisit the primacy given to gender as an organising scheme of society, identity and interaction. Maria Lugones, amongst others, has challenged the way that the assumption of gender as a universal primary vessel for power and personhood obscures the ways that race, disability or sexuality may be more vital to the dynamics of particular spaces or cultures [85].

It is worth observing that context is not just a matter of large-scale cultural dynamics, appearing as a factor only when switching between continents or nation-states. Context may be a matter of individual social computing platforms, spaces or communities; of switching between (as Pyke & Johnson’s study adroitly demonstrates [110]) home and school, of switching between Twitter and Reddit. In each of these spaces, gender may be understood and done differently, even if this difference is not explicitly considered by those present: the question of whether, say, long hair is feminine, has different answers not only depending on your country but depending on your presence in a punk bar. Taking context into account, then, means not only avoiding universalism at large scales, but starting from the assumption that gender and its undertakings may vary in many ways in many sites, with participants passing through a multitude on a day to day basis [28, 77].

Both cases require us to attend to the frequent assumption that gendered assessments or presentations can be transferred seamlessly from site to site. An illustration of this can be found in the

study of Hannak *et al.*, which relies on coding by Mechanical Turk workers to infer the genders of TaskRabbit users for the purpose of understanding inequalities in task assignment and payment. While the work's purpose is good, it operates on the fundamental assumption that the Mechanical Turk workers exist in the same contexts—that is, “code” gender in the same ways—as TaskRabbit workers and employers, respectively. As the work of Sen *et al.* has demonstrated, the applicability of Mechanical Turk codings is rarely so simple [129].

The consequences of failing to take a more nuanced approach are themselves multiple, but an important consideration is the impact on the space our work opens up for activism, organisation and change. As scholars examining campaigns for the rights of sexual and gender minorities have repeatedly demonstrated, the wholesale porting and application of putatively-universal identity categories to new contexts can be (at best) a mixed blessing. Not only do such categories (and those engaging with them) risk being seen as alien and dangerous—particularly in environments with histories and presents strongly shaped by the impact of colonialism—they often act to exclude and/or other existing conceptions of identity. Correspondingly, those who can participate in and *benefit from* the work are unnecessarily constrained, and barriers for those outside it persist [74, 79]

4 DISCUSSION

In these ways and potentially others, gender is complex and multi-layered. Measuring gender is a problem, and that problem involves much more than deciding on a set of labels: “Gender” implicates several distinct concepts, which are arranged in multiple configurations with one another and other elements of identity, and that structure varies not only across continents and centuries but across day-to-day social contexts. We turn our attention to the *consequences* of multiplicity in measuring gender before proposing a strategy for addressing them. We consider the following:

- (1) How ignorance of gender multiplicity leads to the *invisibility* and of those outside the gender binary and makes their existence *unintelligible*;
- (2) How binary gender classification in research informs and influences the systems we as researchers build;
- (3) The placement of gender multiplicity, as a concept and toolkit, in relation to intersectionality.

4.1 Invisibility and Intelligibility

So why (we ask somewhat rhetorically) does this complexity and multiplicity matter? We would suggest two strongly interrelated reasons; questions of *ignorance* and questions of *power*.

A simplistic view of ignorance is as an absence of knowledge; a more complex view understands ignorance as constituting not simply “what we do not know” but as an active, socially shaped and cultivated phenomenon. In other words, a lack of knowledge is frequently the product of a selective view of the world, of active work, not simply a passive *lack* of work.⁵ This is true within research as well as wider society; the frames we bring to research shape not only “what we can think of, what we want to ask, what we want to do” [54, p.184], but also those questions and directions we *do not* pursue.

Importantly, this ignorance is not evenly distributed [109]: It is not simply the case that a simplistic view of gender uniformly fails to generate knowledge about, say, the role(s) of *masculine people* versus *men* in a particular environment. Instead, the burden will disproportionately fall on those populations whose identities and experiences are not easily captured by a model which assumes masculinity and manhood to be one and the same [57]. Simultaneously, the typical assumptions of gender as simple, fixed, and (at most) a two-dimensional grid of possibilities are likely to lead to

⁵As a simple example, consider the common practice of asking study participants to share gender identity labels and removing participants identifying beyond a cisgender woman/man binary prior to analysis.

precisely those norms remaining unquestioned—despite substantial evidence that even putatively “conventional” lives frequently involve messier and more complex experiences of gender than assumed [71, 82].

