

**ACCOUNTING FOR THE EPISTEMIC BENEFITS OF  
DIVERSITY: SOCIAL LOCATION, IDENTITY, AND THE  
POLITICS OF KNOWLEDGE**

**NATHAN HARRON**

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## Abstract

This dissertation investigates and supports arguments intended to justify claims that social diversity in scientific research communities not only promotes justice but is good for knowledge. One such claim that I focus on is that increasing the social location diversity of research communities increases that community's capacity for critically evaluating knowledge claims. I investigate existing arguments defending this position and point out a common weakness—they inadequately detail how social diversity in research communities can be epistemically beneficial, and end up implicitly invoking an untenable identity essentialism. I aim to support the epistemic benefits of social diversity claim by providing a solution to this weakness.

In chapters one and two I describe arguments defending the epistemic benefits of social diversity claim, explaining where current accounts run out, and suggesting how they could be enhanced. I argue that appeals to increase social diversity in research communities for the sake of epistemic benefits are also implicitly appeals for the inclusion of researchers who occupy critical standpoints on knowledge production, and claim that the resources of feminist standpoint theory are vital. In chapter three I expand my discussion to consider other aspects of subjectivity in knowledge productive practices, and argue that feminist standpoint theory, as well as discussions of the epistemic value of social diversity, do not yet adequately account for the positive epistemic role that advocacy, care, affect, and emotion can play in knowledge making projects. I explore this claim both theoretically and in an extended analysis of the development of *Insite*, a safe-injection facility in Vancouver. I use the STS idiom of co-production to analyze the entanglement of the activist coalition to establish *Insite* and long-term health science research programs in the region. In chapter four I apply my findings to the work of an international collaboration, known as 'Gendered Innovations,' attempting to use various policy initiatives to address the under-representation of women and girls in the sciences. I argue that lack of attention, in key works of this collaboration, to the significance of social location in generating epistemic advantage, limits the transformative epistemic potential of their proposed policy initiatives.

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# Chapter 1: On the epistemic benefits of social diversity in research communities

## Introduction

Twenty first century western societies consider the on-going under-representation of people of diverse social locations in cultural positions of power and influence an *ethical* issue. Social epistemologists, feminist philosophers of science, and others, including science policy makers, draw a further observation: under-representation is not just an issue of ethics and social justice, but raises a serious *epistemic* issue as well. These claims can be generalized thus: diversity within communities of inquiry is epistemically beneficial and active efforts should be made to promote and cultivate diversity in such communities.<sup>1</sup>

Throughout Canada, the United States, and Europe there are many ongoing efforts to reverse the marginalization of under-represented groups, particularly women and girls in the sciences, and to address patterns of systemic identity-based discrimination. Such efforts are diverse but can be broadly characterized as attempting to uncover and describe the many mechanisms by which women and girls are marginalized in different science related settings, and in strategizing and implementing solutions.<sup>2</sup> Wrapped together with efforts to rectify ethical concerns is the claim that the under-representation of women and girls in the sciences limits the potential of scientific knowledge.<sup>3</sup> This ethical/epistemic claim is also made with respect to racial

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<sup>1</sup> Rolin 2015, 2004; de Melo-Martin & Intemann 2011; Fehr 2011, 2007; Intemann 2009; Solomon 2006; Longino 2002, 1990.

<sup>2</sup> For example, most of the major science funding agencies in the US, Canada, and the EU now have incentives or requirements intending to promote the inclusion of women and minorities in research as part of grant application processes.

<sup>3</sup> For example: Duncan 2017; Cordova 2016; NSERC 2020.

diversity, especially within the tech sector and the “whiteness” of silicon valley.<sup>4</sup> This claim is also now common in sectors beyond the sciences.<sup>5</sup> Increasing diversity in scientific communities is touted as being “good for science” in addition to the recognition that efforts to promote diversity are needed to rectify unjust marginalization and exclusion—the ethical and epistemic claims are intertwined.<sup>6</sup>

Rarely do discussions of under-representation detail how diversity, in its various forms, but most notably social diversity—researchers from diverse social and cultural backgrounds and identities—can bring about epistemic benefits. One exception is literature by feminist philosophers of science, feminist epistemologists, and feminist science studies scholars, on the epistemic benefits of social location diversity.<sup>7</sup> Some philosophical writing on this topic is engaging with normative and prescriptive epistemic and policy claims, one of which is, for example, that departments should hire more women for epistemic reasons.<sup>8</sup> Carla Fehr (2011), for example, argues that academic departments should hire more women and minorities because doing so will enhance the objectivity of the knowledge produced by the research communities in which they participate. I elaborate on what she means more fully later, but to start, her claim is that increasing the social location diversity of research communities increases that community’s capacity for critically evaluating knowledge claims. Along similar lines, Kristen Intemann (2009) calls such a justification for promoting social diversity in research communities the “increased

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<sup>4</sup> See, for example, Safia Noble’s *Algorithms of Oppression* (2018).

<sup>5</sup> This claim is common in business, innovation, organization studies, and in politics: socially and culturally diverse companies, for example, are believed to be more financially successful and innovative (See: Government of Canada 2017; 2014; Ralph and Noonan 2017; Fonstad 2016; Hunt et. al. 2015).

<sup>6</sup> Duncan 2017; Coe 2017; Cordova 2016; NSERC 2020; Fehr 2011.

<sup>7</sup> Rolin 2015; Plaisance & Kennedy 2014; Goldenberg 2014, 2013; Clough 2013; Fehr 2011; De Melo-Martin & Intemann 2011; Intemann 2010, 2009; Anderson 2004; Longino 2002, 1990

<sup>8</sup> Fehr 2011, 2007; De Melo-Martin & Intemann 2011; Intemann 2010, 2009.

objectivity rationale.” Explaining, she writes: “a scientific community comprised of individuals with diverse life experiences, values, and interests, will be more likely to identify the ways that values influence the reasoning of individual scientists” (255).

In this chapter I defend the social location diversity claim but argue that existing accounts of how social diversity in research communities can be epistemically productive implicitly invoke an untenable essentialist understanding of social identity. I focus on work by Fehr (2011), Intemann (2009), and Longino (2002) and argue that presently their respective arguments are incomplete. On the one hand, epistemological accounts that defend the social diversity claim are too vague on how social location can be relevant to the generation of transformative criticism in the sciences. And on the other hand, those accounts also do not adequately explain the mechanisms through which social location contributed to historical cases of transformative sex and gender critique in the sciences. Without addressing these problems, as I will show, existing arguments are either unconvincing or implicitly end up advancing essentialist conceptions of social location and are thus unable to adequately defend the claim that social diversity can be epistemically beneficial.

Efforts to increase diversity and inclusion in the sciences regularly refer to ‘women and minorities.’ Throughout this chapter and this dissertation I focus my analysis on gender, rather than claiming that an analysis of gender related diversity applies to racial diversity, and rather than attempting to provide an analysis of both. This sequestration is motivated by concern over the phrase “women and minorities,” commonly used in discussions of inclusion and diversity in the sciences. A central problem with the “women and minorities” phrase is that it implies a separation between these communities, and is insensitive to how they intersect.<sup>9</sup> The experiences

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<sup>9</sup> See Bowleg 2012.

and needs of women who are racial or ethnic “minorities” are obscured if not rendered invisible. Furthermore, the term “minorities” is vague because it is “multidefinitional.”<sup>10</sup> The term “minority” is often intended to refer to racial and ethnic social categories, but minority status is historically and regionally specific. Other populations such as lesbian, gay, bisexual, trans, and those labelled with physical or mental disability are also often included in “minorities.” The phrase “women and minorities” obscures the intersecting nature of social identity, and can work to re-enforce systemic racism, ableism, heterosexism, and transphobia. There is a similar case to be made about the epistemic benefits of racial diversity in the sciences, or for the epistemic benefits of any type of social location diversity that tracks patterns of marginalization and oppression in society. The scope of a project of making a case for each of the relevant populations is too broad for this dissertation. I focus on gender diversity, aiming to allow for the intersectional nature of gender as one of many salient aspects of one’s social and personal identity. How my discussion might apply to aspects of social identity beyond gender is more apparent in my discussion of feminist standpoint theory in chapter two.

In this chapter I provide an overview of arguments that make the claim that diversity in research communities can be epistemically beneficial. There are two main aspects to the argument that I make. First, without a more worked out understanding of ‘perspective,’ and how certain ‘perspectives’ can be uniquely powerful in critiquing existing research, the ‘benefits-of-social-diversity claim’ ends up being vague in articulating which actors can provide a diverse perspective. Furthermore, as they stand, Fehr’s and Longino’s appeals for increased social diversity in research communities are susceptible to the criticism that their respective arguments assume a form of social identity essentialism. Here I define ‘social identity essentialism’ as a

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<sup>10</sup> Bowleg 2012.



conception of identity that: fails to recognize within-group diversity; that falsely generalizes across an identity category; that reifies characteristics associated with an identity category, for example femininity; that imagines the experiences of ‘some’ women to be representative of ‘all’ women, reifying within-group sameness (Wylie 2012, 59; Heyes 1997). I support their basic arguments but suggest that with revision this criticism is avoidable. And second, the sense of ‘perspective’ or ‘social location’ that is used by Fehr and Intemann is, as it stands, unable to adequately explain the historical case studies of transformative sex and gender critique in the sciences upon which their arguments rely. I focus on the following question: Why were scientists with an explicit or implicit feminist standpoint able to identify gender bias in many areas of the sciences and to generate transformative criticism? Considering this question is crucial because the social diversity claim, such as Fehr’s and those made in policy settings and beyond, aims to harness and replicate historical cases of transformative gender-based criticism in the sciences in order to prevent the sciences from participating in oppressive projects. A robust understanding and epistemological account of how such critique was possible is crucial to creating similar conditions to make it likely that future transformative criticism is possible, and potentially on a larger scale. In chapter two I flesh out my criticism and suggest how an acknowledgement of these claims’ connection to feminist standpoint theory is the best way to further justify claims about the epistemic benefits of social diversity, and to consider how epistemically motivated, diversity oriented, policy initiatives might be refined in light of my analysis.

Questions about the epistemic value of diversity cut across many feminist philosophies,<sup>11</sup> as well as other areas of critical identity scholarship including critical race studies and queer

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<sup>11</sup> For more on the plurality of feminist philosophies see for example Amoretti and Vassallo (2016).

theory, and my intent is to draw resources from exchanges and lines of inquiry that are perhaps not yet in direct conversation. One of the central questions, stated broadly, that is common to projects in this literature is: how might insights gained from critical feminist science studies be used to advance emancipatory projects—sex and gender, race, and post-colonial focused, for example?<sup>12</sup> Efforts to justify diversifying formal research communities are in part motivated by this question, motivated by the desire to prevent the continued occurrence of so-called ‘impartial’ and ‘objective’ scientific claims from being used to justify beliefs that sustain systemic and systematic discrimination, and from being used to advance the interests of some communities and not others.

In the rest of this chapter I explore claims about the epistemic benefits of diversity in more detail. To begin, I provide an overview of Fehr and Longino’s arguments, and then provide some background on the how the social location diversity claim developed out of feminist science studies scholarship. I then add detail to my explanation of Fehr’s and Longino’s arguments and argue that they contain the weakness of implying social identity essentialism. To demonstrate the pervasiveness of this issue in arguments about the epistemic value of social diversity I provide an overview of a similar argument made by Intemann (2009) that also implicitly presents an essentialist conception of social identity. To conclude I summarize my argument and point to how I will attempt to address and overcome this weakness by utilizing conceptual resources from feminist standpoint theory, an argument I develop in chapter two.

In chapters three and four I expand my discussion in two different directions. In chapter three I expand my discussion to include considerations of affect and emotion as epistemically

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<sup>12</sup> The ‘Gendered Innovations’ project (Schiebinger 2008) is an example, which I discuss at length in chapter four.

productive and beneficial to knowledge making practices, as opposed to epistemically destructive, as they are so often considered to be. In the chapter I argue that notions of social location diversity as epistemically beneficial need to account for the role of affect and emotion in theoretical understandings of, and historical cases of, transformative critical gender analysis in the sciences. I survey several approaches that consider how affect and emotion in knowledge making can be epistemically productive, with special attention on the work of Alexis Shotwell (2011) and her notion of ‘implicit understanding.’ I conclude this chapter by developing my own case study of the co-produced social and health sciences movement in urban Vancouver that advocated for the opening of a safe injection facility, known as Insite. In chapter four I apply my arguments from chapters one and two to analyze an international collaborative policy-oriented project known as ‘Gendered Innovations,’ the stated aim of which is to address and correct the under-representation of women in the sciences and to prevent gender bias in the content of scientific knowledge.

Overall this dissertation is intended to fulfill the call to action made by Fehr and Plaisance (2010) in their programmatic overview of what they call ‘socially relevant philosophy of science.’ In this and subsequent work they highlight and challenge the strict boundaries that have circumscribed the range of ‘legitimate’ topics allowed within mainstream professional anglo North American philosophy of science. They argue that philosophers of science are well positioned to address sciences and issues that are “socially relevant,” by which they mean “directly relevant to public welfare,” that “address concerns about the distribution of harms and benefits of scientific research,” and that work to “expand disciplinary boundaries and possibilities for collaboration.” I align my work throughout this dissertation with the spirit of this vision for what can legitimately count as philosophy of science and take them up on this call. In doing so I

see my work here as fundamentally inter-disciplinary. As will become clear, and as I argue throughout, the questions I aim to address, related to potential epistemic benefits to research of social diversity in research communities, demand an inter-disciplinary response, involving philosophical, historical, sociological, anthropological work, and beyond. Since such an approach is relatively rare in traditional philosophy of science discourse I approach this work as somewhat methodologically experimental, which becomes apparent in the range of disciplines from which I draw but also in my approach, especially in the case study I develop in chapter three.

### **Social location diversity**

Fehr's (2011) aim is to develop an epistemic argument that bolsters policies that promote increased inclusion of women and minorities in the sciences by arguing that doing so will bring about epistemic benefits.<sup>13</sup> Fehr is not alone in recognizing the value of social diversity and in seeking ways to make it happen, although her work is significant in that it links epistemic and policy arguments, and attempts to explicitly articulate the mechanisms by which social diversity has been, and may be, epistemically beneficial. I aim to strengthen Fehr's and similar claims but to do so requires highlighting a weakness within her argument; one that is also present in the work Fehr is building upon, and in other iterations of the claim that social identity diversity in research communities can be epistemically beneficial. Fehr's work draws heavily on developments and work in feminist philosophy of science and feminist epistemology, most directly the work of Longino (2002, 1990). In order to explain the weakness in current arguments

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<sup>13</sup> Fehr hopes to appeal to those who are unmoved by concerns over justice and fairness. See Fehr 2011.

defending the epistemic benefits of social diversity claim I provide a brief summary of the work upon which Fehr's argument is based.

Fehr and Longino refer to the epistemic significance of "social location." This concept is to be contrasted with similar concepts such as "perspective," "point of view," or "social identity." Policy discussion about diversity and inclusion often make reference to the value of diverse "perspectives." For example, a 2016 NSF initiative<sup>14</sup> intended to cultivate diversity in research communities is described by the NSF director: "diversity – of thought, perspective, and experience – is essential to achieving excellence in 21st century science and engineering research and education."<sup>15</sup> Notice the NSF Director's reference to diversity of 'perspective.' The underlying thought here is that a person's personal background and lived experience give rise to a unique understanding and point of view. The inclusion of researchers that have 'diverse perspectives' is here implicitly assumed to be epistemically beneficial—what might count as 'epistemically beneficial' is only vaguely implied by epistemic 'excellence.' For feminist science studies scholars "social location" is a concept used to account for how a knower's "ascribed social identities" and "social roles and relationships" affect what and how she knows.<sup>16</sup> This is a more powerful concept than "perspective" or "social identity." "Perspective" on its own fails to recognize patterns in experience that track social location—that track one's ascribed social identity and social roles and relationships—and it also conveys a purported innocence. Claims about epistemic benefits that might arise as a result of diversity of perspective often imagine perspective as attached to social identity. But such an attachment implies an untenable

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<sup>14</sup> INCLUDES (Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science)

<sup>15</sup> Cordova 2016

<sup>16</sup> Anderson 2015

universality to “women’s perspective,” for example. Throughout this dissertation I use “social location” as the founding concept for the epistemic benefits of diversity claim, although in places I refer specifically to social identity.

### *Background – Getting to the social location diversity claim*

There is a general consensus among feminist philosophers of science and epistemologists that the inclusion of researchers who have sets of values and interests that differ from the norm in research communities may be epistemically beneficial.<sup>17</sup> Fehr (2011), Intemann (2010, 2009) and others develop the argument that an epistemic agent’s life experiences, values, and interests profoundly inform which theoretical commitments, background assumptions, hypotheses, methods, and explanations seem reasonable. As Fehr puts it, the representation of inquirers from diverse social locations in communities of inquiry is epistemically beneficial because:

When a community is homogeneous with regard to the background assumptions, prejudices, and theoretical perspectives of its members, those assumptions, prejudices and perspectives can go unnoted and unchallenged. But when a community is diverse, the assumptions are more likely to be brought to light and subjected to explicit evaluation (2011, 135).

Fehr refers to this view as “diversity promotes excellence”; Intemann (2009) refers to this view as the “increased objectivity rationale” (254).<sup>18</sup> Similar views are made outside academia in popular

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<sup>17</sup> Rolin 2015; Intemann 2010, 2009; Fehr 2011.

<sup>18</sup> I want to distinguish the claim just described, which can be thought of as *active* engagement in critical analysis of one’s own work and the work of others, from a more passive sense in which social diversity might be epistemically beneficial. Research suggests that the mere presence of members of under-represented groups may have epistemic significance. There is a growing body of social scientific research that suggests that in group-based decision making the presence of group members who are read and coded as being from a social identity that is different from the majority of members in the group leads to epistemic benefits. For example, see: Lloyd 2013; Lount and Phillips 2007; Phillips et al. 2006; Sommers 2006. Throughout this dissertation I am addressing ‘active’ forms of critical engagement made possible via social location diversity.

and political culture. For example, while delivering a keynote address to the 2017 Canadian Science Policy conference Canadian Federal Minister of Science, Hon. Kirsty Duncan, said:

I don't think I need to make the case to this group that when our research community includes people from diverse backgrounds with unique experiences, knowledge, and perspectives, we are all one step closer to the next breakthrough idea or discovery. Broad perspectives breed great science. (Duncan 2017)

The very idea that subjective features of a researcher might help their knowledge-making endeavors subverts key assumptions in mainstream twentieth century western philosophy of science and epistemology. Let me briefly review the development of this claim. Mainstream epistemology and philosophy of science implicitly imagines the knower as a “featureless abstraction” (Code 1991, 1993) as feminist scholars have pointed out (Harding 1995; Haraway 1997; 1988). Early 20<sup>th</sup> century logical empiricist A.J. Ayer, for example, in developing his ‘criterion of significance’ (Ayer 1952, 35), emphasized the centrality of observation, and ‘observability in principle,’ to knowledge claims but left thoughts about what is required of an observer implicit. The observing subject of logical empiricism, and inherited in mainstream philosophy of science, is implicitly assumed to be any rational human, about whom no subjective features are relevant to their role as observer.<sup>19</sup> Any rational human, it is implied, could be substituted or swapped into the position of observer. The observer, in this view, is capable of detaching from their embodied self, able to take in and record ‘raw’ data, becoming what Code has called a “...dislocated knower-as-spectator” (Code 2006, 8) and Harding calls “Mr. Nowhere” (Harding 2015). Such detachment, thought to be possible via the observer’s rational

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<sup>19</sup> Daston and Galison (2007) situate and name this historically specific understanding and practice of representation as “mechanical objectivity,” which is attached to a historically specific conception of the scientific self, requiring scientists to “exercise great self-restraint” in order to “protect against subjective projections” (43).

capacities and through the cultivation of a particular kind of “scientific self,”<sup>20</sup> is imagined to render observations neutral and impartial, grounding notions of objectivity as neutrality.<sup>21</sup> Consequently, if subjective features of an observer play a role in making observations, neutrality and thus objectivity, is thought to be lost. Feminist, critical race scholars and others have pointed out several problematic assumptions associated with this conception of the observer, and with this conception of knowers more broadly. One is that the supposed “rational human” of philosophical discourse masks an implicit assumption that only white males can be rational, mirroring longstanding stereotypes about supposed intellectual inferiority of female and non-white persons,<sup>22</sup> and thus only white males can be legitimate observers or knowers (Haraway 1997; Code 1991; Lloyd 1993). The supposed universal substitutability of any rational human in the place of the observer masks the gendered and racialized aspects of this position (Haraway 1997; Code 1991).