As an illustrative example: Why, among all of the CSCW and HCI research that aims to inquire into gender, are there so few papers even *mentioning* Travesti or Hijra communities [21, 61, 107]? Part of the answer is undoubtedly that both communities exist outside the western geographic spaces in which much social computing research is done—but another part, we suspect, is that both communities are not intelligible through the simplistic model of gender we frequently deploy. The former includes people assigned male at birth who engage in feminising social and medical work, but refuse to be considered women; the latter encompasses not simply people who would be labelled “trans” in a western epistemic context, but also intersex people and those who cannot reproduce [80, 114]. Our hypothesis is supported by the language used to describe Travesti people in the one paper that mentions them, which (while noting the distinction between trans and Travesti identities) argues for the distinction to be seen solely as class-based [107]. While there are frequently class-based components to identification and community, the implication is still that “but for” class, Travesti would be women. Such a framing both conflicts with the Travesti’s own understanding of gender [142], and leaves researchers liable to sand off or gloss over those aspects of Travesti experience that do not map to their ideas of womanhood. Similar phenomena are found in research engaging with Hijra lives: Gayatri Reddy and Dutta & Roy’s explorations of and reflections on Hijra experiences in India and Western scholarship surfaces similar class-based components of identity, yes, but similar inaccurate assumptions from outside researchers, to boot [40, 114].

An approach to gender-based research which treats gender as a pre-existing, singular concept to be applied to those areas under investigation will, by necessity, render invisible and unintelligible those lives and research contexts which do not fit the assumption about what “gender” looks like, something extensively documented in research more broadly with regards to Indigenous conceptions of gender [8]. And in a less marked and obvious fashion, such an approach will also shape the questions we ask and the aspects of gender we investigate in those spaces we do, in some way, study. If we understand our framings of identities in general (and gender in particular) to be tacit, taken-for-granted and universal, what happens when gender appears in spaces or contexts where it “shouldn’t”? [11, 87]

To be clear, ignorance is not *uniformly* a thing to be overcome: there are ethical and moral ignorances, intentional refusals to inquire into domains where knowledge has dangerous consequences.⁶ And ignorance can play an important and productive role in resisting violent systems of control: a refusal to be “intelligible”, to register cleanly on the conceptual grid of states or other outsiders to a community, often enables the protection of knowledge, culture, lives, and ways of living [128]. Audra Simpson’s examination of Mohawk practices of maintaining sovereignty in Kahnawà:ke serves as a case in point, demonstrating how the active refusal to engage with settler state systems of governance—the refusal to legitimise them by participating in exchanges of power and knowledge—serves as a vital practice to reinforce epistemic and/or political independence [130].⁷

⁶Plentiful examples are provided by Robert N. Proctor in his introduction to “Agnotology”, including firearms, looms, and forms of fishing net; as he argues, “if knowledge is power...then to dismantle certain kinds of power may require the reintroduction of bodies of ignorance—hence impotence—in that realm...who could lament the loss of knowledge of all the world’s ways to torture, the cognitive equivalent of smallpox stocks?” [109, pp.22-23]. A beautiful example and articulation of this line of thought—one from within collaborative computing—is provided by Kimberly Christen’s reflections on Indigenous knowledge and notions of “open knowledge” [26].

⁷For more on Simpson’s line of thinking and theorising, see [131]; a more Science and Technology Studies perspective on refusal in the context of research can be found in Ruha Benjamin’s work on the topic [13]

But this refusal is, vitally, a *purposeful* one by those seeking to remain outside externally imposed frames of knowledge. As Star & Bowker put it, “Not all silences are benign, nor are all malevolent. Those implemented in the service of erasure are immoral; those created or held for the purpose of reflection, rest and re-thinking are not” [134, p.279]. But discovering which is which, and avoiding the violence that occurs “in the service of erasure”, requires us to—first and foremost—take the time to critically inquire into our silences, our absences, and what our ways of knowing lack.

4.2 The power of categories in design

This leads nicely into our second reason for urging a more multiplicitous view; the question of *power*. CSCW researchers do not, after all, engage in our work solely “to know”: frequently, we aspire to make some positive impact on the design of technological systems, and on society more broadly. Even if this is not an *individual* researcher’s intent, the social role of formal knowledge generation means that research invariably has some wider implications, positive or not [12, 111]. Research we undertake and systems we design often act to reify concepts—to “turn ideas into things” [41, p.226], frequently with far more sticking power than broader rhetorical or cultural arguments [27]—and researchers in feminist STS and HCI have consistently demonstrated how technology and research into it plays precisely this role with gender [103, 119, 146].

Consider, for example, the research avenue of gender prediction. Many dozens of papers have been published on developing classifiers of social media users’ gender based on their posts, profile photos, usernames, or other information. This research generally models gender as a binary variable taking the values “female” and “male,” and finds application in enabling gender-based targeted advertising, where again gender is generally treated as a binary variable taking values of “female” and “male” [17]. User experience is thus bifurcated based on disclosed and/or predicted binary gender identities, reinforcing existing gender inequalities [34]. The choice to represent gender as fundamentally binary in social media research and technology both reflects and reinforces a binary gender convention in marketing practices and (recursively) in social media research and technology itself [17]. By collapsing multiple gender components, configurations, and contexts into two discrete possibilities, then, much gender prediction research is poised to regulate gender non-conformity, from women in tech and men fighting against sexual violence to the very existence of non-binary and genderfluid people. Scheuerman *et al.* illustrate how facial analysis systems, which similarly propagate a binary conception of gender privileging gender expression over other aspects of identity, create a potentially harmful *torque* for trans and gender-nonconforming users of downstream systems [123].

When research is undertaken with a simplistic framework for understanding gender—and more broadly, a framework that does not acknowledge the flexibility and mutability of gender in different contexts—the technologies and ways of thinking that we build will incorporate precisely this simplicity. And the costs of this are profound [41]; the delegitimation of those who do not fit dominant paradigms of being, the authorisation of discrimination and violence against them, and a narrowing of the scope of possibility for all of us. Such changes frequently come back to haunt society and research, informing, in turn, the way that researchers perceive and construct the world—and subsequently design and implement our work [53].

In other words, a view of gender that treats it as a static and generic variable for measurement, rather than something constructed in ways that fundamentally implicate power, risks both constraining the research we might undertake and—because of the vital role research plays in meaning-making, and the role meaning-making, in turn, plays in articulating and legitimising different ways of being and different possible futures and futures—substantial harm [36].

4.3 Intersectionality and Multiplicity

A likely question at this point in the paper—if not earlier—is how this call for multiplicity relates to the range of ongoing calls for intersectionality in CSCW and HCI. Intersectionality, after all, is largely about “thinking about the problem of sameness and difference and its relation to power” [25, p.795]—precisely what we intend to do with this paper.

The traditional academic response would be one of two moves; to either critique intersectionality and distinguish our work from it, or to enthusiastically adopt and incorporate it. Neither strikes us as appropriate.⁸ Many scholars have found room to critique intersectionality, albeit often without agreeing on what it *is*. Scholars have, in turn, argued that intersectionality is too context-driven and so lacks consideration of power [49], or not context-driven *enough* and so lacks a grasp of history and the contingency of identity and power [91, 101]. Critics have contended that intersectionality is not generalisable, or—through being generalised—has lost focus and served as another site in which the work of women of colour in the academy has been glossed, repurposed and discredited [95]. As Simone Bilge laconically comments, “intersectionality gets attached to whatever its critics don’t like” [16, p.11].