A further critique of mainstream thought in epistemology and philosophy of science focuses on the claim that the conditions required for knowledge largely relate to, and are internal to, individuals and their isolated cognitive activity. Feminist philosophers of science, feminist epistemologists, and science studies scholars generally, instead emphasize the sociality of knowledge making practices, which is a central premise of arguments defending the social location diversity claim. Longino (2002) argues that aspects of scientific reasoning have important social dimensions, writing: “central elements of the knowledge-productive practices of the sciences—observation and reasoning—are social” (97). Such a claim implies two things: a)

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<sup>20</sup> Daston and Galison 2007.

<sup>21</sup> Daston and Galison (2007) have also persuasively shown that the concept of objectivity is a) a historical product, emerging in particular historical-social settings, with a shifting meaning over time, and b) relies on the supposed cultivation of specific forms of the scientific self.

<sup>22</sup> See Takaki 1993.



that there are group, interactive, or dialogical dimensions to cognitive activities that have traditionally been thought to be performed by individuals, and that must be accounted for by theories of knowledge; and b) that even individual cognition is subject to socially produced, authorized, and stabilized norms and practices. ‘Observation,’ for example, is not simple sense perception but should be understood, rather, as: “an organized sensory encounter that registers what is perceived in relation to categories, concepts, and classes that are socially produced” (2002, 101).<sup>23</sup> With respect to reasoning, justification is a core cognitive activity involved in scientific knowledge making. Longino defines ‘justificatory reasoning’ as: “the combining of ideas or information to support some other idea” (2002, 103), and she argues that justificatory reasoning is rooted in social processes. She writes:

Justificatory reasoning can be understood as a practice of challenge and response: challenge to a claim is met by the offering of reasons to believe it, which reasons can then be challenged on grounds both of truth and of relevance, provoking additional reasoning. Justificatory reasoning, thus understood, gets its point in a social context, a context of interaction among individuals rather than of interaction between an individual and the object of her cogitations. What counts as an appropriate consideration, as a reason, is determined and stabilized through discursive interactions (2002, 103-104).

Longino’s emphasis on scientific reasoning as being grounded in discursive (i.e. social) interactions between individuals highlights the superficial analysis of philosophies of science that consider justification as involving one person’s cognitions. Feminist philosophers of science, feminist epistemologists and science studies scholars challenge both of these conceptual tendencies of mainstream philosophy of science and epistemology: one, the belief that a capacity

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<sup>23</sup> I want to highlight here the sense in which Longino’s use of ‘science as social,’ and ‘knowledge productive practices are social’ includes a claim about both the group-based dimensions of scientific reasoning and the situatedness of an individual’s cognition. I am hoping to prevent a reading of the claim that ‘scientific reasoning is social’ as meaning that all reasoning occurs in a group setting. Longino’s claim allows for a scientist, for example, to work alone and perform their cognitions by themselves but nevertheless be dependent on socially produced categories and concepts.

for reason allows for a knower to detach themselves from their bodily experiences and their social surroundings; and two, that the locus of justification is the cognitive activities of individual knowers.

The relation between evidence and hypothesis is an entry point for considering the role of background assumptions in scientific reasoning. Longino argues that: “experimental results can be taken as evidence only for hypotheses in the context of some set of background beliefs” (1990, 48). Longino and others have argued that there is a logical gap involved in connecting evidence to a hypothesis, and this gap is filled with “background assumptions” (Intemann 2005; Longino 2002, 1990). Emphasis on ‘background assumptions’ in making inferences about the relation between evidence and hypothesis contradicts the view that evidence ‘speaks for itself’—the belief that that for which data counts as evidence is self-evident. Longino argues that in many decision-making domains of the sciences, including those often thought to be governed exclusively by a priori principles of logic, ‘background assumptions’ of various sorts play an inevitable role. The Duhem-Quine hypothesis,<sup>24</sup> the under-determination of theory by evidence,<sup>25</sup> and the theory laden-ness of evidence and observation, each create an opening for the claim that background assumptions are necessary in domains of choice in the sciences. One example of such a domain is setting the research agenda. It is sometimes claimed that ‘nature’ directs scientific agendas. It is now fairly uncontroversial to observe that research agendas are determined by many pressures, but importantly such pressures derive from social, political, cultural, and value domains. Perhaps more controversial is the claim that background assumptions are involved in

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<sup>24</sup> Hypotheses are always tested in conjunction with supporting/necessary auxiliary hypotheses.

<sup>25</sup> Supporting evidence for a theory could also support other, incompatible theories.

domains of theory choice, of justification for theory choice, in decisions about best methods, and deciding which data come to stand in relation as evidence for theory, to name a few.

Kuhn's (1962) elaboration of observation as theory-laden, for example, emphasizes that to make an observation requires an underlying or background theory. One can only make sense of what is seen by making reference to theory. Taking Kuhn's work as one point of departure, feminist science studies scholars, and others, argue that interpretive resources for linking empirical data to evidence extend beyond auxiliary hypotheses and comprehensive theories to also include social, cultural, and value-oriented resources. Coming back to Longino, this relation between hypothesis and evidence, she claims, is "determined by background assumptions operative in the context in which data are being assessed" (1990, 58).

Background assumptions then are not only inevitable but can also be a cognitive resource. Rather than imagining the role of background assumptions, especially so-called non-epistemic values, as corrupting or biasing, Longino proposes a strategy for rendering them transparent, making them an epistemic resource, and thus highlighting accountability and responsibility (Code 1991; Haraway 1988). Within her epistemology, background assumptions cannot be entirely eliminated. Practices of scientific knowledge production take place within communities and are situated. Longino highlights community practices of criticism and response as providing the base for scientific knowledge production. Practices of criticism and response provide the opportunity for implicit and unacknowledged background assumptions that inform research to be brought to light, questioned, evaluated, and revised or rejected if necessary.

Coming back to how a researcher's social location can be an epistemic resource rather than strictly a hindrance, historical case studies of critical gender-based transformation in the sciences reveal that at least some background assumptions—relating to social and political

values—tend to track social identity. Consequently, if practices of criticism and response in a research community are key mechanisms for revealing unacknowledged background assumptions, then socially homogeneous research communities may not be able to identify or recognize assumptions shared by the community at large (Longino 2002). Longino here argues for the epistemic significance of social diversity in research communities, imagining criticism and response practices as opportunities for socially diverse participants to challenge assumptions held by the majority. Ensuring social diversity in research communities then makes it more likely that assumptions will be exposed and addressed. Social diversity is thus an epistemic issue and not just an issue of fairness. Longino writes that social diversity in research communities can “ensure the exposure of hypotheses to the broadest range of criticism” (2002, 132). She further argues that research communities then have an epistemic responsibility to cultivate potentially dissenting voices and prevent them from being discounted (132).

*Making the case that social location diversity can be epistemically beneficial*

Fehr (2011) more directly outlines how social location diversity might be epistemically useful through the production of criticism by drawing on case studies illustrating transformative sex and gender critique in the sciences. She writes:

The addition of women, with *varying degrees of feminist commitment*, to scientific communities can uncover gendered assumptions, provide new or alternative methodologies and engage alternative perspectives that have bearing on research that relates to sex and gender and even research that does not. (Fehr 2011, 137, italics mine)

Fehr is arguing that empirical case studies from the history of science demonstrate that as the inclusion of women in various scientific fields increased in the last quarter of the 20<sup>th</sup> century, widely held gendered assumptions were revealed as conditioning basic widely shared premises about primate behaviour and evolution. Fehr also notes that those female researchers responsible

for initiating substantive and transformative criticism in their respective fields had implicit or explicit feminist perspectives, a vital point to emphasize.

Although Longino's claims about the importance of social diversity can be interpreted as suggesting women per se can provide desired diversity, Fehr recognizes the identity essentialism implicit in such a view. Attempting to avoid this problem, Fehr distinguishes between "situational" and "epistemic" diversity (2011, 146-47; 2007, 114). "Situational diversity" refers to a community that is composed of people who are situated differently in terms of identity categories—gender, race, class for example (2011, 146). "Epistemic diversity" refers to researchers who differ in terms of "points of view, research interests, or theoretical perspectives" (2007, 114). Fehr suggests, adding detail to Longino's view, that sometimes situational diversity can lead to epistemic diversity, and thus, at times, situational diversity can be good for knowledge. Fehr writes: "The examples of women [who made transformative criticism in their respective sciences] with varying degrees of feminist engagement, such as Jeanne Altmann, Barbara McClintock, Ruth Hubbard, Sarah Hrdy and Ruth Bleier, demonstrate that situational diversity can have a significant impact on epistemic diversity" (2011, 147). Fehr Acknowledges that one cannot assume that situational diversity will result in epistemic diversity because doing so would be claiming that there is a single point of view associated with identity categories.

Summarizing her view, Fehr writes:

Although we cannot assume that situational diversity will result in epistemic diversity, if scientific communities don't give members from some situational perspectives (in this case don't give women) intellectual respect and treat them as good knowers, as good members of a community, the community will be less likely to benefit from the epistemic diversity that those women may be able to offer. If there are differences in the ways that some particular women approach their work it would be a shame not to glean the epistemic differences of those differences (2007, 114).

Fehr is attempting to avoid identity essentialism but is unsuccessful because she does not provide a discussion of the “wide range of factors” (147) that can influence whether or not “a woman brings epistemic diversity, gendered or otherwise, to a community” (147). Fehr does focus on cultural factors in academic communities that make it more difficult for women specifically to generate and share criticism. But she never digs more deeply into the relationship between situational diversity, feminist commitment, and epistemic diversity.

To help explain my critique I now turn to a closer look at one of the historical case studies Fehr and Longino are drawing from. Fehr considers historical case studies that demonstrate that increased inclusion of women in research communities resulted in the uncovering and rejection of gendered assumptions in research findings. One that Fehr focuses on is from the history of primatology. As has now been well documented (Blaffer Hrdy 1986; Haraway 1989), primatology up to the mid-1970s, and particularly research examining the sexual behaviour of primates, was conditioned by cultural stereotypes about men and women. A motivating intuition of primatological research generally is that since primates—the great apes in particular—are closely related to humans, understanding the natures of non-human primate species will tell us something about human nature. It turns out that the history of primatology is an interesting example of researchers imposing on their primate research subjects their own background assumptions about human behaviour. A particularly clear example of such a transposition occurred with researchers whose topic was primate sexual behaviour. A central question pursued was something along the lines of: what are primate practices with respect to sexual reproduction? By the mid 1970s the dominant understanding suggested essential characteristics of male and female primates: that male primates are sexually *active*, indiscriminating, and uninvolved in the care of offspring, and that female primates are *passive*, discriminating when it comes to mate

selection, and only engage in mating behaviours for reproduction. Such purportedly scientific claims about primate sexual practices were used to explain and justify North American and Western human sexual norms and practices at the time. This is perhaps best exemplified by the title of a 1979 article in Playboy magazine: “Why does your man cheat?: New Research tells us why.” The explanation given made reference to the primatological claim that since primate sexual behaviour involved certain norms for males and females, sexual norms for men and women must be the same—there is no denying nature. Donna Haraway argues that “primatology is politics by other means” (Haraway 1989). Of course, with criticism in the mid-1970s and into the 1980s it became clear that the primatological research community was imposing existing androcentric sex and gender assumptions about male and female sexual behaviour onto the primate communities under study. Primatology is by no means the only research field shown to have been under the sway of sexist and other faulty assumptions. What is particularly interesting about the case of primatology, however, is how and who made the criticisms of the widely accepted androcentric assumptions that eventually led to them being overturned. It was not until an increased number of women researchers entered the field that such assumptions began to be challenged. What were before behaviours that went unrecorded and were considered irrelevant, for example female primates exhibiting sexual behaviours unrelated to reproduction, were considered relevant by female researchers. What is also particularly striking about this example is that it seems it was not only women researchers who were beginning to ask new, often critical, questions, but also it was women who had and were developing a feminist perspective (or a feminist *standpoint*). Sarah Blaffer Hrdy, one such researcher, describes how her understanding of female primate sexual behaviour changed as she came to develop a “dawning awareness” of

second wave feminist insights. I say more about Hrdy and the history of primatology in chapter two.

Many scientific fields underwent similar periods of criticism and rejection of long held core assumptions. In most cases it was feminist oriented researchers who exposed gender bias in their respective fields. Evolutionary biology, for example, long of the assumption that human and primate evolution is driven by the males of the species, assumed that female behavioural and physical characteristics were not relevant to understanding human evolution (See for example Hamlin 2011; Hubbard 1990; Longino and Doell 1983). Archeologists similarly long assumed changes to the males of the species were the core mechanisms of human evolution, leading to the claim that “man the hunter” should be the focus of archeological accounts. What the females were up to was considered irrelevant to archeological concerns. This assumption that male morphological and behavioural changes were the lead mechanisms of human evolution did not change until women with either an implicit or explicit feminist perspective entered academic archeology (Wylie 1996; Slocum 1975). There are many other examples.<sup>26</sup>

It is with this now substantial accumulation of historical evidence—cases from the history of science of women with feminist perspectives entering and making new and radical critiques of core assumptions—that Fehr is deriving her claims about the epistemic benefits of diversity. Much more could be said about each of these historical, and in some cases ongoing, case studies, but the point is that several important questions related to social diversity in research communities emerge: What can be inferred about the epistemic significance of subjective

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<sup>26</sup> Reproductive Biology: Martin 1991; Biology and Gender Study Group 1989. Evolution of female genitalia: Ah-King et al. 2014. Psychology of Sex differences: Maccoby and Jacklin 1974; Fausto-Sterling 1986; more recently Fine 2010; Hoffman and Bluhm 2016. Sex Chromosomes and hormones: Richardson 2013; Oudshoorn 1990. Non-human animal laboratory studies: Birke 2011, 1993.



features of researchers in research communities? In the case studies currently available, what was it about those making the critiques that enabled them to develop their criticisms? What is the explanation for why women working from feminist perspectives (or standpoints) were able to make revolutionary criticisms in many different scientific research projects? And as Alison Wylie phrases it, utilizing the language of standpoint theory: “How did the gendered roles and standpoints of feminists serve as a cognitive resource?” (Wylie 2012). Fehr and others infer that the inclusion of women with an “implicit or explicit feminist perspective” in research communities can have a beneficial effect on the knowledge produced by the community joined. She and others also infer that a similar claim can be made about other marginalized groups that have historically been under-represented in the sciences, although she does not elaborate this point. Fehr’s conclusion is that research communities should develop and adopt hiring policies that will increase the number of women and minorities because doing so will result in epistemic benefits.

#### *A weakness in the argument*

The case of transformative critique in primatological research is a central case study highlighted by Fehr as demonstrating her point. But it is apparent, after considering Fehr’s claim and after examining the case study of primatology in more detail, that the extent to which the feminist commitments of the researchers mattered to how they understood their work and the work of the field is left under-explored. Fehr does not pursue a more detailed articulation of the mechanisms of how epistemic benefits may arise out of critical perspectives. We notice, then, that epistemic advantage seems to come from their critical consciousness or standpoint, a point I develop further in chapter two.

Fehr makes the inductive inference that increasing the representation of women and minorities in scientific research communities makes such moments more likely to occur. This argumentative strategy is analogous to what is known as the Pessimistic Meta Induction (PMI) used by anti-realist philosophers of science (see Laudan 1981; Barker and Kitcher 2014). The PMI is the argument that since many scientific theories in the history of science that were taken to be true turned out to be false, Laudan (198) inductively infers that we are justified in being pessimistic about whether current theories are true. This argument appears in debates about scientific realism. Carla Fehr's argument is grounded in the same argumentative structure. Fehr writes:

There are many examples [primatology being her primary example] where the addition of women, with varying degrees of implicit or explicit feminist perspectives, have had a positive impact on our understanding of science, on the practice of science and on the products of scientific work (Fehr 2011, 136).

Generally speaking, “positive impacts” here, or epistemic benefits, amount to the uncovering of gendered assumptions in various stages of scientific activity, from the specifying of research questions, to study design and methodology, as well as the analysis and interpretation of findings and data. Fehr writes that the lack of social diversity can be understood as a cognitive problem:

It is a cognitive problem because all of the background assumptions that researchers use to determine the connection between theory and evidence do not announce themselves. Those assumptions can be brought to light through critical interactions with people who are aware of those assumptions or who hold different assumptions. (Fehr 2011, 146-147)

Also, social diversity can lead to alternative questions, alternative theories to test, and alternative methods to generate data. I will elaborate on examples in the next chapter.