In the spirit of disclosure and reflexivity, we should note that we—the authors—engaged strongly with these critiques. Indeed, an earlier version of the paper featured several of those arguments, drawing from several of those authors. We engaged in precisely the conventional, disavowal-based approach to confronting others’ scholarship—and we did so largely out of reactive ignorance. Our position was changed by simply *engaging more deeply*, a parable about appropriate approaches to take when faced with new conceptual frameworks of gender if there ever was one. The work of Vivian M. May highlighted the strong history of intersectionality scholars’ direct engagements with questions of power and history, and work to exist in a double position of confronting both the micro and macro questions of identity [90]. Sirma Bilge’s scholarship raised the ways in which intersectionality’s frequent dismissal or appropriation resonates with longer patterns of how the academy responds to Black women and their scholarship—and the likelihood that there was a *reason* it was so easy to attempt to set intersectionality aside, and not a flattering one [15, 16].

Our understanding of intersectionality, then, is of a way of thinking about identity that is deeply attentive to questions of power, history and context—and one fundamentally grounded in the possibility and desire for change. Yolanda Rankin and colleagues emphasise precisely this in their article in *Interactions*:

“There is a need for intersectionality in HCI because for far too long, hegemonic power has gone unchecked and uninterrogated, resulting in the maintenance of the status quo. Hegemony allows for the ignorance of these things, which brings about benefits to those in power. The HCI field has dismissed intersectionality as a viable critical framework, in large part because it illuminates hidden power relations. Those that have this power rarely want to relinquish it because they benefit greatly (i.e., making decisions about curriculum, conference format, speakers, policy decisions). Undeniably, those who are privileged wield power. The question becomes: How will those who have power use their power to dismantle oppressive systems?” [113]

We are in agreement with this focus, and this question. Nevertheless, we would not position our work as “intersectional” work precisely *because* of our agreement. Rankin *et al.*’s question points to the long history of intersectional scholars’ involvement with programs for social change and the righting of injustices. Intersectionality is ultimately a *liberatory* analytic [73]. Given the history of (white) scholars diminishing or appropriating Black scholarship in general and intersectionality in particular; given the ways in which we recognise the constraints of our own

⁸But what paper on gender *doesn’t* have to confront a false binary?

work as primarily urging researcher reflection and attentiveness—that is not a mantle we feel adequate to adopt. The most we can say is that our intended contribution is a toolkit; a set of considerations and grounded examples of the need to do better, and some ways that researchers may go about it. Through multiplicity, scholars can both interrogate and move beyond the (often-hegemonic) conceptualisations of gender, specifically, that shapes much of the research in HCI.) We hope that it is useful to both scholars who explicitly share intersectionality’s liberatory goals, even if they do not identify with the term, and those who desire the addressing of injustices but are still working to articulate where they sit. More broadly, mirroring our understanding of multiplicity as simultaneously necessary and insufficient, we encourage the reader to engage with questions and theories of intersectionality *even if* they initially come to rely on multiplicity as the appropriate step forward. This includes not only (or necessarily) engaging with the theoretical works we have discussed here, but more broadly considering and internalising the increasing work on intersectionality within HCI—from Rankin *et al.*’s work above, to Ogbonnaya-Ogburu *et al.*’s broader consideration of critical race theory or Erete *et al.*’s reflections on the authors’ experiences as Black women in HCI and CSCW [43, 104], to efforts to explicitly apply an intersectional lens to not only analysis, but active design interventions [112, 138].

5 RESEARCH RECOMMENDATIONS FOR MULTIPLICITY

Thus far we have articulated various ways in which gender can be conceptualised as multiplicitous, highlighted examples of research that appears promising (or problematic) from this perspective, and discussed the urgency of this work and the ways in which it aligns with other conceptions of investigating identity. Some readers might, by this point, be seeking ideas for what we want them to *do* about our concerns; precisely how one should undertake multiplicitous inquiry.

In a critique of the language applied to sexuality in public health research, Young & Meyer write:

“Readers of an earlier version of this article...were frustrated that we did not provide a list of acceptable terms and usages. We continue to balk at that task. We believe that the solution resides not in discovering better terminology but in adopting a more critical and reflective stance in selecting the appropriate terms for particular populations and contexts” [152].