In Fehr's work on the epistemic benefits of diversity we see two components in her response to questions about what form(s) of diversity might be epistemically beneficial: the inclusion of women in areas of scientific research in which women were historically under-

represented has had a positive impact on scientific knowledge. Adding more detail, Fehr points out that case studies that support the social diversity claim involve the inclusion of women with “varying degrees of implicit or explicit feminist perspectives” (Fehr 2011, 136). This qualification substantially narrows the kind of diversity that might be epistemically beneficial. Rather than suggesting that the inclusion of greater numbers of women per se in the sciences would be epistemically beneficial, her argument implies that inclusion in greater numbers of women with an implicit or explicit feminist perspective may be epistemically beneficial. Fehr does not draw enough attention to this distinction, between gender diversity at large and gender diversity combined with an implicit or explicit feminist perspective. Also significant is the “implicit or explicit” qualification. Fehr is adding a clarification regarding the extent to which a woman is aware that her perspective is feminist. This qualification includes women who perhaps did not self-identify as feminist, or did not recognize that they were influenced by a feminist perspective, yet traces of a feminist perspective can be found in their work.<sup>27</sup>

Fehr’s argument suggests that although not all women who participate in the sciences will generate transformative critical criticism, as the numbers of women in research communities increase the odds are good that some will make critical sex and gender criticisms. This suggests there is an element of chance that socially diverse researchers will provide criticism of taken-for-granted assumptions. She acknowledges that it would be incorrect to claim that all women in research communities are able to make the sort of transformative critiques of gender bias that

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<sup>27</sup> The ‘implicit’ or ‘explicit’ distinction that Fehr mentions here will prove to be more complicating still in the following chapter. Sarah Richardson (2013) provides an example of a subfield of biology that has now fully incorporated feminist insights from the 1990s, such that now we might say benefits from the inclusion of feminist diversity in this research community are implicitly integrated. We will also see that the ‘implicit’ or ‘explicit’ distinction will complicate policy recommendations.

have occurred in primatology and other sciences. Given, however, that her proposed policy initiative of hiring more women and minorities into academic departments applies to women in general, it is then only by chance that, of women hired, some may be in a position to make transformative criticism, in virtue of some occupying feminist standpoints. Given the historical evidence upon which Fehr is basing her claim it is worth considering that suggestions about who should be included in research communities could be more specific. Fehr recognizes that not all women will make such transformative critiques. She stresses this point in order to avoid the criticism that such a claim would imply a distinctly ‘woman’s’ perspective. Such a claim would be essentialist, assuming a sort of universal experience that all women share; a view that has been widely and correctly criticized. But without being more specific about the qualifications that seem to position one to make transformative critique, Fehr’s claim about the epistemic benefits of diversity is incomplete and ends up inadvertently implying the identity essentialism she seeks to avoid. The argument either fails to be persuasive *or* ends up implying identity essentialism. In laying out her claim initially, Fehr includes the qualification “implicit and explicit feminist perspectives” but throughout the argument she also refers consistently to “women and minorities.” The broad demographic groups are the focus of the justice-based movements to address the under-representation of women and minorities, and so the discussion of women and minorities in general makes sense. But there is a tension between the claim that including women in departments will make an epistemic difference and the claim that including women with an implicit or explicit feminist perspective will make an epistemic difference. The two groups are not equivalent. If it is the case that the vast majority of the empirical work produced by feminist science studies scholars demonstrates that it is women with an implicit or explicit feminist perspective who have advanced the science in the particular field of which they were a member,

then we have less reason to adopt the general claim that including women of any perspective would make an epistemic difference, for the reason that not all women endorse or adopt a feminist perspective. And, as we pay more attention to this distinction we will need to address basic questions about what it means to occupy a feminist perspective, and how this might be possible without presupposing identity essentialism. I think Fehr and Longino are correct in their basic point but they, and others, do not sufficiently explore how we might more carefully explain what resources—epistemic or otherwise—marginalized social locations can provide, which make possible the critical standpoints that can help reveal faulty background assumptions.

Summarizing, a challenge with advancing the argument that increasing social diversity in academic communities will lead to more objective knowledge is to investigate in more detail how epistemic benefits might accrue, and consider how prescriptive calls for promoting the inclusion of women and minorities in the sciences for epistemic benefits might be altered in light of such findings.

Given that arguments about potential epistemic benefits of social diversity are often wrapped up in policy questions about inclusion it is important to recognize that my observations will turn out to have consequences for how policy might be used to promote epistemic gain. Furthermore, on the policy side, a more robust elaboration of the connection between social diversity and epistemic benefits is needed because policy initiatives with the explicit aim of increasing social diversity for epistemic concerns may be met with skepticism or resistance. Also, such claims, because they contravene traditional notions of value-neutrality, which are the foundation of notions of objectivity-as-neutrality, face the task of explaining how some sense of objectivity can be maintained. Fehr's account, and Longino's upon which she is building, do not develop a more comprehensive account of how and who might be positioned to provide the sort

of criticism of taken-for-granted assumptions that they urge. In chapter two I aim to address and work to resolve this weakness, but supporters of this view need to more clearly articulate the mechanisms by which social location can position a researcher as able to perform epistemic diversity work in order to make more precise claims about who, exactly, might bring epistemic benefits to academic communities.

Furthermore, although it is clear that Fehr's claim is focused on the epistemic benefits of increasing the numbers of women in research communities, throughout her paper she refers to the inclusion of "women and minorities" as epistemically beneficial. She does not elaborate on who might be included in 'minorities,' or whether women might also be included in 'minorities.' In North American sciences, for example, one presumption might be racialized minorities, or non-white minorities, but 'minorities' should certainly be understood more broadly, including LGBTQ, indigenous, non-Anglophone, non-able-bodied, non-western theorists: generally, members of communities that have been historically, and are currently, under-represented in the academy. Although I think Fehr is correct in her inclusion of "minorities" in her claim, as it stands it is not clear that her claim is able to justify this extension. Utilizing the resources of feminist standpoint theory may help to make the justification for this extension more robust. If her claim is grounded in an induction based on historical case studies, none of the case studies she references document what has happened to a field when the representation of racialized minorities was increased. Funding agency concerns are about social diversity of researchers generally, not exclusively increasing gender diversity. Going forward then it is important to address the epistemic underpinnings of claims that social diversity across many categories of social identity are epistemically beneficial. Arguments calling for social diversity in research communities for the sake of epistemic benefits need to utilize a wider range of historical case

studies that demonstrate epistemic benefits from the inclusion of a broad range of underrepresented groups.

### **Another example of the argument showing the same weakness**

The tension discussed with respect to Fehr's work is also present in Intemann (2009). While discussing possible rationales to justify diversity requirements for grant proposals submitted to the US National Science Foundation (NSF), Intemann lists three: the "social justice rationale"; the "talented workforce rationale"; and the "increased objectivity rationale" (254). Many science funding agencies world-wide are implementing diversity and inclusion requirements for research proposals. Research teams must include members with diverse social identities, or research must in some way address diversity and inclusion. Intemann (2009) reflects on reasons for why such requirements might be justified. Reflecting specifically on requirements for NSF proposals, Intemann recognizes increasing social identity diversity in research communities may provide epistemic advantages, that is, may increase the objectivity of the theories, hypotheses and explanations produced. Intemann lists seven possible mechanisms for how epistemic benefits might result from increased diversity:

1. **Generating new research questions:** "Which research questions are posed and how research problems are framed depend on the particular interests, values, and experiences of researchers (256)" Diversity in the pool of researchers can increase the range of research questions asked.
2. **Identifying limitations with existing models and proposing new models.** Diverse research communities will be more likely to identify assumptions about models. "...models can reflect value-laden assumptions, categories, stereotypes, and interests. When these assumptions are shared by a homogeneous group of researchers, it is very difficult to recognize their presence" (257).
3. **Proposing alternative hypotheses and interpretations of data.** The personal experiences of the researcher significantly impact the range of possible hypotheses which occur to a researcher.
4. **Accessing accurate and complete data from human subjects.** Evidence suggests that "...when collecting data from human subjects, subjects may provide different

data depending on the race, sex, or other social characteristics of the researcher” (259).

5. **Opening up new lines of evidence.** What comes to count as evidence is influenced by assumptions made by researchers.
6. **Revealing loaded language.** “There are different ways to describe the same phenomena” (260). Diversity in research communities can increase the likelihood that descriptions that draw on faulty assumptions can be revealed and corrected.
7. **Identifying a fuller range of risks.** Often researchers must make assessments of risk, and “judgements about what constitutes a ‘cost’ or ‘benefit’ are informed...by one’s experiences, values, and interests” (261).

Epistemic benefits four and seven are the only ones that suggest a broad understanding that social identity diversity may be beneficial; that is, that gender or racial diversity at writ large may be epistemically beneficial. Epistemic benefit four, about accessing data from human subjects, makes the empirical claim that human research subjects provide data to researchers that in part is influenced by the social identity of the researcher. For example, research suggests that black research subjects, or female research subjects, respond to questions differently depending on the race or gender of the researcher asking the research questions. Intemann (2009) writes: “There is growing evidence that, when collecting data from human subjects, subjects may provide different data depending on the race, sex, or other social characteristics of the researcher” (259). The implication of this epistemic benefit of social diversity is that the simple fact of whether the researcher presents as, and is read as, a man or a woman, or as a person of colour or as white, may impact the data the research subject provides. If this is true then it would indeed be epistemically advantageous to ensure social diversity in research communities that deal with human research subjects. Here the perspective of the researcher (e.g., whether a feminist or critical race perspective) supplying the diversity appears to be irrelevant.

In the other five of seven examples, however, the perspective of the researcher does seem to be relevant, suggesting that a general diversity of race and gender is not precise enough to



support the claim. Take example three from Intemann, that diversity may increase the likelihood of alternative hypotheses and interpretations of data being proposed. She writes: “Individual experiences and values can influence which hypotheses a researcher is able to generate. Our personal experiences influence which alternative hypotheses are likely to occur to us” (258). The reference here to “personal experiences” is vague. As written, we might interpret this claim to mean that all people have different life experiences and that those life experiences inform the background assumptions that are drawn upon when engaging the various scientific practices and activities associated with justification. The fact of the variety of life experiences in general is implied as relevant, as mattering. But given the examples from which Intemann draws, and the literature within which her argument is situated, it is clear that the “life experiences” she has in mind are more specific than what is suggested in the quotation. Her examples suggest she means life experiences that track patterns in social and material advantage and disadvantage, which suggests that her claim is associated with, and draws upon the resources of, standpoint theory, but this theoretical debt is not stated.

Similar to Fehr’s work discussed above, Intemann’s argument does not adequately distinguish the source of “diverse perspectives” that may be epistemically beneficial. On the one hand she seems to be supporting the broad claim that the inclusion of researchers from historically under-represented groups will be sufficient to provide diverse perspectives, but on the other hand the case studies to which she alludes involve women with distinctly feminist politics. The examples provided by Intemann are illuminating. She indicates developments in the history of sex differences research in psychology reveal the epistemic value of diverse “perspectives,” work specifically in psychology on visual-spatial abilities from the 1970s. She writes:

When females performed less well than their male counterparts [on visual-spatial aptitude tests], it was inferred that such skills must be biologically determined and that biological differences between males and females accounted for differences in performance (258).

To make her point Intemann relies on work on this topic by Anne Fausto-Sterling (1985), who in turn documents that non-biologically deterministic explanations were available to interpret results but were not considered. Intemann writes: “There were alternative hypotheses that the differences in performance were due to social differences that could also adequately explain the experimental results (258)”. It is now more common for feminist health researchers to examine connections between various aptitudes, health, and cultural gender norms when evaluating claims about sex-based biology<sup>28</sup>, but in the early 1970s psychological research on sex differences such connections were not drawn at all.<sup>29</sup> The story of how biologically deterministic inferences about female and male aptitudes and skills were challenged in western academic psychology is similar to the story of how gender bias in primatology was challenged. It was not until more female researchers began to enter the field of academic psychology that alternative hypotheses were suggested and then tested. Importantly for my point here, Intemann does not distinguish whether the researchers who entered the field had a feminist perspective, implicit or explicit. This question does not arise in her presentation of the case. Her summarizing point on how biologically essentialist claims about sex differences in visual-spatial abilities were challenged simply suggests that the shift to arguing that there are few or no biological differences in such abilities resulted from the inclusion of more women in the research community. I agree with Intemann’s reading of this history, but my point is to draw attention to the imprecision of her

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<sup>28</sup> Krieger 2003

<sup>29</sup> After critical examination little to no differences between women and men in visual-spatial abilities were found (See for example: Hyde 2014; Fine 2010; Fausto-Sterling 1985).

claim that challenges to biological essentialism resulted from the inclusion of women in general. I am here suggesting that when we look more closely at the case of claims about sex differences made by psychologists, as well as sex differences research in other fields, the addition of women corresponds to significant shifts in the claims, but it was the addition in particular of women with feminist political perspectives.

Looking more closely at the work Intemann is using as an example of why diversity of values and interests matters, we see that she, as well as Fausto-Sterling (1985)—from whom Intemann is deriving this case history—is referring to the work of psychologists Eleanor Maccoby and Carol Jacklin,<sup>30</sup> who were among the first psychologists in the 1970s United States to begin critically investigating the validity of sex differences research emerging from academic psychology. At that time, psychological research in various domains was thought to provide evidence of innate sex differences between men and women in various abilities and aptitudes. Maccoby and Jacklin, although they were not alone, became pioneers and leaders of criticisms of specific research studies and bodies of evidence that claimed to find such sex-based differences. Maccoby, the more senior of the two researchers, tells the story of how she came to work on gender differences research, and of being approached by Jacklin to act as Jacklin's post-doctoral supervisor (Maccoby 2013). In an interview for the documentary series *Inside the Psychologist's Studio*, Maccoby explains that as she progressed through graduate school and her early career she was not outraged at gender discrimination, in part because it was unrecognizable to her as such. After moving to Stanford University's psychology department in the 1970s, however, Maccoby describes a period of her own increasing feminist awareness. She describes how as one of very few women who were tenured faculty at Stanford she could begin to see patterns of inequality:

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<sup>30</sup> See Maccoby and Jacklin 1974.

that part-time workers were women, often the wives of male faculty, were underpaid, received minimal professional recognition, and were often just as qualified as their husbands for full time faculty positions. Maccoby participated in the founding of Stanford's Clayman Institute for Gender Research in 1974, and describes the growing interest in gender equality of national academic organizations. She was part of the Social Science Research Council's working group on gender issues in academia. When asked how her research program in the early 1970s, and leading to the publication of her influential book *The Psychology of Sex Differences* (1974), began to focus on sex differences research within developmental psychology, Maccoby explains: "It [sex differences research] began to matter more as I got taken up in the women's movement" (Maccoby interview, 20mins:50s)

Maccoby describes one of her and Jacklin's strategies for investigating sex differences research: As insiders in academic psychology, they knew of researchers whose work involved gender differences, sometimes indirectly, but whose publications did not mention gender components of their work (Maccoby, interview). They began systematically contacting these researchers to ask why gender differences were not mentioned in their publications, and about any unpublished gender related findings. Maccoby and Jacklin found that there were many cases of research studies that found no gender differences but that did not include this detail in published work. It turned out that the number of studies that found no gender differences exceeded the number of published articles that reported findings of gender differences. The effect was that the psychology of sex differences literature was skewed towards gender differences in psychological abilities and aptitudes, but behind the scenes of published work was a bigger body of unpublished research data showing no or little difference. This discovery marked the beginning of their now iconic work that challenged the status quo of sex differences research at

the time, and led to corrections and reversals in North American psychological communities of claims about innate sex-based differences in abilities and aptitudes. The details I here raise about the origins of Maccoby and Jacklin's work are important to my discussion because they show that political commitments are entangled with social identity in the production of transformational criticism in this area of psychological research. Highlighting such detail shows the limitations of Intemann's analysis of how social identity diversity might be epistemically beneficial.

All but two of Intemann's seven listed epistemic benefits of diversity involve not just the inclusion of members of an under-represented demographic but the inclusion of members from that under-represented demographic who brought innovative and challenging perspectives (standpoints) to the research and practice. The argument that social diversity is epistemically beneficial is crucially reliant on empirical evidence; it is reliant on historical case studies. It would be overly bold, and unnecessary, to claim that each and every case of women making a difference to research outcomes was a case of the inclusion of women with a feminist perspective. It is an empirical question. So far, however, and especially within the case studies referenced by those making the epistemic benefits of social location diversity claim, the empirical findings indicate that the particular perspective of the researcher is crucially relevant to their capacity to critically evaluate and confront gender-based assumptions within their respective fields. The empirical evidence to date suggests that it is crucial to account for the role of researchers with feminist perspective as cognitive resources for research communities.

## Conclusion

My main point in recounting this moment in the history of psychology regarding sex differences research is that, like in the case of primatology, it seems it was not simply because the inclusion of women in the field was increasing, in this case Maccoby and Jacklin and others, but rather it

was the inclusion of women who worked from a feminist perspective that led to transformative gender focused criticism. As I have pointed out, and point out in more detail in the next chapter, this is a pattern we see across many different areas of research in the sciences: women working from a feminist perspective are the ones who end up making a significant critique of taken-for-granted assumptions in their respective areas of inquiry. Although Fehr and Intemann acknowledge there is a difference between claiming that the addition of “women per se” to research communities is epistemically beneficial versus the addition of “women with a feminist perspective,” they give the significance of a “feminist perspective” insufficient attention. In an understandable effort to avoid the challenges of making an essentialist claim about the perspective of women, Fehr falls back on the policy suggestion of simply hiring more women per se for epistemic benefits, relying on the probabilistic nature of at least some women having a feminist perspective and being able to use that perspective as a cognitive resource for generating new criticisms. But such an argument is unsatisfying for several reasons. For one, as a justification for claiming that increasing the inclusion women in academic departments via hiring policy will be epistemically advantageous, the chance nature of the conclusion leaves the argument ambiguous. Additionally, and more concerning, the ambiguity can be read as tacit essentialism; without being more precise about what women who are able perform “epistemic diversity work” provide—the ability to critically evaluate community assumptions in ways that most other community members cannot—the reader is left to assume that Fehr’s argument is in fact reliant upon a tacit assumption of a ‘women’s perspective.’ And finally, leaving the argument as Fehr and Intemann do is unsatisfying because there are philosophical resources to elaborate it further: namely, resources from feminist standpoint theory. Not only will drawing upon standpoint theory help to make Fehr’s and Intemann’s arguments more robust, but doing so

will also open the door to further clarifying policy initiatives that will help maximize the epistemic benefits that social diversity has and can provide.

## **Chapter 2 The Epistemic Benefits of Social Diversity and Feminist Standpoint theory**

### **Introduction**

In July 2017 two senior female faculty members of the prestigious Salk Institute for biological studies, Victoria Lundblad and Katherine Jones, filed lawsuits against their employer claiming years of gender-based discrimination (Wadman 2017; Lundblad v Salk 2017). The two document, in their court filings, many instances of discrimination and describe an overall work environment that is hostile to women (Lundblad v. Salk 2017). They describe, for example, gender biased patterns of resource distribution, explicit campaigns by the Institute administration to downsize their research labs and teams, repeated instances of derogatory comments about the work of female scientists, and many more, all contributing to what they characterize as “a culture and dominating overarching sentiment that the three Salk tenured women professors ‘do not belong’ at Salk because they are women” (Lundblad v. Salk 2017, 8 sec. 29). Dr. Lundblad writes that she “did not imagine the levels of discrimination, humiliation and hostility she would endure and continues to endure” (Lundblad v. Salk 2017, 10, sec. 37). Unfortunately, the experiences of Dr. Lundblad and Dr. Jones are not idiosyncratic but rather they capture well-documented patterns of systemic gender discrimination experienced by women working in the sciences in general. Throughout Canada and the United States there are now many ongoing efforts to reverse marginalization such as this and to address patterns of gender-based discrimination. Such efforts are diverse but can be broadly characterized as attempting to uncover and describe the many mechanisms by which women and girls are marginalized in different science related settings, and in strategizing and implementing solutions. Intertwined with the



ethical claim calling for efforts to promote diversity in order to rectify unjust marginalization, diversity is also touted as being “good for science,” a claim I explain at length in chapter one (Cordova 2016; Duncan 2017; NSERC 2020; Coe 2017; Fehr 2011). Physicist Jocelyn Bell Burnell<sup>31</sup>, for example, recipient of the 2018 special breakthrough prize in fundamental physics, reflects on the significance of the outsider perspective that helped to make her research possible:

I feel that I made my contribution in part because I felt an outsider...I was one of very few women, and I wasn't from the southeast of England, the affluent part of the country. So, I think increasing diversity of the workforce actually allows all sorts of things to develop (Wall 2018).