We take a similar position: as we hope the preceding discussion illustrates, there is no quick, universal fix for managing multiplicity that we can provide. What we can offer is twofold; some questions which researchers can use for sensitising when studying gender, and some suggestions to the field as a whole for different ways of looking at gender as a community.

5.1 Sensitising researchers to gender

Our attention to multiplicity and complication resonates strongly with the ethos of an earlier work, Bowker & Star’s “Sorting Things Out”. Focusing on classification as a *general* practice, the authors articulate that there is no simple or singular solution to the knotty problems of marginality and multiplicity. Instead, they point to a range of questions (“How are categories tied to people?”, “is [assignment] reversible or irreversible?” [18, p.316]) for the designers of classification systems, and researchers into them, to attend to when beginning their inquiries. Taking a cue from this, we suggest a list of questions for researchers inquiring into gender to ask during both the preparation and undertaking of a study. Such a list is inevitably incomplete, and should be contextualised with reference to other resources, such as Scheurman *et al.*’s guidelines on gender equity and inclusion in HCI research practices more broadly. Nevertheless, we hope that they can serve as useful sensitising prompts.

- (1) **How do we define gender?** As covered in Section 3.1, “gender” can refer to multiple concepts—concepts with different implications for description and measurement. Precisely what conception(s) of gender are most relevant will depend on what, ultimately, the purpose of the research is [10], but a first step is critically inquiring into what it is we mean by “gender,” what we intend to get from it, and—from there—what methodology makes the most sense.
- (2) **How do our participants define gender?** As helpful and necessary as refining researchers’ methods can be, it is insufficient without also taking the time to ensure that those methods map to the contextual frame being studied; as discussed in Sections 3.2 and 3.3, what gender “looks like” and how it is experienced may vary widely depending on the site of study and how other aspects of participants’ (users’) lives interact with gender.
- (3) **What is gender’s role?** Similarly, the role that gender plays in structuring the site of study, and its importance, may vary. Sometimes gender will be the primary dimension of difference; sometimes it will appear rarely, and then, be filtered frequently through race or disability; sometimes it will look nothing like what researchers may expect, rendering interrogations somewhat moot. Attending first and foremost to the role and prominence of gender ensures that research can remain flexible, and capable of adapting if the role, form and prominence of gender diverges from their expectations.
- (4) **Who (and what) do we leave out?** By necessity, choosing any conceptual framing or research approach forecloses others, rendering aspects of the site(s) of study unintelligible—and unintelligibility or intelligibility can both, in different circumstances, lead to substantial harm. The (justifiably) lauded work to develop more nuanced ways of asking about gender, discussed in Section 2.2, aims to tackle precisely this problem by bringing a wider range of identities and perspectives to the grid of intelligibility that makes up our understanding of the world, as individuals and as a community. But any set of categories, or choice of focus or definition, will by necessity exclude some subjectivities and preempt some understandings. The question then becomes how we are *attending* to who (and what) we exclude; how we seek to recognise our limitations in a way that allows for research to be appropriately situated as a partial answer in a long line of partial answers, and renders visible the gaps in our knowledge while advocating they be attended to. Attending to who is excluded does not imply an ethical assumption that exclusion is necessarily harmful—as Hames-Garcia puts it, “being excluded...is not necessarily the same thing as being oppressed” [58, p.25]. But it does require researchers to take the time to *ask*, rather than assuming the absence of harm or non-existence and irrelevance of those outside their frame of reference.
- (5) **How are we accountable for our work?** Situating the partiality of our knowledge only goes so far to address the harm that can come from involuntary erasure, ignorance and uncertainty. Rather than simply note our limitations with greater nuance, researchers should also aspire to be accountable to those spaces they are inquiring into, and those voices left out: to develop, as Eva Haifa Giraud puts it, an “ethics of exclusion” that (recognising the inevitability of leaving stories untold and harms unaddressed) grounds our understanding not in the progress we have made, but in the harms left unaddressed and the urgency of turning our attention there [51].