Such a claim raises questions about how, exactly, the sciences or scientific knowledge in general might benefit if historically under-represented groups were better included, such that equitable representation is achieved.

The aim of this chapter is to build on chapter one’s overview of literature claiming that the diversity of inquirers’ social identities can be epistemically beneficial, and to suggest a way forward for addressing the essentialist conception of social identity that I argue is implicit in such claims. I argue that the social location diversity claim is dependent on a conception of social identity as epistemically significant, and a view that the conceptual resources of feminist standpoint theory are vital. I argue that the social location diversity claim<sup>32</sup> is dependent on three core theses of feminist standpoint theory: i) the situated knowledge thesis, ii) the inversion thesis (also referred to as the ‘thesis of epistemic advantage’), and iii) the “achievement thesis,” the thesis that a critical standpoint on knowledge production is achieved, not given.<sup>33</sup> Claiming the

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<sup>31</sup> Although Burnell was awarded the prize in 2018 it was for her 1967 discovery of pulsars. The pulsar discovery was recognized in 1974 with a Nobel prize in physics, but the prize went to Burnell’s phd supervisor, Antony Hewish.

<sup>32</sup> From here on I will abbreviate social location diversity claim to ‘SD claim.’

<sup>33</sup> Rolin 2015.

dependence of the SD claim on core theses of standpoint theory creates an opening for several additional claims. One such claim relates to incorporating considerations of other forms of diversity, beyond sex and gender, into Fehr's claim, and similar claims made by others. I will argue that as it stands Fehr's claim is not able adequately to defend such an expansion beyond gender diversity, and that acknowledging standpoint theory dependence will begin to lay the groundwork for such an expansion. Without greater precision about the mechanisms through which social diversity may provide resources for critical analysis of community-held shared assumptions, arguments urging for increasing social diversity beyond gender end up making essentialist assumptions about members of social identity groups. Utilizing the resources of feminist standpoint theory to understand how social identity may facilitate a critical capacity will provide the groundwork for expanding the social diversity claim beyond gender.

#### *Reviewing the SD claim*

There are different senses of 'diversity' that are imagined to have the potential to bring about epistemic benefits. Some senses of 'diversity' discussed do not consider the social identity—or social location—of researchers to be epistemically significant.<sup>34</sup> In the first chapter and throughout this dissertation I focus on the epistemic significance of *social location diversity* in research communities, investigating the following claim: research communities that are composed of members from heterogeneous social identities may be epistemically privileged over research communities composed of researchers all from the same or similar social identity categories (c.f. Fehr 2011; De Melo-Martin & Intemann 2011; Intemann 2009; Longino 2002). The general claim is that an epistemic agent's life experiences, values, and interests profoundly

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<sup>34</sup> See for example: De Langhe 2014; Weisberg & Muldoon 2009; Solomon 2006, 2001; Kitcher 1993, 1990.

inform which theoretical commitments, background assumptions, hypotheses, methods, and explanations seem reasonable. While these claims can lend themselves to caricature—as in, every casual opinion counts, no matter whose it is—the more delicate understanding of this position, which this chapter takes up and treats in detail, is that “interpretive habits,” and standpoints, to borrow from Alison Wylie (Wylie 2012, 2011), develop within distinctive patterns of experience connected to social location. I expand on this claim and its derivation from feminist standpoint theory over the course of the chapter.

One plausible explanation for why standpoint theory has largely been left out of discussions about the epistemic significance of social diversity in research communities has to do with the controversy that has historically followed standpoint theory. As I will describe in more detail throughout the chapter, feminist standpoint theory has often been understood by critics to rely on stable, homogeneous, and ultimately untenable essentialist conceptions of social identity, to which standpoints are attached. Such a view was and is criticized for sweeping away difference, heterogeneity, and contingent social identity categories. A view that imagines all women share an identity, that there exist so-called ‘Women’s ways of knowing,’ for example, implies an essentialist conception of social identity that has been roundly rejected as false. Although it is common for detractors to claim that feminist standpoint theory depends on essentialist conceptions of social identity, very few proponents of the theory defend such a position. For example, entries in an important collection of core articles on standpoint theory, spanning several decades beginning in the 1970s—Sandra Harding’s *Feminist Standpoint Theory Reader* (2004)—acknowledge a possible reading of standpoint theory as implying essentialist identity categories but such readings are not endorsed by the theory’s authors and proponents. The essentialist criticism in some ways depended on a misreading of work by proponents of

standpoint theory. As Alison Jagger's 1983 essay points out, a critical consciousness and standpoint on knowledge is not automatic for those occupying a marginalized subject position: "The standpoint of women is discovered through a collective process of political and scientific struggle" (57). Rather than seeing the theoretical potential of feminist standpoint theory and engaging in productive and generative critique, many readers, especially in mainstream Anglo-American philosophy, but also outside, dismissed the theory outright on the grounds that the so-called essentialism, imagined to be inherent to standpoint theory, is a fatal flaw. The essentialist critique attached to feminist standpoint theory has contributed greatly to under-appreciation of the theory's potential contributions to work in science studies and beyond.

As it is presently articulated, the social location diversity claim suggests that promoting the inclusion of people from historically under-represented groups in the sciences will be epistemically beneficial for whichever communities of inquiry make such changes. My argument suggests that this normative claim is perhaps not precise enough to bring about the theorized and desired epistemic benefits of diversity. A discussion about how to reformulate the normative call for diversity for the sake of epistemic benefits will conclude the chapter.

The central thesis of this chapter, then, is that the social diversity claim is conceptually dependent on three core theses of feminist standpoint theory—the situated knowledge thesis, the inversion thesis, and the achievement thesis—and being explicit about this dependence will help to address and refine some of the normative questions about how to implement calls for diversifying academic communities and diversity promoting hiring policies. Explicitly laying out the dependence of the SD claim on these three theses, I argue, suggests that Fehr's claim—and similar claims made by others—does not sufficiently exploit the transformative epistemic potential of social diversity derived critique.

### *Outline of the chapter*

The chapter begins with an analysis of critical gender transformations that occurred in American primatology in the 1970s and 80s, focusing on the work and reflections of primatologist Sarah Blaffer Hrdy. Her case illustrates the intertwining of late 20<sup>th</sup> century primatology and the emergence of second wave feminism and the women's liberation movement in the United States. My summary of, and reflections on, how the SD claim comes out of historical case studies and analyses of shifts in primatology will be followed by an outline of the key theses of standpoint theory as developed by Alison Wiley (2003, 2011, 2012). I will make the case that the SD claim is dependent on core theses of feminist standpoint theory and discuss how this recognition helps to incorporate intersectional analysis and social locations beyond gender. I conclude with considerations about how my argument impacts initiatives to increase social diversity in academic research communities for the sake of epistemic benefits.

There is a sense of urgency driving the questions discussed here, about the role of diversity in the sciences. This urgency is certainly concentrated in sciences related to sex and gender but should be considered to apply more widely. More precisely, there is a sense of urgency to questions about how to leverage social diversity in research communities to prevent the conscious and unconscious uptake of cultural gender narratives, scripts, and assumptions into the content of scientific research projects: for example, emerging in questions asked, questions left un-asked, in choice of methodologies, in how data is interpreted, in how results are interpreted, and how conclusions are communicated publicly. One might suggest that historical examples of gender and racial bias in the sciences are a thing of the past, that such forms of 'bad science' have been corrected. Such a view would be mistaken. Although most examples of the uptake of gendered assumptions into the sciences are historical, there are critiques of cutting-edge

science as well. In addition to her historical work Sarah Richardson applies her critical standpoint to critique scientific work *in-the-making*. For example, building on her work documenting and exposing the uptake of gendered assumptions and scripts in 20<sup>th</sup> century sciences including hormonal and chromosomal research, Richardson's work also attempts to show and suggest caution about the re-inscription of gender assumptions in 21<sup>st</sup> century genomics. Furthermore, as examples of algorithmic bias in predictive analytics and machine learning and software analysis of big data proliferate it is becoming clear that sensitivity to sex and gender bias is essential for preventing the perpetuation of oppression in high tech and AI. Richardson's work and work by critical data and algorithm scholars highlights the urgency of addressing such systemic issues in at least those sciences that address questions of sex differences, if not the sciences and applications of data analytics more broadly.

### **Origins of the SD claim: The case of Primatology**

There are several important case studies in the history of western sciences that reveal gender bias in the content of scientific knowledge,<sup>35</sup> but an influential and interesting case is about the uncovering of gendered assumptions embedded in core claims of primatological research. In the late 1970s and throughout the 1980s Primatology became a focal point for feminists thinking about connections between gender and science (see for example: Haraway 1989). This is perhaps because non-human animal and human sciences were being used to make and justify the social order of the time. For feminist, anti-racist, and other cultural critics the use of scientific claims to

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<sup>35</sup> For example: Martin 1991; Biology and Gender Study Group 1989. Ah-King et al. 2014. Maccoby and Jacklin 1974; Fausto-Sterling 1986; Fine 2010; Hoffman and Bluhm 2016; Richardson 2013; Oudshoorn 1990; Birke 2011, 1993.

justify sexist or racist claims about the social order was troubling. Feminists working in primatology, for example, were able to see these links and began to challenge the supposed neutrality and objectivity of primatology. The questions here were less focused on racial homogeneity and the low numbers of women and who were practicing primatologists—although this was a concern. Instead they focused on the extent to which gender plays a role in shaping the content of scientific knowledge—more specifically, in the case of primatology: the extent to which research questions and descriptions and explanations of primate behaviour and lives were shaped by assumptions about gender.

There are several notable works on this topic, most notably Donna Haraway's *Primate Visions* (1989), which provides a history of American primatology, beginning in the late 19<sup>th</sup> century up to the mid-1980s. Haraway writes at length about several female primatologists who challenged core methodological and explanatory standards and assumptions within American primatology, including Sarah Blaffer Hrdy, whose work I discuss here. Hrdy did her graduate training at Harvard University in the early 1970s. She worked primarily on studying Langurs, a species of monkey, in South India. Hrdy is one of several American female primatologists working in the 1970s and 80s who made transformative criticism for various primatological sub-fields. Her case is particularly interesting here because of her substantial reflections on the significance of her feminist commitments for the gender critique [she made], which I will say more about shortly.

The primary questions that were asked by the researchers in the field, as Blaffer Hrdy was completing her PhD work, had to do with strategies that males of the species use to increase their reproductive success. Hrdy's own research focused on the behaviour known as 'infanticide: the killing of infants. Although it is a rare event, infanticide has been a phenomenon of deep interest

to primatologists, and has been a significant site of controversy within primatological research (Reese 2009, 2).<sup>36</sup> Hrdy's doctoral research and early scholarship throughout the 1970s focused on how to understand infanticide from an evolutionary perspective. Hrdy played a significant role in challenging gender assumptions implicit in her field and of interest to my discussion here is a 1985 article that is a reflection on the significance of what she calls her "dawning feminist awareness" in the early years of her academic career. In her paper written in the early 1980s she writes that during her observations of primate behaviour she noticed behaviour that "didn't fit her Harvard trained eyes" (Hrdy 1985, 126). The behaviours she is talking about are female sexual behaviours that could not be explained by her Harvard training.

Backing up for a moment, it turns out that from its inception American primatology was conditioned by several presuppositions, one of which Blaffer Hrdy captures succinctly with the phrase: "The myth of the Coy female" (Hrdy 1985). As Hrdy explains, the 'myth of the coy female' is "the presumption basic to many contemporary versions of sexual selection theory that males are ardent and sexually indiscriminating while females are sexually restrained and reluctant to mate" (Hrdy 1985, 120). It seems all sides in the primatological controversy over how to best understand primate infanticide focused exclusively on male behaviour and the males of the species. This assumption was the result of this 'myth of the coy female,' also tied to the assumption that male traits and characteristics are the driving forces of evolution, an assumption long and widely held in evolutionary theory generally. It was assumed that sexual selection was

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<sup>36</sup> The controversy is about whether the infanticide behaviour is an evolutionary adaptation or whether it is a response to certain social and/or environmental conditions (Reese 2009, 2). In 1970s North America the question was significant especially for researchers who accepted the basic premises of socio-biology: that all human behaviours and traits are the products of evolution, and can therefore be explained by the evolutionary advantage provided by such traits—Blaffer Hrdy self-identified as a socio-biologist.



determined by male-male competition, and therefore male adaptations to competition for female mates are the driving force of evolutionary change. Hrdy suggests that primatologists were blind to "... the strategies of both sexes which together compose the social and reproductive behavior of the species" (Hrdy and Williams 1983) Reflecting on her graduate training, Hrdy writes that she was observing behaviour that didn't fit her "Harvard trained eyes": her graduate training had conditioned her to assume that female behaviours were irrelevant to the study of infanticide. She stresses this point by suggesting that although focus on male behaviour and the assumption of females as coy had been operational premises of primatological field research, evidence had in fact accumulated which suggested the contrary. These assumptions about female primate behaviour persisted "despite the accumulation of abundant openly available evidence contradicting it..." (Hrdy 1985, 120). Hrdy's graduate training had not provided her with the resources to interpret and render as significant female primate behaviour: "At the time, I had no context for interpreting behavior that merely seemed strange and incomprehensible to my Harvard trained eyes" (Hrdy 1985, 126).

A question Hrdy struggles with in her reflections on gendered assumptions in primatology is why no one investigated female primate sexual behavior, especially when many field studies provided examples of females in animal groups that ardently seek to mate more than once or twice: behaviour that contradicts the 'coy' characterization and a behaviour which is, in retrospect, obviously relevant to the study of behaviours associated with reproductive success. Blaffer Hrdy's thought is that cultural gender stereotypes conditioned how primatologists, mostly men but also some women, interpreted observations of primates in the field. The most interesting part of Hrdy's work for my purposes here comes with her speculations about what led to the reconsideration of the 'coy female'. Hrdy notes that it is not the case that there was a conscious

effort to leave out female reproductive behaviours. And it was not simply new or better data alone that brought about the revisions. Data that went against the myth of the coy female was available all along. Hrdy asks:

Assuming, then, this bias, a preconstituted reality in which males played central roles, what factors motivated researchers to revise invalid assumptions? What changes in the last decade brought about the new focus on female reproductive strategies and, with it, the recognition that certain assumptions and corollaries...were quite wrong? (Hrdy 1985, 135).

Hrdy's own answer is that something motivational for a few primatological researchers changed, including for her. The following reflections are in part based on her experiences of coming to this recognition. For example, she writes:

...I seriously question whether it could have been just chance or just historical sequence that caused a small group of primatologists in the 1960s, who happened to be mostly male, to focus on male-male competition and on the number of matings males obtained, while a subsequent group of researchers, including many women (beginning in the 1970s), started to shift the focus to female behaviours having long-term consequences for the fates of infants (Hrdy 1985, 136)

Pressing her own question, Hrdy continues: "But why, we still need to ask, was the process of same-sex identification by women different in the 1970s and 1980s than in the early years of primatology?" (139). Reflecting on her own experiences, she says: "...increasingly, *my identification was with the female victimized in this way*, not with the male who, according to sexual selection hypothesis, was thereby increasing his reproductive success" (Hrdy 1985, 139, *italics mine*).

If infanticide really was an inherited male trait that could be elicited by particular conditions (as I believed was the case), *why would females put up with this system?* Why not refuse to breed with an infanticidal male and wait until a male without any genetic propensity for infanticide showed up? Considerations of this question led to many others related to the question of intrasexual competition among females generally (Hrdy 1985, 139, *italics mine*).

This history of primatology suggests that the nature of this identification was changing over time *as the self-image of women researchers also changed. In my own case, changes in the way I looked at female langurs were linked to a dawning awareness of male-female power relationships in my own life...* (Hrdy 1985, 140, italics mine)

Hrdy is suggesting that it was not simply the increasing inclusion of women in the field of primatology that led to the exposure and revision of false gendered assumptions, but was rather the presence and increasing inclusion of women who were developing a feminist standpoint, providing a particular kind of epistemic advantage. As I will show, it seems Hrdy is suggesting that some female primatologists were developing a critical consciousness of gender relations, and it is specifically this critical consciousness that allowed them to develop their critique of the implicit assumptions related to sex and gender that pervaded primatological research.

Haraway (1989) writes about Hrdy's role in challenging androcentric and sexist assumptions within primatology, but she writes about others as well, including primatologists Jeanne Altmann and Linda Marie Fedigan. Altmann and Fedigan were scientists with explicit feminist politics and who made significant contributions to challenging and revising primatological assumptions and methodologies, some of which were gender focused, but not all (Haraway 1989). One important point the primatology case study reveals is that it is not simply a case of doing better science and eliminating bias. All of the traditional standards for eliminating bias in the sciences were operative in the case of primatology: peer review and replication being core mechanisms.

This history of primatology suggests that a researcher's political commitments can have a positive impact on knowledge-making practices, rather than a necessarily corrupting impact, as traditional philosophies of science would imply. Feminist science studies scholars have also taken this case and others that make similar claims to suggest that claims and presuppositions about observer neutrality, that any rational human being will make the same observations in any

given situation (universal substitutability), are in fact false assumptions about the nature of observation (see for example Harding 1995), and this claim is pushed, over time, into the diversity claim made more recently (Rolin 2015; Fehr 2011; de Melo Martin & Intemann 2011; Intemann 2009).

One question that emerges from analyses of case studies of the exposure of androcentric assumptions in primatology, and in other areas of scientific research, is: how can androcentric, sexist, and gender related cultural community wide assumptions be prevented from giving shape to research projects in the sciences? What does the primatology case study—and other similar case studies—reveal about preventing gender and other forms of bias in the sciences? This concern is at the heart of much feminist science studies scholarship, including Longino's and Fehr's, although it is sometimes more explicitly stated, as it is, for example, in Kourany (2010) and Fisher (2011). Fehr positions her argument about the epistemic benefits of socially diverse research communities to be a response to such questions.<sup>37</sup>

The case of primatology, among others, illustrates, as Longino argues, that exclusion of “women and members of certain racial minorities from scientific education and the scientific professions constitutes not only a social injustice but a cognitive failing” (Longino 2002, 132). The case illustrates such a cognitive failing because the exclusion protected widely shared androcentric assumptions from critical scrutiny (2002, 132). In the case of primatology background assumptions, prejudices, and theoretical perspectives of the community were

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<sup>37</sup> Fehr opens her paper (2011) with an anecdote relating an experience following a presentation she gave to STEM faculty members outlining data that demonstrates the problem of under-representation of women and minorities in the sciences. After her talk Fehr recounts being approached by a male administrator who told her that if she wanted to “get traction with these guys” she would need to answer the question they each had on their mind: what is in it for me? What interests of theirs will be advanced by caring about under-representation of women and minorities in STEM disciplines?

homogeneous with respect to sex and gender and thus went unnoted and unchallenged. The SD claim that Fehr makes, building on Longino, is that such unnoted assumptions are more likely to be noticed and challenged, and pushed aside when the community of researchers has a wide range of differing background assumptions. Longino stresses, and Fehr does so as well, the need, then, to create norms and mechanisms to ensure dissenting views are cultivated and valued. Notice that Longino, too, quickly goes from the inclusion of ‘women and minorities’ to talking about the importance of critical points of view, that what historical case studies demonstrate can be epistemically crucial for challenging shared background assumptions. In making this quick transition in her discussion she does not adequately acknowledge that the sources of transformative critique in the cited case studies all originated from researchers with critical feminist perspectives. There is a gap, then, in her explanation for how women—and more broadly those historically excluded or under-represented—can provide critical perspectives. This gap leaves an essentialist interpretation open as an implication of Longino’s view, which I am sure she intends to avoid.