5.2 Inquiring into the borderlands

Beyond paying closer critical attention to *how* we engage in research into gender, we would also suggest new areas and forms of research that a centring of multiplicity and its accompanying attentiveness to exclusion makes available. Part of this consists of actively inquiring into dynamics of gender that frequently go unmarked and unremarked because they are taken as a given, or a default: perhaps we should spend more time studying men, and masculinity? This is not to suggest that inquiries into gender prioritise normative masculinity, but to suggest that we ask how systems become masculinised, how spaces and communities feature and communicate forms of masculinity. Some work here has already been undertaken, but it largely centres fatherhood as a component of a wider interest in parenthood, rather than examining masculinity in other forms or contexts [4, 5, 70]. An explicit attention to *dominant* forms of gender and gendering would allow us to avoid falling into the trap of treating only marked, outsider identities as vibrant, constructed and agentic. Similarly, attention to questions of transness would benefit not only from broadening our view of gender to allow for inquiry into Travesti, Hijra and other groups who unsettle a simplistic binary of gender, but from inquiring into *cisgender people*: asking how social computing spaces inform users' perception of gender's stability, as well as its instability [72, 141].

More broadly—tying back to our discussion of intersectionality in Section 4.3—paying attention to the multiple sites, contexts and components of gender can be generative in encouraging us to consider and study *interferences*. Originally defined by Ingunn Moser, an interferences-focused study of identity and difference is one in which the co-construction of aspects of identity and society is treated not as a one-way relationship (identities metastasising each other and the oppression or privilege holders experience) but as two-way, in which “differences work not only to support and reinforce each other but also to operate in complex, unexpected and surprising ways and produce quite contradictory effects” [99, p.543]. Studying these surprising and contradictory interactions between, say, gender and disability, seems both valuable and (given our argument about the *inevitability* of interplays) necessary. Moreover, “interferences” as a term also suggests a way of looking at gender split over multiple contexts, or concepts. Rather than undertaking a comparative analysis of gender on two platforms, or to two populations, and trying to synthesise observations together, researchers might do well to examine the *places and points where interferences occur*: the connections between communities where ideas of gender or views of identity mingle and come into conflict and combination. Doing so offers a way of potentially addressing multiplicity and complexity without overwhelming or entangling researchers in a headspace in which not even *partial* answers feel available.

So what would all of this look like in practice? To demonstrate, we can explore what augmenting a piece of existing work with multiplicity might look like—specifically, Menking & Erickson's “The Heart Work of Wikipedia” [98]. Our choice of this article should not be taken to imply some deep-seated critique of it;⁹ to the contrary, we consider the paper an exemplary and particularly thoughtful exploration of gender through a conventional frame. This, in fact, is why we chose it: to demonstrate that even brilliant, important work can be augmented by new frames of analysis. As the title suggests, the paper's focus is on emotional labour on Wikipedia—specifically, its gendered character. Through interviews with women who edit Wikipedia, Menking & Erickson surface the ways that their participants labour to avoid and minimise the emotional costs of participation, from work to avoid engagement in high-tension areas of the community to efforts to minimise, and avoid accelerating, harassment. Their study brilliantly highlights the ways that “many participants’

⁹Indeed, our first hope—to avoid precisely this possible misinterpretation, and demonstrate the reflexivity many scholars encourage—was to use one of our *own* papers as the example. Unfortunately the only one our framework easily applies to is, in a classic bootstrapping problem, currently in preparation for publication.

experiences in the community are shaped by others' perceptions of and responses to their gender. This not only affects participants' choice and timing of work in unintended and unstructured ways...but also their engagement with other Wikipedians, friends, partners, and children" [98, p.209]. The authors note some limitations in their study—for example, that “the participants interviewed for this study do not represent the entirety of women, genders, or perspectives within the Wikipedia movement, and thus this study cannot and does not speak for all women Wikipedians or those who have left the community” [98, p.208]—but have still produced work that is both insightful and nuanced. A conventional extension on this study might be to generalise it: to interview more people, from a broader range of backgrounds, in the hope of building a more broadly-applicable understanding of gendered emotional labour.