Summarizing, socially diverse research communities are thought to translate into a membership that has diverse sets of background assumptions. But if we attach the source of diverse background assumptions to social identity categories, significant challenges arise. Such a presumed connection, without elaboration, tacitly implies identity essentialism. Standpoint theory becomes a resource, counter-intuitively—because it has been criticized on similar essentialist grounds—to avoid the essentialist implications. Without further articulating the mechanisms by and through which social diversity in research communities can result in epistemic benefits, Fehr’s claim does not provide grounds for concluding that members of under-represented groups in the sciences are uniquely positioned to make the desired critiques. Her claim becomes one

about diversity in general, without being attached to people from particular demographics, unless she is willing to make an essentialist claim about women in general, which of course she is not. I contend that a robust theory of the epistemic implications of social identity is necessary, and that feminist standpoint theory is uniquely able to provide the needed epistemic details. My contention is not that standpoint theory is the only conceivable theoretical remedy for sustaining the social diversity claim. Rather, it is meant as a provocation to push for further elaboration on how socially diverse research communities can be epistemically superior to socially homogenous ones.

The case of transformative critique in primatological research is a central case study highlighted by Fehr as supporting her argument. But it is apparent, after considering Fehr's claim and after examining the case study of primatology in more detail, that the extent to which the feminist commitments of the researchers mattered to how they understood their work and the work of the field is under-explored. Fehr does not pursue a more detailed articulation of the mechanisms of how epistemic benefits may arise out of critical perspectives. We notice, then, that epistemic advantage seems to derive from a critical consciousness or standpoint. To begin such an articulation I now turn to a discussion of what feminist standpoint theory has to offer the SD claim.

## **The Reliance of the SD claim on Standpoint theory**

### **Some Background on Feminist Standpoint theory**

Since the early 2000s, perhaps beginning with Wiley 2003, there has been renewed attention by some feminist philosophers of science and feminist epistemologists to standpoint theory,

although this literature is sparse.<sup>38</sup> Alison Wiley, for example, has made the case for renewed attention to feminist standpoint epistemology as integral to advancing feminist projects, both theoretical and activist.<sup>39</sup> Wiley stresses those core elements of standpoint theory that she argues are worth renewing and thinking carefully about, three of which include: the situated knowledge thesis, the inversion thesis (of epistemic advantage), and the thesis of a standpoint as developed or what I call here, with Rolin (2015), the achievement thesis. After exploring a refined understanding of these conceptual tools, I argue that the social diversity claim is dependent on each of these theses of feminist standpoint theory. I also highlight a tension that emerges, that if the social diversity claim is dependent on several key theses of standpoint theory, and if Wiley's refined understanding of standpoint theory is to avoid the typical pitfalls (i.e., essentialist conception of social identity and automatic epistemic privilege) then the sweeping claim to diversify academic departments by including women and minorities may not have the desired epistemic impact. Another way to put this is to consider whether the SD claim, without incorporating the resources of standpoint theory, implicitly invokes essentialist conceptions of social identity. The SD claim needs the resources of standpoint theory developed by Wiley (2012, 2011, 2003) if it is to avoid the essentialist critique, and this is possible only once the explicit connection between the SD claim and standpoint theory has been laid out. Here I continue building my argument that to coherently accept the general claim that social diversity can be epistemically beneficial for research communities one must also accept all three theses of feminist standpoint theory. I explain each thesis below.

### ***Situated Knowledge thesis***

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<sup>38</sup> See for example: Rolin 2015; Crasnow 2014; Wiley 2012, 2011, 2003; Intemann 2010; Hypatia Symposium on Feminist Standpoint Theory 2009 introduced by Crasnow 2009.

<sup>39</sup> Wiley 2012; 2011; 2003

The ‘situated knowledge thesis’ is the claim that knowledge and its constitutive practices cannot be neatly separated from the situation in which it or they occur. ‘Situated knowledge’ is often defined as the recognition that knowledge is ‘socially’ situated (Rolin 2015 for example). This is true, but is also too limited. The spirit of ‘situation’ in ‘situated knowledge’ is ideally meant to incorporate social, cultural, geographical, material, and historical conditions. ‘Context’ is sometimes used to capture the ‘social background of knowledge making, but ‘context’ pre-supposes categorical separations between knowledge making practices and the outside intrusion of social influences, and between ‘text’ and ‘context.’ The situated knowledge thesis denies such categorical separations, such as those between ‘science and politics’ and ‘science and society’ (See Haraway 1997), and claims that knowledge making and circulating practices are inseparable from situation, from the social and material circumstances in which knowledge related practices. Wiley argues that the situated knowledge thesis stipulates that: “Social location systematically shapes and limits what we know, including tacit, experiential knowledge, as well as explicit understanding, what we take knowledge to be as well as specific epistemic content” (Wiley 2003, 31). ‘Social location’ signifies an epistemic agent’s historically contingent social and material positioning. Accounting for one’s social location includes unfixed and historically contingent social identity markers—how one is perceived in cultural space—such as gender, race, class, sexuality and material geographical positioning. Wiley is here drawing attention to ‘situation’, as in “the place where epistemic activity occurs” (Code 2006, 100). ‘Place,’ then, is not epistemically benign. This is a point emphasized and elaborated by Code (2006) in her notion of ecological thinking. There are several dimensions of situated knowledge that Code highlights that are important to my use of the concept here. To say that knowledge is ‘situated’ is to draw attention to, and deem epistemically significant, the place where epistemic activity occurs (Code



2006, 100). For Code, situation is a place to know in two broad senses: “as a place where epistemic activity occurs, and as a place that itself demands to be known in those of its aspects that facilitate or thwart knowing responsibly and well” (2006, 100). In knowledge circulating practices, for example, thinking of Fricker’s work on epistemic injustice (2007), various forms of prejudice play into whether a testifier is deemed trustworthy or not.<sup>40</sup> Situated knowledge then opens conceptual space for considering practices of knowledge making, but also practices of knowledge authorization, sharing, circulation, and the thwarting of each—amounting to a recognition of the importance of considering power in epistemic analysis.

In Haraway’s influential formulation (1988), ‘situated knowledges’ is intended to counter the sense in which conceptions of knowers as disembodied and abstracted from their own subjectivity and larger situation work to absolve knowers of responsibility and accountability for their knowledge claims and knowledge making practices. In the first place, conceptualizing knowers as disembodied and abstracted from subjectivity performs what Haraway famously calls the ‘god trick,’ drawing attention to the fantastical claim that a knower can achieve a ‘view from nowhere,’ an imagined empirical-observer positioning that is disembodied from a would be knower’s corporeal existence, achieving an imagined purity, an imagined value-neutral recording of sensorial data. Haraway, and Code with her ecological thinking (2006), is insistent on re-locating knowledge claims and constitutive practices in historically contingent times and places, in the literal bodies of those participating in knowledge making, recognizing “the partiality of all human seeing and knowing” (2006, 118).

Characterizing knowledge as linked to particular embodied knowers, and embodied knowers as fundamentally situated in particular socio-material-historical moments, runs in

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<sup>40</sup> See Fricker 2007.

opposition to the positivist insistence on disconnect between a knower their particular social situation to achieve a “view from nowhere” (Haraway 1988). As Wylie (2012) points out, what we might think of as a “generic” version of the situated knowledge thesis argues that: “contingent histories, social context and relations, inevitably affect what epistemic agents know...and shapes the...epistemic resources they bring to bear in generating and adjudicating knowledge claims” (62). Given this insistence on understanding knowledge as situated, epistemic attention must be devoted to investigating how an epistemic agent’s location in hierarchical systems of power relations, that structure material and social relations, affect “what we know and how we know” (Wylie 2012, 62).

Knowledge is made situationally and epistemic analysis that takes patterns of authority and expertise into account needs to acknowledge the epistemic significance of social identity. The social diversity claim implies that in at least some circumstances a researcher’s subjectivity can benefit knowledge making practices and may enhance objectivity—not defined as value-neutral but rather as less partial. Relating back to the historical case study of how transformative criticism was made in American studies of primate sexual behaviour, it was women primatologists with an explicit feminist commitment that were able to make and carry out critiques of the androcentric assumptions that permeated the field. If it is epistemically advantageous for an epistemic—a research—community to be socially heterogeneous as opposed to homogeneous, as in the case of primatology, then the subjectivity of researchers must have had some degree of epistemic significance. I now turn to the next core thesis of feminist standpoint theory: the inversion thesis.

### ***Inversion thesis***

The inversion thesis is perhaps what most distinguishes feminist standpoint theory from other feminist epistemologies. The inversion thesis, also sometimes referred to as the thesis of epistemic advantage, builds on the situated knowledge thesis by further considering the epistemic significance of historically contingent structural patterns of experience related to social identity.

Wiley defines the inversion thesis in the following way:

Those who are subject to structures of domination that systematically marginalize and oppress them may, in fact, be epistemically privileged in some crucial respects. They may know different things, or know some things better than those who are comparatively privileged (socially, politically), by virtue of what they typically experience and how they understand their experience (2003, 26).

Marginalized folks are often popularly imagined to be epistemically disadvantaged compared to privileged folks because, for example, higher education is more readily accessible for privileged folks. The inversion thesis is ‘inverting’ this popular assumption. To help explain what she means in her definition of the inversion thesis it will be helpful to consider how feminist standpoint theory was initially articulated. Sandra Harding, summarizing the broad goals of feminist standpoint theory, writes: “Feminist standpoint theorists...set out to explain how certain kinds of politics do not block the growth of knowledge but, rather, can stimulate and guide it” (Harding 2004, 2). Standpoint theory is about articulating the positive role that partiality and politics can have on knowledge production. It should be clear that this is in direct opposition to hegemonic conceptions of the place of values and politics in knowledge making, which demand impartiality and value-neutrality to warrant the honorific label knowledge.

Standpoint theorists begin by recognizing patterns in the contingent, un-fixed and un-stable material and, consequently, experiential differences of peoples’ lives, and particularly patterns in how such differences manifest. The ‘un-fixed’ and ‘un-stable’ qualifiers here are vital and worth pointing out explicitly. In her work to re-articulate the value of feminist standpoint

theory Wiley stresses that the theory is “jointly empirical and conceptual” (Wiley 2003). Feminist standpoint theorists must stress the empirical nature of their claims about material and experiential differences in peoples’ lives. One’s social identity, and the material conditions of peoples’ lives, are not essential or fixed or stable but are rather in-flux; patterns are, however, empirically discernable and verifiable. Feminist standpoint theory is in agreement with and is utilizing sociological conceptions of ‘identity,’ and it will be helpful to briefly review some of this work.

Lawler (2008) points out that western traditions imagine ‘identity’ as “...a unique and individual possession” (2008). Lawler and many sociologists argue, with feminist standpoint theorists, that identities are the products of social processes (Hacking 1999; Scott 1992; Hall 1987). ‘Identity’ refers to a range of phenomena. ‘Identity’ means both “its public manifestations—which might be called ‘roles’ or identity categories—and the more personal, ambivalent, reflective and reflexive sense that people have of who they are” (Lawler 2008, 7). The various meanings of ‘identity’ are not interchangeable, and can often be in tension. For example, “publicly available categories of identity may not easily map on to how people live, experience and understand themselves within those categories” (2008, 7). One’s experience of their identity might be reflected in how others respond to, and identify, them, but they also might not (2008, 7). Recognizing the multiple dimensions of identity is not to say that one meaning reflects a ‘real’ or ‘innate’ self. Furthermore, Scott (1992) argues that to claim significance for identity is not to claim that those identities are rooted in nature or biology, or are essential. Claiming, then, a ‘realism’ (Alcoff and Mohanty 2006) for identity is to claim that social identities are: “...socially significant and context specific ideological constructs that nevertheless

refer in non-arbitrary (if partial) ways to verifiable aspects of the social world” (Alcoff and Mohanty 2006, 6).

Wylie, then, and feminist standpoint theorists who claim significance—epistemic and social—for social identity do not stipulate that one’s social identity demarcates anything essential about the inner nature of that person. Rather, social identity can be discerned in patterns of engagement, in patterns of how one is interpreted and engaged within social and cultural space. Conceptions of ‘identity’ used in feminist standpoint theory can be understood as historically and geographically contingent manifestations that can be empirically verified. Certainly, one’s understanding of their own identity is entangled with how the social and cultural space that they occupy engages with them. But clarifying the relation between one’s ‘sense of myself’ and how social categories ‘attach themselves to me’ does not need to be addressed by feminist standpoint theorists. Requiring defenders of feminist standpoint theory to account for this relation amounts to a red herring because to do so is to imply an understanding of identity that feminist standpoint theorists—and most sociologists!—reject. It is to imply a definition of ‘identity’ that imagines public and inner manifestations of identity as necessarily linked. Feminist standpoint theorists define these aspects of identity as independent, and treat their relation as a matter of empirical investigation. Feminist standpoint theorists, focusing on the public, or outer, aspects of one’s experience of identity avoid the problem of essentialism outright because ‘inner’ identity is not invoked, and because patterns with respect to ‘public’ identity are defined as contingent and in need of empirical assessment.

Initially focusing on patterns of difference in the lived experiences of men and women in North America, feminist standpoint theorists argue that lived experiential differences have

important epistemic implications. In early work by Nancy Hartsock, for example, she argues that one's experiences are structured by the material conditions of life (37). Hartsock writes:

If material life is structured in fundamentally opposing ways for two different groups, one can expect that the vision of each will represent an inversion of the other, and in systems of domination the vision available to the rulers will be partial and perverse (37).

According to Hartsock, and feminist standpoint theorists, a dominant organizing feature of material life—at the time of her writing, in the early 1980s in the United States—is what she refers to as ‘the sexual division of labour,’ which defines women’s activity as contributors to subsistence and as mothers. She writes: “...women’s lives make available a particular and privileged vantage point on male supremacy, a vantage point which can ground a powerful critique of the phallocratic institutions and ideology which constitute the capitalist form of patriarchy” (36). Hartsock is arguing that, given empirically verifiable patterns to the lived experiences of women in a particular place in a particular time, such experience provides the basis for rendering aspects of social relations visible, relations that are otherwise obscured. Those who are disadvantaged by the prevailing organization of social and material life have an interest in understanding and critiquing social relations to a degree that those who are advantaged do not. Thus, patterns of experiential difference that track social identity can give rise to diverse worldviews.

Just what kind of advantage do those who are subject to structures of domination have?

What kinds of advantage? Wiley writes:

Those who negotiate social, legal, and economic institutions from a position of marginality may come to know...in intimate detail, how labour is exploited, how material conditions of life and social relations are sustained, how power inequities are reproduced and what their consequences are, especially for those who are subdominant (Wiley 2011, 164).

Wiley imagines that lived experience as a marginalized member of society can provide a critical distance from hegemonic understandings of the social relations of, and organization of, society.

Wiley continues:

Marginality enforces critical dissociation from a dominant world view, throwing into relief the parochial nature of conceptual categories and norms of credibility that are otherwise taken as given and projected as universal. (2011, 164)

For example, that certain types of labour are assigned according to historically, geographically, culturally specific conceptions of gender, suggests that one's lived experience may differ greatly from place to place, and over time, depending on one's assigned gender. For example, In North American culture domestic labour—relating to care of the home, care of the children, care of the family in general—is generally assigned to women. This is what standpoint theorists refer to as the sexual division of labour.

With such talk of “women”—seeming to imply ‘all women’—and ‘mothers,’ implying a sameness of what it means to be a mother as well as an implied inherent connection between ‘womanhood’ and ‘motherhood,’ it is easy to imagine the emergence of the essentialist critique and controversy surrounding feminist standpoint theory. The claim that epistemic privilege accrues to those who occupy certain social identities seems to imply, so the criticism goes, a lack of intra-group variation and essentialism with respect to social identity. This reading of the inversion thesis suggests that all women, in virtue of being women, have access to knowledge that men do not. A second criticism is that the inversion thesis seems to imply an “automatic” epistemic privilege. The criticism suggests that standpoint empiricism must presuppose an “essentialist conception of social identity” (Wylie 2012, 58). The criticism continues that in order for there to be a women's standpoint (taking gender to be one of several epistemically salient social identities) then there must be one or more essential attributes that “anchor” members

together. Given how implausible this sounds, so the criticism goes, social identity-based standpoints must be abandoned.<sup>41</sup> A person who occupies a defined standpoint will have knowledge that is uniquely available to those who occupy that standpoint/social location.

***The Achievement Thesis: Critical standpoint on knowledge production***

As a counter to the claim that the inversion thesis implies automatic privilege, Wiley, building on the work of earlier feminist standpoint theorists (Smith 1974; Hartsock 1983; Jagger 1983) develops the third core thesis of standpoint theory, which claims that a standpoint does not accrue automatically but is rather achieved and developed and that a standpoint is best understood as a project. What might it mean for a standpoint to be developed or achieved or a project? A critical standpoint on knowledge production is:

...that of a race, class, and gender disadvantaged ‘insider-outsider’ who has no choice, given her social location, but to negotiate the world of the privileged, a knower who must understand accurately and in detail the tacit knowledge that constitutes a dominant, normative world view at the same time as she is grounded in a community whose marginal status generates a fundamentally different understanding of how the world works. (Wylie 2003, 34-35)

The epistemic advantages that can result from marginalized standpoints are not automatic. Part and parcel with the inversion thesis is the achievement thesis, which stipulates that a standpoint is achieved over time, often within a community, through critical examination of the politics of knowledge making and their relationships to power and authority. The ‘achievement’ of a critical consciousness or standpoint on knowledge production begins with political consciousness of social relations and material conditions of life, and, as Haraway puts it, “...leads to re-examination and re-evaluation of taken-for-granted assumptions...”(1989, 335). Wiley writes that an achieved standpoint is: “A critical consciousness of the conditions under which

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<sup>41</sup> For more on this criticism see Wylie 2012 pgs 58-60 and Alcoff 2006.



knowledge is produced and authorized, and of the difference that our situated-ness makes to epistemic agency” (Wiley 2003, 162). Developing a standpoint is about destabilizing instead of replacing. It is tempting to imagine feminist standpoint theory as suggesting that the standpoint, or understanding of the world, of the marginalized should replace the understanding of the privileged, but this is a misinterpretation. To achieve a standpoint is to recognize the situated-ness and the need to interrogate all knowledge claims.

In her reflections on transformative critique that occurred in American primatology, brought about by Hrdy, Altmann, Fedigan and others, Haraway helpfully explains that standpoints of these women were achieved and not simply given.

Haraway writes:

‘Being’ a woman becomes a constructed site for interrogating meanings, a kind of paradigm for a possible strategic site to produce better science, not a resting place in a unitary female body grounding ‘women’s’ experience as nature grounds culture. (Haraway 1989, 310)

Describing this process in more detail, Haraway continues:

What made up the strategic site called ‘woman’ was a process akin to juggling—keeping several realities in precariously patterned motion and building strength to see the world that way...Here, ‘being’ a woman becomes a constructed site for interrogating meanings, a kind of paradigm for a possible strategic site to produce better science, not a resting place in a unitary female body grounding ‘woman’s’ experience as nature grounds culture. (Haraway 1989, 311)

And on transformative sex and gender focused critique in American archeology, Haraway writes: “American anthropologist women did not know how to ask such things any more than men did, until they consciously learned to see differently in the course of a major historical social movement” (1989, 311).

Blaffer Hrdy comes to the recognition that knowledge is situationally produced: that the historically contingent social and material conditions in which knowledge is produced cannot be

neatly cleaved from the content of knowledge. Blaffer Hrdy developed a critical consciousness about sex and gender in North American society as a result of her experiences participating in the social movement of second wave feminism and the women's liberation movement of the 1970s. Her critical consciousness, her standpoint, facilitated her new understanding of contradictions she observed within primatological research, and provided the resources for posing questions that others did not. She achieves a critical distance from dominant understandings of social relations and this critical distance allows her to challenge the obvious-ness of implicit assumptions about sex and gender. She achieves a critical understanding of the politics of knowledge production. Within Blaffer Hrdy's reflections on what changed in primatology—and this is also apparent in other analyses of this episode (Haraway 1989)—we see each of the core theses of standpoint theory. Blaffer Hrdy points out that it was not simply the increasing inclusion of women in American Primatology in the 1970s that led to transformative criticism, since the empirical evidence used to generate criticism was available even to earlier primatologists, including women. Hrdy argues that transformative criticism became possible for her as she began to empathize with the female primates she was studying. When Blaffer Hrdy associates the changing of how primate behaviour was understood with a changing “self-image of women researchers,” she seems to be describing something along the lines of a development of a critical consciousness of marginality—the achievement of critical distance. She writes: “...changes in the way I looked at female langurs were linked to a dawning awareness of male-female power relationships in my own life” (1985, 140). In her accounting of transformative gender focused criticism within American primatology in the 1970s—focusing on primatologists Jeanne Altmann and Linda Marie Fedigan—Haraway also emphasizes the feminist commitments of researchers as epistemically vital to their scientific work (Haraway 1989).

Arguments defending the social location diversity claims made by Longino and Fehr do not sufficiently describe and investigate how initial criticisms, that ended up being transformative—in primatology but also in examples from a range of sciences—were generated. Longino and Fehr highlight the view that transformative criticisms were made by women with implicit or explicit feminist commitments, but they stop short of doing two things. One, they stop short of exploring in greater depth why the criticisms were generated by some women but not others—they do not answer the question: why was it, for example, Blaffer Hrdy and Altmann who became critical of implicit androcentric assumptions and not other women working in primatology? And two, they stop short of then incorporating the details of how transformative criticism was generated in the case studies they highlight into their proposals for how to encourage the generation of transformative criticism in the future, and in other fields. Longino writes that the point of promoting a diversity of perspectives in research communities, as one of her four social norms for knowledge production, is “...to ensure the exposure of hypotheses to the broadest range of criticism” (Longino 2002, 132). She then cites the exclusion of “women and minorities” from research communities as not only a social injustice but a “cognitive failing.” The case studies she references to justify this claim include the case of primatology. Continuing her argument, she writes that the exclusion of women and minorities from research communities “reduces the critical resources of the community” (2002, 132). The ‘critical resources’ to which she is here referring include the capacity to demonstrate how sex and gender structure research programs in a range of scientific disciplines. But my argument suggests that examination of the case studies upon which this claim is based—the case of primatology being one—needs the three core theses of feminist standpoint theory to more precisely explain what the ‘critical resources’

were and how they were able to be epistemically productive. Key to the analysis are the situated knowledge thesis, the inversion thesis, and the achievement thesis of feminist standpoint theory.

The SD claim ends up unintentionally and implicitly relying on essentialist assumptions about ‘all women and minorities’ when it stipulates that women and minorities can provide ‘critical (cognitive) resources’ to the research community. My contention is that the SD claim needs the resources of feminist standpoint theory to avoid the social identity essentialism that is implicit in the claim as it stands. I also contend that imagined epistemic benefits of social diversity are less likely to come about without a more precise understanding of the mechanisms of how social identity can be epistemically advantageous.

I want to be sure to return to my acknowledgement of different mechanisms through which social diversity can be epistemically beneficial. Fehr and Longino do not highlight the distinction I have made between active and passive mechanisms. Acknowledging these different mechanisms is important because it helps to clarify arguments and policies in defense of increasing social diversity for epistemic reasons. ‘Passive’ mechanisms of social diversity derived epistemic benefits can result from the simple presence of members of under-represented groups in research communities.<sup>42</sup> For the active form of epistemic benefits, however, as is the focus of Longino’s and Fehr’s arguments, I have tried to show that the ‘active’ SD claim is not well justified without utilizing a conceptual apparatus that accounts for the epistemic implications of social identity. To elaborate this point further, we might say that social diversity is weak in the sense that it would be analogous to the fairly common belief that the more people you have working on a problem the more likely you are to be presented with a solution. This is not on its

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<sup>42</sup> See Chapter one for a discussion of social scientific research that makes this ‘passive’ claim about the epistemic benefits of social diversity.

own a trivial point but I am suggesting it is ‘weak’ with respect to the likelihood of it bringing about transformative criticism in epistemic communities. Such a position does not then offer a good reason to believe members of under-represented groups may be able to contribute something others may not. But this does not adequately capture the sorts of examples Fehr and others seem to have in mind, all of which suggest that members of marginalized communities have something epistemically unique to provide. A stronger possible version of the SD claim would be more precise about the kind of social diversity that could be epistemically beneficial. It would include in its elaboration a mechanism or mechanisms by which social identity can be epistemically advantageous. I argue that the kind of diversity required is that which comes from a developed or achieved standpoint on knowledge production.

I acknowledge that my discussion so far takes it for granted that feminism is good, and this point is in need of some elaboration. Agreement about a singular definition of ‘feminism’ has never been fully reached. Since at least the beginnings of early second wave feminist movements the term ‘feminism’ has been intensely debated. A key critical point has been that ‘feminism’ as a term, and ‘the feminist movement,’ often focuses on the concerns of a small subset of women, namely economically privileged white women. Understandings of ‘feminism’ that fall into this trap can end up being harmful, further marginalizing those excluded from the subset of women to whom limited implicit definitions of feminism imply. This is a concern, for example, that was front and centre around organizing of the ‘women’s march,’ which took place in January 2017 in Washington, DC, following the inauguration of U.S. President Trump. Organizing for the march highlighted concerns about what ‘feminism’ means, and about who can use the label ‘feminist.’ For example, there was intense debate among organizers and in social media about whether to allow people who are anti-choice to participate in the march, highlighting questions about

whether to be ‘feminist’ means to take a particular stance on abortion. There were also concerns that the issues being most loudly vocalized by some organizers did not acknowledge the intersectional nature of gender with other socially salient identity markers that contribute to the experience of oppression. Many internal critics argued that the march needed to highlight the intersection of gender and race, otherwise the issues raised would implicitly focus on the concerns of white women and further marginalize women of colour. Although I do not intend to argue at length in favour of one definition of feminism over another, I do need to make it clear how I am understanding and using the term. Throughout my dissertation I am operating with an intersectional understanding of feminism that goes beyond exclusive concern with issues related to sex and gender. I am drawn to definitions that highlight feminism as a movement and set of values aimed at, as Intemann (2016) puts it, “reducing power inequalities and at challenging systems of oppression” (80). And I see similarities here with a working definition put forward by Patricia Hill Collins, when she writes: Black feminism is: “...a process of self-conscious struggle that empowers women and men to actualize a humanist vision of community” (Collins 2000, 416). It is this sort of understanding of ‘feminism’ that I am drawing on throughout this chapter. I take this understanding of feminism to be ‘good’ because it attempts, at least in spirit, to advance social justice for all people and peoples who ideological oppression.

My argument reveals that Longino’s and Fehr’s argument, and others like it, such as those made by Federal Minister for Science and Sport Duncan, puts two rationales for promoting social diversity in research communities in tension: the social justice rationale and the epistemic rationale. Without clarity about why and how under-represented folks can provide epistemic benefits, these two rationales are in tension. The tension arises because the rationales do not necessarily entail the same kind of social diversity. The social justice rationale entails inclusion

of those who occupy social identities that have been marginalized and under-represented. The epistemic rationale entails the inclusion of a subset of folks who inhabit social identities that have been marginalized, and that have achieved a critical standpoint on knowledge production.

### ***Framing the issue as one of numbers***

Longino's, Fehr's, and others' claims about the need to promote social diversity for the sake of epistemic benefits frame the problem as one of numbers. That is, the problem is thought to result from too few women and minorities making it into the upper reaches of academic sciences. Framing the problem as one of numbers is important with respect to social justice concerns because the historically low numbers are the product of systemic discrimination and marginalization. But a closer look at Longino's and Fehr's arguments, as I have argued, suggests that the problem their respective solutions are meant to address is not exclusively a problem of numbers, but is a manifestation of sex and gender inequality and oppression in western society. If the problem is not exclusively one of numbers, then solutions that address the numbers will not resolve the problem. Focusing on numbers as the avenue for redress lacks precision with respect to what it is that some researchers can provide—a critical standpoint that enables transformative criticism. Addressing numbers alone will not be sufficient to solve the epistemic problem: How to prevent the sciences from being used to justify, perpetuate or build oppressive projects? An epistemological account of how subjectivity can be enhancing to knowledge making practices is essential for understanding how to maximize the potential realization of future transformative critique in the sciences, and not just retroactive critique, but upstream prospective critique as well.

Furthermore, there are other weaknesses of overemphasizing epistemic concerns as the result of low numbers. If Longino's and Fehr's goal is to replicate—or at least approximate—the

circumstances that gave rise to transformative sex and gender critique in the sciences in the past, emphasis on numbers under-emphasizes the significance of the broader social and political conditions of possibility that made and make gender critique possible.

Adding to this point, social diversity policy initiatives do not destabilize the late 20<sup>th</sup> and early 21<sup>st</sup> century structure/organization of North American universities and knowledge making practices. For example, Philip Mirowski documents the re-ordering of North American academic science, and universities in general, according to neo-liberal principles (Mirowski 2011; 2018). Part of the neo-liberal re-imagining of the purpose of academic institutions and academic science in particular is a reversal of the view that teaching and research are mutually beneficial. Such a division is driven by the ethos that the goal of academics and the sciences in particular is to produce knowledge that has commercial applications, leading to profit. Teaching thus becomes a secondary function. Additionally, criticism, understood as critical to facilitating the exposure of implicit sex and gender assumptions in the sciences, is also de-valued and pushed aside as a central practice of the sciences. To address, then, the larger question that I take social diversity hiring initiatives to be at least partially meant to answer—how to prevent the sciences from being used to mount, justify, or perpetuate oppressive projects?—social diversity policy initiatives do not explore, reveal, and address the entanglement of gender and science with other forces operating in this historical moment. Although a piecemeal approach is perhaps practically necessary, it is nevertheless helpful to imagine social diversity initiatives as part of a more wholistic critique and epistemic improvement project.

### **Considering feminist values**



One plausible alternative for addressing my concerns with the essentialism associated with Fehr's, Longino's, and others' arguments in more applied settings, about social location diversity is to adopt an approach that emphasizes feminist values rather than people. There is a well-developed literature arguing for the incorporation of feminist values into and as part of scientific values as a means of eliminating various sorts of bias in scientific knowledge.<sup>43</sup> Intemann and de Melo Martin, for example, defend the claim that feminist values can play a legitimate role in scientific justification. Acknowledging disagreement about what precisely counts as feminist values, they take 'feminist values' to be: "those [values] aimed at reducing power inequalities and at challenging systems of oppression" (2016, 80). Rather than proposing and defending the use of feminist standpoint theory as a means of understanding and correcting arguments claiming that epistemic benefits can arise out of social location diversity it is plausible to suggest that the incorporation and prioritization of feminist values in scientific practices can achieve the same results as social location diversity. It could be argued that the historical case studies of transformative gender critique in the sciences suggest that it was the use of feminist values by researchers that enabled the successful criticisms to be made. Such a claim is attractive because it implies that any researcher, regardless of social identity or location, could use feminist values to generate critical insights about theirs or others' work.

But imagine a researcher, or a research community, that decides they want to be committed to feminist values as defined by Intemann et al., and that they want to use those values to interrogate their own and others' research. How might such a strategy be implemented? One possibility is that they might develop a set of critical questions, grounded in feminist values, to

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<sup>43</sup> See for example: Intemann and de Melo-Martin 2016; Borgerson 2011; de Melo-Martin and Intemann 2011; Goldenberg 2015; Harding 2008; Intemann and de Melo-Martin 2014; Kourany 2010.

help force critical reflection on research. Imagine one such question: Does chosen research method/question/interpretation make any unwarranted gendered assumptions? Is it fair to assume that any imagined researcher would be able to adequately perform the evaluation that the question requires? My answer is that it would not be fair to make such an assumption. We have no good reason to believe that the decision to accept and apply feminist values also then implies that such a researcher would be able to adequately perform the critical analysis required to reveal potential unwarranted gendered assumptions. Values on their own are not enough. The historical case studies suggest that values alone are not enough. A form of political commitment and activism are also required. What might this mean? I explore this in more detail in chapter three, but for now, I'll say that what is also required is an affective dimension, a sense of urgency motivated by anger, by caring, by a drive for justice. Feminist standpoint theory is one plausible framework that can explain what, in addition to a commitment to feminist values, might be necessary.

***Complicating matters further: Even feminist commitment is sometimes not enough: Sarah Richardson on Biomedical geneticist Barbara Midgeon***

Sarah Richardson's book *Sex Itself* (2015) interrogates the historic and on-going association of the human X and Y chromosomes with female-ness and male-ness, respectively. Richardson's research as a whole documents the ways in which historically contingent cultural assumptions, beliefs, and scripts contributed to 'sexing' the X and Y chromosomes: that is, the role that cultural assumptions about gender played and continue to play in undergirding the scientific association of X chromosomes with female-ness, and Y chromosomes with male-ness. Looking at an area of her work in more detail, an area specific to my aim here, Richardson critiques the work of medical geneticists who are investigating links between women who present with female

specific auto-immune disorders and the X chromosomes. Human females carry two X chromosomes, one inherited from each parent. Males carry one X and one Y chromosome. X-mosaicism is a term used to highlight the duplication of the X chromosome in females: female sexed bodies have two copies of the same chromosome. In some instances, because the respective X chromosomes carry the same genetic instructions the resulting duplication can lead to various disorders or abnormalities, or illnesses. In addition, X-mosaicism is widely taken to provide a scientific explanation for several stereotypical, culturally designated, female characteristics, including stereotypes of women as “more mysterious, contradictory, complicated, emotional, or changeable.” (Richardson 2015, 109). Author David Bainbridge, in the popular *The X in Sex: How the X chromosome controls our lives* (2003), writes that X-mosaicism “explains women’s unpredictable, capricious nature” (Bainbridge 2003, 127). The point is to say that it is widely believed, popularly and scientifically, that the X-chromosome, and X-mosaicism in particular, is a primary source of female behavioural traits.

Richardson critically analyzes the work of Barbara Midgeon, a medical geneticist working on diseases linked to the X-chromosome. She argues that Midgeon’s linking of two diseases that typically only manifest in females—Rett syndrome and Fabry disease—to the X-chromosome is not logically sound and is rather indicative of Midgeon being influenced by the assumptive link between the X-chromosome and female-ness. On the one hand, this can be read as yet another case of gendered background assumptions influencing the direction and content of scientific knowledge, but there is a more interesting reading for my purposes. Richardson spends some time outlining Midgeon’s commitment to feminism: Midgeon self-identifies as feminist, her undergraduate training is from Smith College—a primarily women’s college well known for promoting feminist politics—and she is an activist on issues about women’s health. Richardson

does not pursue this point in detail but the implication is clear: As a feminist, should Midgeon not have uncovered this faulty gendered assumption in the field and in her own work? I bring up the example of Midgeon within my discussion of the SD claim to point out just how complex realizing epistemic benefits from diversity can be. I do not speculate about how or why Midgeon missed this assumption in her own work, but it suggests, I think, that a straightforward call for diversity of members of historically under-represented groups in the sciences might not bring about the imagined and desired epistemic benefits. I think it also suggests that the SD claim is not a straightforward claim that researchers who inhabit social identities from under-represented groups will be able to recognize implicit assumptions operative in a given field. Some have been able to do so in the past, but some also have not. The conclusion is not that therefore the SD claim does not hold. I think the conclusion to draw is that articulating a way forward for how to implement the SD claim so as to reveal ongoing faulty assumptions is much more complex and situation specific than those currently making the claim have so far acknowledged.

## **Conclusion**

Since Minister Duncan took on her role as Minister for Science in the Federal government of Canada in 2015 progress on the representation of women and minorities in the sciences has already been made. Evidence can be seen, for example, in the gender and racial distribution of 2017 federal research chair positions, as well as the applicant pool for those positions, both of which show unprecedented numbers of recipients and candidates from under-represented social identities. Perhaps the most significant implication of my argument is that, on its own, simple increases in the numbers of marginalized folks in the sciences may not be sufficient to ensure the best conditions for achieving epistemic benefits from social diversity. My argument points out

that in most—I hesitate to say all—examples of transformative gender focused criticism, in a wide range of sciences, those who made the crucial initial criticisms were committed to feminist politics. In each case commitment to feminist politics was not incidental to the generation of transformative criticism but was, rather, epistemically vital. Analysis of these case studies suggests that the commitment to feminist politics was crucial in the generation of gender focused critique. An implication, then, of my argument, with respect to prospective policy initiatives to bring about the epistemic benefits of social diversity, in addition to efforts to increase representation per se, is that a case could be made to also target the inclusion of researchers with critical standpoints on knowledge production. Thinking about the implications of my argument for hiring policies more generally, a central point I want to make is that more than one policy initiative is needed to realize the epistemic potential of social diversity. Additionally, policies are needed that go beyond the scope of hiring initiatives and demographic representation.

There are many practical policy challenges my argument raises, one of which is that imagined re-configured or additional hiring policy initiatives, such as requiring the hiring of researchers explicitly committed to developing critical standpoints, place epistemic attention and value on the subjectivity of a researcher which is in opposition to widely accepted frameworks of what it means to be a good scientist or researcher more generally, and to widely accepted theoretical understandings of the significance of value-neutrality and impartiality on the part of researchers. Seeking out researchers whose social justice commitments will inform their research contradicts the way positivism and its successor epistemic projects exclude subjectivity as epistemically beneficial, let alone significant at all. Perhaps the monumental challenge of making this shift in social-epistemic imaginary is why the argument I make here has not already been made.