A multiplicitous approach is not *opposed* to that work, but would look very different. As we have argued above, conventional frames which treat the “nature” of gender as tacit (but largely universal) knowledge carry the risk of building assumptions about gender's social role, configurations and primacy into study design and interpretation. A multiplicitous approach would thus begin not by extending the study, but by stepping back through it—by revisiting, and articulating different forms of, the premises that motivate the work. One example is the question of “concepts of gender”, discussed in Section 3.1. Menking & Erikson's study specifically examines the experiences of people who “self-identify as women” [98, p.208]; it is unclear from the paper whether this is in a broad sense (any potential participant who identified to the author as a woman) or a narrow one (any potential participant who both identified to the author, *and identified publicly*, as a woman). If “women” is meant in a narrow sense, the question immediately arises of how identification *itself* has gendered components. What are the experiences of those who do not publicly identify as women—and what are their motivations? How do different gendered trajectories through life inform the emotional work done in different ways? The same questions arguably apply if “self-identified” is meant in a broad sense, albeit arising more from the homogenisation of participants' experiences.

Heavily interlinked with this are the issues of *configurations* and *contexts* of gender (discussed in Sections 3.2 and 3.3). The authors quite rightly note that “the participants interviewed for this study do not represent the entirety of women, genders, or perspectives within the Wikipedia movement, and thus this study cannot and does not speak for all women Wikipedians or those who have left the community” [98, p.209], but even with this caveat, the effect of beginning with a purely-gendered frame—and a frame informed by a population that is 65% American, to boot¹⁰—is to produce what sociologist Laurel Westbrook refers to as a *homogenous subjecthood* [150], in which a *particular view and experience of gender* is seen as a primary variable in determining emotional work and representative of gendered subjecthood as a whole. While we do not doubt that gender is a primary variable, we suspect that this framing means that conventional expansions incorporating wider or different samples are likely to risk layering those different experiences on top of such homogeneity, treating differences as exceptions or additions rather than reflective of the substantial consequences of starting from American women and womanhood. A multiplicitous view, in contrast, would work to step back from the assumed centrality of gender (and tacit meaning of gender) by asking not “Do we see the same thing with different samples of participants?” but instead, avoiding direct comparison to the existing work, “How do participants negotiate emotional work and identity disclosure on Wikipedia—and what do they understand that to *be*?” We might expect not only different approaches to identity disclosure and emotional work from differently-situated people, but also different understandings of the nature, and relevance, of such disclosure and work in shaping

¹⁰ Although identifying that the participants are from “a wide range of gender identities, sexual orientations, life stages, and relationship statuses”, the paper does not provide much information on many of these ranges, or any on factors such as disability or race, so it is not possible to precisely identify how homogenous or heterogenous the participant population is.

their experience of Wikipedia. In a similar vein, multiplicitous approaches would seek to highlight points of tension: places where aspects of identity reshape, sometimes in unexpected ways, one's experience of emotional work. What, for example, is the experience of queer women balancing Wikipedia and life, when queer familial dynamics and the domestic work within them are often not accorded the same legitimacy, and so primacy? How do disability or poverty, which impact how much work one might not just be willing but *be able* to do, shape participants' experiences of Wikipedia's gendered dynamics?

6 CONCLUSION

Building on prior work, we have argued that social computing researchers interested in considering gender should critically assess how they conceptualise the term, working to utilise it in a way that is sensitive to and reflective of the layered multiplicities it represents. We have argued that the consequences are *also* multiple, including rendering subjects who fall outside the bounds of the conceptualisation invisible or unintelligible and reconstituting gender in a form consistent with the conceptualisation. In lieu of allowing these harms to occur unquestioned, we have suggested a set of sensitising questions to promote researchers' critical engagement with gender in their work, and some possible directions for new research into gender in the future.

We are writing in a time of great violence, and a gestalt repudiation of multiplicity; a time in which vast power situates itself in support of demands that we lock ourselves off from each other, retreat to simple explanations, elide normative violence and treat ways of living that run contrary to those norms as their own kind of violence. For this to change, we must—as individuals, and as a community—embrace the possibilities of complexity, openness and wonder. While this is a small contribution to unfolding those kinds of futures, it is, we believe, a necessary one: a small push that, building on other small pushes, might enable yet others in turn.

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