Acknowledging the importance of the three core theses of feminist standpoint theory in justifying the social diversity claim opens up other possible modes of realizing epistemic benefits of social diversity. For example, the achievement thesis suggests that training is essential in developing a standpoint. Feminist standpoint theory does not stipulate that a critical standpoint on knowledge production can be achieved only if the epistemic agent occupies a particular social identity. What it stipulates is that a critical standpoint on knowledge production must begin with the experiences of marginalized folks. Although lived experience is perhaps necessary for making initial insights and observations, it is an open question as to how members of a privileged social identity might achieve a critical standpoint from a marginalized position. Perhaps doing so requires the cultivation of empathy, imagination, deference, and humility.

In this chapter and in chapter one I have documented feminist science studies scholars as well as science policy makers making the claim that increasing social diversity in communities of inquiry has epistemic benefits as well as social benefits.

More precisely, the active claim is that increasing the inclusion and representation of women in academic communities—demographics that have traditionally been under-represented in such communities—may result in the revelation of background assumptions that would otherwise go unnoticed. There are many case studies from the history of science—including very recent history—that make this point.

I argue that this claim—what I am calling the social diversity claim—is theoretically supported by and dependent upon feminist standpoint theory: namely, several key theses of feminist standpoint theory: the situated knowledge thesis, the inversion thesis, and the achievement thesis.

The SD claim's dependence on feminist standpoint theory is not acknowledged by anyone who makes it, and no one provides an alternative theory that accounts for how a researcher's

social identity might have beneficial epistemic implications. When policy makers state the SD claim, such as Minister Duncan, identity essentialism is often implied. In her remarks quoted earlier in this chapter, the minister suggests that diverse perspectives are beneficial for science, and that diverse perspectives are attached to diverse social identities, such as ‘woman’ or ‘indigenous person.’ Minister Duncan is here implicitly making an essentialist claim about the perspectives of all members of any given social identity category. I am not suggesting that she would defend such an articulation of her position, but that without an alternative explanation essentialism is implicit. Relying on standpoint theory to justify the SD claim helps to avoid essentialism and automatic privilege.

Furthermore, as I noted in chapter one, increasing social diversity per se may not have the desired epistemic impact. There is perhaps a statistical likelihood that of the diverse members that are added to communities of inquiry as a result of the call to diversify, some proportion of those new members may uncover and expose assumptions that have been taken for granted. But going on the case histories of SD having an impact, Hrdy being one example, it does not seem very likely that simply increasing the inclusion and representation of women and minorities will lead to the exposure of taken for granted assumptions. With a refined theoretical notion of the mechanics of how epistemic benefits might accrue following the introduction of historically under-represented members, the call to diversify needs to be modified. The inversion thesis makes this possible, and it is in recognizing that the theses of standpoint theory are empirical, and that a standpoint is a project that ensures that essentialism and automatic privilege are avoided. Initiatives to increase social diversity in research communities should be promoted and accelerated. My argument does not suggest such initiatives should be abandoned. Arguments referring to principles of justice and fairness are sufficient justification to defend diversifying

policy initiatives. However, my argument suggests that in addition to existing initiatives, further initiatives could be put in place that focus on achieving epistemic benefits through the inclusion of researchers who represent critical standpoints on knowledge production.



## **Chapter 3: Insite, Science, and Advocacy: The entanglement of health science and a social movement in the making of a safe-injection facility**

### **Introduction**

In the previous two chapters, I argue that appeals to increase social diversity in research communities for the sake of epistemic benefits are also implicitly appeals for the inclusion of researchers who occupy critical standpoints on knowledge production. I also argue that feminist standpoint theory is a crucial resource for those defending the claim that social diversity in research communities is epistemically beneficial. In this chapter, I suggest that feminist standpoint theory, as well as discussions of the epistemic value of social diversity, do not yet adequately account for the positive epistemic role that advocacy, care, affect, and emotion can play in knowledge making projects. I suggest that advocacy, care, and affect figure in exemplary cases of transformative sex and gender criticism in the sciences, and that the epistemic dimensions of advocacy in such cases have not been sufficiently discussed or explored in the literature. I suggest further that, in some cases, to occupy a critical standpoint on knowledge production is to be an advocate, or to stand in a relation of care to an epistemic project. At stake also, then, in arguments about the epistemic benefits of social diversity is the epistemic value and significance of advocacy and care.

Within hegemonic Western social-epistemic imaginaries, advocacy, care, affect and emotion on the part of researchers function as disqualifications to the required objectivity of epistemic authority. Advocacy and care are understood as necessarily compromising a researcher's capacity to be dispassionate, and thus compromising their neutrality and objectivity

in their epistemic activities. Such a view makes a sharp separation between reason, on the one hand, and emotion, affect, and passion on the other: reason is judged to be corrupted by emotion. Here I challenge this hegemonic understanding of the place of advocacy and care in knowledge making projects. I show that because of the role of advocacy and care in exemplary historical case studies of transformative sex and gender based criticism in the sciences, and thus in what it means to ‘achieve’ a feminist standpoint, supporters of the social diversity claim are implicitly committed to a re-imagined place for advocacy and care in knowledge making projects. Working with literature that seeks to challenge the sharp division between well-functioning science and science motivated by advocacy and care—science charged with affect and emotion—I attempt to think through connections between the core theses of standpoint theory and advocacy and care. I do this by describing an extended real-world example of knowledge making and negotiation in action. I chronicle the entanglement of the activist coalition to establish a safe injection site in Vancouver with long-term health sciences research programs of the region.

Reviewing an example of the social diversity claim, in a June 2017 opinion article in the *Toronto Globe and Mail* (Duncan 2017) Federal Minister of Science, Kirsty Duncan, writes about her experiences as a politician addressing gender equity in Canadian STEM research communities. She writes:

Science would benefit from adopting [an]... approach that openly promotes equity since women can bring different perspectives to the lab that could lead to improved health treatments, new technologies and different ways of understanding the world.

The claim that a researcher’s ‘perspective’ can be epistemically beneficial, and thus research communities should be composed of people with diverse perspectives and experiences, as exemplified by Minister Duncan’s statement above, implies, as I argued in chapters one and two,

that social location can provide epistemically beneficial critical resources.<sup>44</sup> Additionally, in this chapter I suggest that advocacy and care are often associated with critical standpoints and can thus be beneficial to rather than necessarily impeding knowledge making. Minister Duncan is not making an essentialist claim about ‘women’s ways of knowing,’ but is, rather, as the previous two chapters help to explain, drawing attention to the ways in which patterns in experience that track social identity can be leveraged in research communities for epistemic productivity. In this chapter, I draw out certain implications of Minister Duncan’s claim, and other similar claims, which link to advocacy and care.

Calls such as Minister Duncan’s for social diversity in research communities implicitly recognize the potential epistemic value of advocacy in research. While challenging science-versus-advocacy binaries, I argue that there is a gap in articulations of feminist standpoint theory with respect to advocacy and care in theorizing the ‘achievement’ of epistemic advantage. I mine discussions by several scholars of how a standpoint is achieved, pointing out that although advocacy, care, affect and emotion are not explicitly discussed they are nevertheless implicitly present. I argue that an affective and emotional charge is often involved in the achievement of a standpoint that needs to be fleshed out. Detailed examples are helpful in this respect, and in the second half of this chapter, I provide an extended discussion of the important role of advocacy and care in the production of the health services research that provided the empirical basis of arguments in defense of keeping Insite open. My aim is to advance resources for thinking about the ways in which care and advocacy can expand the innovative capacities of gendered and other anti-oppressive critique in the sciences. If a central goal of increasing social diversity in research communities is to replicate the conditions of past examples of social diversity being leveraged to

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<sup>44</sup> Acknowledging of course that the reverse can also be true.

generate transformative critique, and if advocacy, care, and affect play a significant role as I am suggesting they do, then it is crucial to develop a deeper understanding of how advocacy, care, and affect can be epistemically productive and can be incorporated into theories of knowledge making and circulating.

I begin the second section of this chapter by asking: How do affect, care, and advocacy figure in historical cases of transformative gender-based critiques in the sciences? I briefly discuss several examples before turning to discussions of what it means to ‘achieve’ a critical standpoint on knowledge production, which is a core thesis of feminist standpoint theory. I point out allusions to affect and emotion that are implicit in discussions of the “achievement thesis” by feminist standpoint theorists, and claim that the role of affect and emotion in the achievement of epistemic advantage needs to be further described. In the third section of this chapter I provide a brief overview of three streams of scholarship that are re-imagining the place of advocacy, care, affect, and emotion in theories and accounts of scientific knowledge making. One way to develop understandings of the epistemic significance of advocacy and care is to examine nuanced accountings of real-world epistemic projects that involve epistemically productive roles for advocacy and care. In the fourth section of the chapter, I highlight the need for examples of advocacy and care as potentially epistemically beneficial to knowledge making. I move away from examples focused on sex and gender critique in order to expand the scope of application of my considerations. I develop my own extended history and analysis of an example of knowledge making being bound up with affect and emotion: the case of scientific knowledge making about safe injection sites, with harm reduction as a foundational principle for the delivery of health services, and the entanglement of scientific knowledge and the broad social movement in defense of a safe injection facility in urban Vancouver: Insite. My analysis utilizes the STS idiom of co-

production, a framework helpful in describing and explaining how social worlds and bodies of knowledge produce each other (Jasanoff 2004, 5). Co-production helps to illuminate the “...constant intertwining of the cognitive, the material, the social, and the normative” (Jasanoff 2004, 6). Existing explanations of the success of the social movement to open Insite, I argue, omit any accounting of the entanglement of the social movement with the production of empirical knowledge about health harms associated with injection drug use. Utilizing the co-production idiom to explain the success of the campaign for Insite will help to reveal how care was vital in knowledge making projects related to injection drug use in Vancouver, and will function to complicate and enrich explanations of how social, political, and legal understandings of injection drug use shifted from being understood as a law and order problem to a health care problem, one to be addressed with principles of harm reduction. The Insite case provides an example of how advocacy and care can be epistemically valuable core components of knowledge making projects.

## **2. Highlighting the need to account further for advocacy, care, and affect in theories of knowledge**

Historical case studies that chronicle the development of transformative sex and gender critique in the sciences do not explicitly discuss the epistemic role of advocacy, care, affect, and emotion. In the case of psychologist Eleanor Maccoby, for example, described in some detail in chapter one, and also described by Fausto-Sterling (1985), we can read an affective and advocacy dimension into Maccoby’s account of the development of her feminist commitments and consciousness, and of how they helped her to produce influential sex and gender critiques in the psychology of sex differences research. I explore resources that help explain connections between political transformation and knowledge. First, I highlight the place of affect and emotion in articulations of feminist standpoint theory, highlighting the need for additional discussion. As I

argue in Chapter 2, feminist standpoint theory helps explain the source of the ‘active’ epistemic advantage that social diversity can provide. Absent from articulations of standpoint theory, however, is clarity on whether and how advocacy, care, and affect can play a role in developing and in enacting a standpoint. Below I go over articulations of how a standpoint is claimed to develop and how epistemic advantage emerges.

Feminist standpoint theory is grounded by the situated knowledge thesis, the thesis of epistemic advantage, and the achievement thesis. I am here interested in considering how affect and emotion figure in articulations of feminist standpoint theory. Wylie, for example, writes:

those who are subject to structures of domination that systematically marginalize and oppress them may...know different things, or know some things better than those who are comparatively privileged (socially, politically), by virtue of what they typically experience and *how they understand their experience*” (Wylie 2003, 26).

And on the achievement thesis, Wylie writes that developing a standpoint is a project, involving work to “develop a critical consciousness of the conditions under which knowledge is produced and authorized, and of the difference our situatedness makes to epistemic agency” (2011, 162). In these excerpts and other articulations of the above theses, there is no explicit mention of advocacy, care, affect or emotion in how a standpoint is achieved. As I describe below, however, in phrases such as “how they understand their experience” and “a struggle to develop a critical consciousness,” there are implicit references to the mechanisms by which a standpoint is achieved to highlight spaces where advocacy, care, and feeling have a substantial role to play.

In *Primate Visions* (1989), Donna Haraway tells the history of several American primatologists working in the 1970s and 80s who participated in transformative sex and gender-based critiques of empirical and methodological distortions in leading primatological research, leading to a significant overhaul of theoretical frameworks that guide research and understanding

of primate behaviour. Although not explicitly advocating the adoption of standpoint theory as a tool for explaining why *these* women at *this* time were capable of generating such critique, Haraway nevertheless discusses what it means to suggest that the women in question had an epistemic advantage. I offer some of Haraway's writings on how a few American female primatologists in the 1970s came to occupy the "strategic site called woman" to construct a scientific point of view that was capable of transformative gender criticism. I offer these excerpts so as to consider the extent to which advocacy, care or affect figure in articulations of epistemic advantage. Haraway writes:

What made up the strategic site called 'woman' was a process akin to juggling—keeping several realities in precariously patterned motion and building strength to see the world that way...Here, 'being' a woman becomes a constructed site for interrogating meanings, a kind of paradigm for a possible strategic site to produce better science, not a resting place in a unitary female body grounding 'woman's' experience as nature grounds culture. (Haraway 1989, 311)

Although Haraway does not explicitly refer here to what motivates one to occupy such a 'strategic site,' I read in her thoughts a space for exploring in more detail what she means when she refers to 'building strength' and 'interrogating meanings.' In this next quotation, Haraway is reflecting on 1970s anthropologist Sally Linton's influential critique (Linton 1975) of the 'man the hunter' hypothesis in anthropology. Haraway writes:

American anthropologist women did not know how to ask such things any more than men did, until they consciously learned to see differently in the course of a major historical social movement (Haraway 1989, 335).

What is involved in 'consciously learning to see differently' and specifically, in doing so in 'the course of a major historical social movement'? Presumably such 'learning,' as it occurs in relation to participation in a social movement, involves the engagement of feeling and emotion, and developing a relation of 'caring about' with respect to her field of study as it relates to the social-political project of feminism. Furthermore, Haraway writes that those women who were

critical of sex and gender assumptions in their respective fields came to “a specific consciousness about the constitutive relations of science and gender, as well as science and other positional markers” (1989, 335). To what extent are advocacy, care, and affect involved in ‘coming to a specific consciousness’ in this case?

The achievement thesis of feminist standpoint theory captures each of the points above. For Kathi Weeks, a standpoint is “a project, not an inheritance, it is achieved, not given” (Weeks 1996, 106). Wylie (2012) writes in detail about what an epistemic advantage derived from social identity means, and what it means for a standpoint to be achieved. The kinds of epistemic advantage attributed to a feminist standpoint vary widely. Some variations include:

- A. [T]hose who are socially marginal may be privy to evidence, and may develop the interpretive heuristics necessary to understand and to navigate dimensions of the social and natural world that the comparatively privileged rarely engage, or are invested in avoiding
- B. [T]he experience of exclusion or marginalization may itself be a source of insight. Various forms of critical dissociation and comparative meta-knowledge become possible, indeed, necessary when survival as an insider-outsider requires that you understand the norms of a dominant culture as well as those that structure your own subdominant community.
- C. “[C]an put those who are socially marginal in a position to recognize what remains tacit for members of a dominant culture, in the process catalyzing counter-narratives and counter-norms that have the conceptual resources, lacking in dominant culture, to name and to make sense of this dissident experience” (Wylie 2012, 63)

In point A, Wylie suggests that the epistemic advantage that may come with a standpoint may help one understand and interpret aspects of the natural or social world that members of privileged groups are ‘invested in avoiding.’ The ‘investment in avoiding’ for privileged groups suggests that the opposite is true for members of marginalized groups; that those who develop a critical standpoint are *invested in revealing*, suggests a certain kind of motivation behind such work, which I claim is linked to affect.



Implicit in each of the points A, B, and C above are allusions to what might provide the motivations for ‘achieving’ a standpoint and epistemic advantage. The point is that epistemic advantage is enacted when it becomes attached to a social-political emancipatory project. Part of what motivates such achievement might be a desire to bring about justice, motivated by anger, frustration, care, for oneself or for others: at root, some sort of affective, emotional connection. Experiences made available through marginalization are resources for developing a critical consciousness or standpoint, but experience of marginalization is itself insufficient for the achievement of a standpoint. As Hartsock put it in an early iteration of feminist standpoint theory in the 1980s, “a standpoint is not simply an interested position but is interested in the sense of being engaged” (Hartsock 1983, 285). Wylie (2012) develops this point further:

[A] standpoint is characterized by a particular kind of epistemic engagement, a matter of cultivating a critical awareness, empirical and conceptual, of the social conditions under which knowledge is produced and authorized. (Wylie 2012, 63)

One aspect, then, of what motivates the achievement of a critical standpoint on knowledge production is the affective charge attached to what it might mean to ‘be engaged,’ in Hartsock’s and Wylie’s sense.

Given that feminist standpoint theory is a direct challenge to dominant theories of knowledge that exclude any positive epistemic role for the subjectivity of the researcher/knower, it seems odd that articulations of feminist standpoint theory do not more directly challenge, specifically, the reason/emotion binary. Perhaps initially to do so seemed too dangerous, too destructive of the epistemic claim feminist standpoint theorists were, and are, making. It appears, however, that affect and emotion are central to explaining what it means to ‘achieve’ a critical standpoint on knowledge production because such ‘achievement’ is part of social-political emancipatory projects.

### **3. How might advocacy and care figure in knowledge making projects?**

I acknowledge that I am not alone in pointing out the need to articulate connections between care, affect, and emotion in knowledge making projects. As a way to consider how other scholars draw attention to affect and emotion knowledge making I consider how their work might help to explain the above comments from feminist standpoint theorists on what it means to achieve a standpoint. Some questions I consider: How does one come to be invested in revealing the interpretive heuristics necessary for understanding oppressive social and political relations? What does it mean for a standpoint to be “characterized by a particular kind of epistemic engagement”?

A commonality in cases cited by feminist standpoint theorists as exemplary of the epistemic advantages that arise out of the achievement of a standpoint is that they are all related to broad social movements and political transformation for individuals and communities. Alexis Shotwell’s (2011) work can be helpful in understanding this connection. Her work aims to expand epistemological analysis beyond considerations of propositional knowledge to include what she calls “implicit understanding”:

Implicit understanding names our background, taken-for-granted understanding of being in the world: The implicit is what provides the conditions for things to make sense to us. The implicit provides the framework through which it is possible to form propositions and also to evaluate them as true or false, and is thus instrumentally important. Implicit understanding is also non-instrumentally important. It not only helps provide the conditions for propositional work, it also occupies its own epistemic and political terrain, and in itself is vital to flourishing. (Shotwell 2011, x-xi)

Shotwell outlines four sorts of implicit understanding: Practical, skill-based knowledge; Somatic or bodily knowing; Potentially propositional but currently implicit knowledge; Affective and emotional understanding. She intends to broaden the scope of what is considered knowledge in order to develop ways of understanding and valuing how diverse ways of being and engaging in the world, and diverse sorts of experience(s), are enmeshed with propositional knowledge; And

to consider sorts of knowledge that are non-propositional, that they are worthy and in need of epistemic consideration.

For my purposes here, Shotwell considers at length how implicit understanding works in conjunction with propositional knowledge in moments of personal and social political transformation. Building on work by Susan Babbitt (1996), Shotwell argues that implicit understanding is crucial to opening up new ways of thinking about, and interpreting, one's place and standing in society. Shotwell reiterates Babbitt's claim that: "...changes in one's non-propositional understanding"—what Shotwell reformulates as 'implicit understanding'—are crucial to developing the ability to think and act outside of oppressive or inadequate norms" (Shotwell 2011, 14). Shotwell, agreeing with Babbitt, writes that implicit understanding, representing a cluster of sorts of non-propositional knowledge, is central to understanding political transformation "because it gives people the resources to understand ideological oppression to which they may be subjected" (Shotwell 2011, 20). And understanding ideological oppression, she continues, "can amount to a change in people's interpretive position" (Shotwell 2011, 20). Shotwell is unhappy with Babbitt's omission of a more nuanced understanding of varieties of non-propositional knowledge, and she dedicates much of her work to developing a more carefully parsed account.

Rehearsing Shotwell's taxonomy of implicit understanding is beyond the scope of this chapter, but one aspect of her discussion that is helpful here is her articulation of affect and emotion, understood as a sort of knowledge, as fundamentally wrapped up in new propositional knowledge making in moments of political transformation. Shotwell argues that 'implicit understanding,' including affective and emotional knowledge, is central to, and perhaps a precondition for, political transformation. Summarizing her thoughts, Shotwell writes:

Every story I know about queerness and coming out, about gender and transitioning, about coming to political consciousness or racial formation and one's own place in it, of struggle for economic justice, of coming to pride, unfolds in a complex web of understanding. In that web, conceptual knowledge changes—the information one has and one's ability to speak about it shifts, and people learn facts and figures they didn't know. But that changed propositional knowledge is thoroughly enmeshed with other forms of understanding—feeling, somatic experience, skills and competencies, presuppositions and common sense. (Shotwell 2011, x)

Shotwell adds sensuous knowledge to her taxonomy of 'implicit understanding,' and her discussion of sensuous knowledge helps us understand the non-propositional knowledge associated with experiences of marginality. Relying on work by Avery Gordon, Shotwell understands sensuous knowledge as involving: "pleasures and pains, sensations we can name and ones we have no language for, and ways of being constrained or freed in the world. Sensuousness names a socially situated experience of one's embodiment" (Shotwell 2011, 57). 'Being invested in revealing and understanding oppressive social relations,' then, as part of what it means to achieve a standpoint, involves engaging with multiple dimensions of one's experience at the same time; including engaging with propositional knowledge made available through experience, and also with affective, emotional, and sensuous dimensions of one's experience. Shotwell writes that participation in social movements "might create circumstances that transform our sensuous knowledge; they can create new knowledge or give us a way to organize our felt politics differently" (2011, 57). Thus, the achievement of a standpoint is not the same as, or reducible to, learning and knowing new propositions; although new propositional knowledge is vital to achieving a standpoint. When feminist standpoint theorists write that: "the experience of exclusion or marginalization may itself be a source of insight," they are signaling that experience of marginalization is the source of new propositional knowledge but also a kind of non-propositional knowledge, a source of implicit understanding. Affect, emotion, and Shotwell's

broad taxonomy of implicit understanding is, then, enmeshed with the making of critical consciousness and with transformative criticism in the sciences.

In their introduction to a special issue on “the politics of care in techno-science” Martin et al. (2015) highlight an emerging body of work in science studies focused on theorizing care in technoscientific projects. They highlight the claim that care is a multi-dimensional and fraught term that carries varying, contested and contentious meanings. ‘Care’ defined as ‘caring for’ or ‘taking care’ can carry the connotation of representing essentially feminine ways of living in the world, as in original formulations of an ‘ethic of care,’ as opposed to an ‘ethic of justice.’ Martin et al. (2015) take Maria Puig de la Bellacasa’s (2011) definition of ‘care’ as a starting point. Care signifies “an affective state, a material vital doing, and an ethico-political obligation” (Puig de la Bellacasa 2011, 90). Stated in these terms Puig de la Bellacasa’s definition has an affinity with implicit references to care, affect, and emotion in articulations of what it means to achieve a standpoint. An ‘affective state’ motivates the ‘achievement’ of a standpoint in order to facilitate an affectively charged ethico-political obligation, acknowledging that such a felt obligation can be imbued with feelings across the spectrum, including frustration, anger, sadness, or happiness.

Martin et al. (2015) explain the urgency of, and some of what is at stake in, accounting for care, affect, and emotion, in (technoscientific) knowledge making projects. Aligning themselves with core claims of feminist science studies generally, Martin et al (2015) argue that all knowledge making is imbued with care and affect, perhaps more broadly stated as politics. They write: “masking care and advocacy can obscure...processes by which researchers find and carry out their projects” (Martin et al. 2015, 631). They go on:

To bypass, curtail, or overlook care would work to obscure further the moral and affective economies that shape researchers’ entanglements with the phenomena they describe. To disavow care would leave intact binaries that circumscribe realms of legitimate and illegitimate knowledge and the pervasive bifurcations that prioritize the rational over the

sensory and affective dimensions of knowledge. It would also evade what actually needs to be examined: the all too latent norms and values that shape all kinds of inquiry. Care and its politics will continue to contour and propel research, and the partialities and limits of care must be made evident, be examined, and taken into account (Martin et al. 2015, 631).

Although in this quotation the authors are not addressing my claim about the inseparable role of care, affect, and emotion in what it means to ‘achieve a standpoint’ they are nevertheless arguing that more attention be paid to how care figures in knowledge making and circulating projects and activities. The contribution I make in the second half of this chapter is, in part, about following through on their call to examine and take into account the ways that “care and its politics...contour and propel research.”

A third trajectory in feminist-oriented scholarship that addresses care, affect, and emotion in theories of knowledge is the epistemology of testimony. A central issue discussed by scholars working on questions related to the epistemology of testimony is credibility, and the politics of denying or withholding credibility to would-be knowers. Let me briefly explain how such concerns emerge in social epistemology. One commitment shared across feminist oriented epistemology, feminist philosophy of science, and feminist sciences studies generally, is the notion of situated knowledge, as discussed above and in earlier chapters. Situated knowledge is grounded in the claim that knowers cannot be extracted from the assemblage of historical social-material-discursive particularities in which they exist. Knowers are always ‘somewhere,’ never ‘nowhere,’ and as such they are both enabled and constrained by ‘situation’ (Code 2014). Feminist social epistemologists postulate that “...sociality contributes positively to knowledge production; indeed it is integral to its success” (Code 2014, 151). As is described in chapters one and two, for example, Longino argues for the recognition that scientific knowledge making, and knowledge making in general, depends on sociality and community arrangements (2002, 1990).

Some social epistemologists also place significant emphasis on testimony, based on the recognition that much of what people know is derived from some form of testimonial exchange, for example through spoken or written word. Recognizing testimonial exchanges as in need of epistemic analysis—what are the conditions in which one is justified in believing testimony? — issues of credibility, either its attribution or its withholding, become significant.

Miranda Fricker's *Epistemic Injustice* (2007) opens up epistemic concern with credibility by drawing attention to ways in which one can be harmed in their capacities as a knower. She focuses on the dialogical nature of the testimonial exchange, involving a hearer and a speaker, and describes two broad forms of epistemic injustice: *testimonial injustice* and *hermeneutic injustice*. Testimonial injustice occurs when a deflated level of credibility is attributed to a speakers' word. Such withholding amounts to an injustice when it is caused by "...deeply embedded identity prejudice in a social order that prevents his or her testimony from claiming a fair hearing because of whose it is" (Code 2014, 156).

Central to analyses of testimonial injustice, then, is credibility, and the attribution and withholding of credibility, for individuals but also importantly, for social groups. Working within this analysis of testimony and credibility, Code argues that advocacy and care can come to figure centrally in resisting the denial or withholding of credibility to individuals or groups (2015, 2006). 'Advocacy' in this sense suggests that the advocate, who either has the resources or the social license to speak credibly, speaks on behalf of, or speaks with, those receiving diminished credibility because of stereotypes related to social identity. The advocate uses their socially derived authority as a means of advancing a claim, and as a means of contesting social-political-epistemic regimes that maintain hierarchies of credibility and authority. Code writes that advocacy in relation to credibility can amount to "[r]epresenting someone/some group in order to

counter patterns of silencing, discounting, or other egregious harms” (Code 2006, 165). Thinking through some of the ways advocacy practices can figure in addressing testimonial injustice, Code writes:

It [advocacy] can take place in individual and communal practices: someone may advocate on her own behalf or on behalf of (an)other person(s), may advocate in favor of the significance, cogency, validity, credibility of another person’s testimony, of the testimony of several people, a group, institution, or society (Code 2006, 165).

Given the politically charged nature of the sorts of denial of credibility that the concept of testimonial injustice is meant to highlight, there seems to be a comparable ‘ethico-political obligation,’ borrowing from Puig de la Bellacasa, associated with the sense of advocacy invoked here and my examination of what it means to ‘achieve a standpoint.’ The care, affect, and emotion attached to advocacy in the above sense is attached, if not to a social movement, then at least to efforts working toward political transformation. The advocate, in the above sense, seems to have achieved a critical consciousness on knowledge production and the interconnected politics of epistemic authority and credibility. The case study I develop below attempts to tease out the sense in which the program of health research that developed in urban Vancouver around identifying health related harms associated with injection drug use was made possible by health researchers who were advocates on behalf of, and with, injection drug users in a precarious urban Vancouver neighborhood.

#### **4. Epistemically productive roles of advocacy and care in knowledge making projects**

A guiding question for the remainder of this chapter is: How do affect, care, and advocacy figure positively in real-world examples of socially and politically charged scientific knowledge making projects? I have so far left un-discussed the issue of affect, care, and advocacy figuring negatively in scientific knowledge making. I have done so because there are already many case studies of



how care, or thinking more broadly, partiality, on the part of researchers, can have negative epistemic consequences. The commercialization of research—a phrase meant to capture the shift in sources of research funding in the sciences, accelerating in the last quarter of the twentieth century, from primarily public institutions to increasing funding coming from commercial or for-profit enterprises—is a focus of such work. A focus of concern of scholarship addressing the commercialization of research is biomedical health research conducted by the pharmaceutical industry. Significant scholarship that demonstrates the negative epistemic impacts of pharmaceutical company funded research has already been done (For example, see Sismondo 2018; Biddle 2007; Angel 2004). On the other hand, there is very little scholarship that considers how partiality, in this case I discuss here, care, advocacy, and affect, might be epistemically productive or beneficial. There are theoretical and empirical dimensions to challenging social-epistemic imaginaries imbued with positivist legacies that imagine value-neutrality as both possible and desirable. In the first part of this chapter, above, I highlight the need for more theoretical analysis, pointing out existing lines of thought, and in this second part of the chapter I attempt to add to the empirical basis for claiming that care, affect, and emotion can figure positively in knowledge making projects. Rich and complex examples are needed in order to better understand how to create space for affect and emotion to have epistemic legitimacy.

My intent is to highlight the role of advocacy, care, affect, and emotion as they were and are wrapped up in, and entangled with, the science(s) that were and continue to be used to defend the existence of Insite—and safe injection sites generally—as a legitimate dimension to health policy and the delivery of health services. As I show below, existing social scientific analyses of the Insite case nicely explain and describe the heterogeneous grassroots social movement that emerged in the 1990s to advocate for a safe injection site and a harm reduction approach, but this

work only superficially accounts for the role of the scientific projects that were ongoing throughout the campaign and were part and parcel of the larger social movement.

Below I provide a case study of Insite, as an example of how advocacy and care can be essential and epistemically beneficial components of knowledge making projects. I begin this section with (i) a background overview of the opening of Insite and the social and political controversy in which it was (and still is) embedded. It includes a discussion of the emergence of the ‘harm reduction movement’ in the 1980s, which is followed by (ii) a review of how social science scholars have explained Insite’s social and political success, finishing this overview by pointing out a key weakness in these accounts. I then provide (iii) my own account, utilizing the STS idiom of co-production (Jasanoff 2004), of the entanglement of scientific knowledge making with the broad social movement in defense of a safe injection site, pointing out ways that care, affect, and emotion—manifesting as advocacy—figure positively in health sciences knowledge making in urban Vancouver.

### ***(i) Overview of the history of Insite***

In September 2003, the city of Vancouver, the provincially-governed Vancouver regional health authority, as well as several community groups came together to open Insite: a safe injection facility (SIF) founded on and committed to principles of harm reduction for the delivery of health services for Injection Drug Users (IDU). Located in the city’s Downtown East Side (DTES), Insite was the first safe injection facility to open in North America. As an approach to lessening the harm that comes with substance abuse, especially intravenous drugs (for example heroin), harm reduction is a health services approach that encompasses several different tactics. Where harm reduction is practiced, the most common service provided is some version of a needle exchange program, where intravenous (IV) drug users can swap ‘dirty’ used needles for new

ones. SISs take the harm reduction approach further by providing a safe space for drug users to inject illicit drugs that they bring with them into the facility, under the supervision of health care workers.

The Insite case is well known in part because of the high profile ruling by the Supreme Court of Canada (SCC) in 2011 declaring that the federal government of Canada's refusal to grant the necessary criminal code exemptions for Insite to legally operate amounted to a violation of the charter rights of Insite's clients.<sup>45</sup> The ruling was declared by many as "a victory of science over ideology" (CBC 2008). In defense of keeping Insite open, it was argued that, both in formal legal proceedings as well as in public relations campaigns, there was an overwhelming number of scientific research papers and empirical evidence outlining the benefits of Insite to IDUs, benefits to public health at large, and benefits to the community surrounding the facility. A key finding in the original trial, and supportively reiterated in the SCC ruling, was that addiction, as it occurs in the DTES, is to be understood as an illness. Opposing Insite and the harm reduction model of health care upon which it is based was the Conservative party of Canada, led by then Prime Minister Stephen Harper, together with the government's successive Ministers of Health, who all argued that illicit drug use is never to be tolerated, and that allowing illicit drug use to be overseen and supervised by health care providers amounted to a grievous ethical violation.<sup>46</sup> Key to the government's rejection of Insite was their framing of drug addiction as a moral failing, to be addressed with policing and criminal prosecution. The judicial assertion that "addiction is an illness" to be addressed via health care and services thus represented a decisive moment of support for what the coalition behind Insite had been aiming for all along, a re-imagining of how

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<sup>45</sup> *Attorney General of Canada v. PHS Community Services* [2011].

<sup>46</sup> Health Minister Tony Clement referred to the service and facility as an "abomination" (reference).

injection drug users are viewed by society and the state and a central role for harm reduction as a tool for addressing drug addiction.

In 1997, the *B.C. Centre for excellence in HIV/AIDS* announced that the rates of HIV/AIDS in the DTES were the most rampant in the developed world (Campbell et al. 2009, 11). Many provincial, municipal, and local politicians and community groups recognized the urgent need for emergency health care measures to be taken. Concerned political and community groups included: friends and family of addicted drug users and infectious disease and drug overdose victims; community support services, including social, economic and health supports; law enforcement officials and emergency responders; medical officers of health and the local coroner's office; journalists; drug users themselves. One influential group was VANDU (Vancouver Area Network of Drug Users). Founded by community activists and concerned residents of the DTES, many of whom were active IV drug users, VANDU was a grassroots group that came up with their own proposals for solutions to the crisis.

#### *Emergence of a 'Harm Reduction' movement*

At the same time as a public health emergency was developing and being recognized in Vancouver a new approach to addressing concerns about infectious disease and drug use was developing internationally. This new approach was called 'harm reduction.' Histories of harm reduction as a strategy and health care philosophy point to the city of Liverpool in the UK as a site of origin (O'Hare 2007). The services implemented as part of the harm reduction program included needle exchanges, methadone prescriptions, and treatment outreach. The program proved to be successful, as the spread of HIV/AIDS was minimized, and soon other jurisdictions became interested in the approach. In 1990, the first international conference on the reduction of

drug related harm took place in Liverpool, UK, opening an approach to public health that generated wide interest over the next decades (O'Hare 2007).

### *Grassroots activism and harm reduction strategy*

Back to Canada, then Harm reduction became the desired approach for addressing what was thought to be a public health crisis for injection drug users in the DTES and greater Vancouver. Grassroots advocacy groups, including VANDU, and From Grief to Action, for example, comprised of drug users, friends and family of drug users and victims of overdose, and local residents, became leaders in advocating for a harm reduction approach to addressing drug use. Many leaders in Vancouver advocated for a harm reduction approach, including local health researchers, municipal politicians and workers, [including]? members of the police force and health care practitioners. Larry Campbell, for example, was the chief coroner for Vancouver through the 1990s. He ran for city Mayor in the 2002 Vancouver municipal election, promising to implement a harm reduction strategy for the city, and after his victory the site became a priority.

Several illegal pop-up safe injection sites operated between 2000 and 2002 in Vancouver. Opening a legally sanctioned safe injection site required the municipal and provincial government obtain a federally granted exemption from the Controlled Drugs and Substances Act (CDSA). In early 2003, the Canadian federal government granted the city the needed exemption as long as several conditions could be met.<sup>47</sup> One such condition was that the facility was to undergo extensive scientific evaluation during the exemption period. Health Canada contracted the *B.C. Centre for excellence in HIV/AIDS* to carry out scientific research and evaluations of Insite during the exemption period, committing \$1.5 million over three years. Insite officially

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<sup>47</sup> For more detail on how the exemption was obtained see: Campbell et. al. 2009, Ch. 12.

opened in September 2003, operated by PHS Community Services, with over six hundred injection drug users visiting on the first day (Campbell et. al. 2009, 183).

During initial discussions about a safe injection site between Vancouver, B.C., and the Canadian federal government, the ruling federal party was Prime Minister Jean Chretien's Liberals. By the end of the three-year initial exemption that allowed Insite to operate legally a federal election had occurred, and Stephen Harper's Conservative party had taken over. Initially providing a short extension to the exemption following the election, the now-ruling Conservatives made it clear that they were against Insite, safe injection sites in general, and harm reduction as a strategy for addressing illicit drug use. They favored an approach to addressing drug use that focused on law enforcement, and treatment strategies that stressed abstinence rather than harm reduction. In 2008, before the last exemption for Insite expired, Tony Clement, the Federal Minister of Health for the Federal Conservative government, made his opposition to Insite clear in his now widely cited comments that Insite is 'an abomination.'

Prior to the expiration of what was evidently the last exemption Insite would receive, PHS Community Services Society launched a legal charter challenge against the federal government in B.C. courts. They argued that the Canadian federal government's refusal to grant further exemptions to Insite amounted to a violation of the charter-protected rights of users of Insite. After the case made its way through B.C.'s lower courts, in May 2008 the B.C. Supreme Court ruled in favour of PHS Community Services Society, finding that the government of Canada, in denying a permanent exemption from the CDSA for Insite, was infringing upon the charter rights of the facilities users (*PHS Community Services Society v. Attorney General of Canada*). The federal government appealed, and in 2011, the SCC upheld the lower court's ruling.

Throughout the period beginning with the identification of a public health crisis in the DTES and calls for a harm reduction approach, including a safe injection facility, and continuing today, the status and conclusions of scientific findings about harm reduction strategies and Insite in particular have been an important part of discussions about Insite and other safe injection facilities in Canada. The status of what scientific evaluations conclude about the consequences and effects of Insite became particularly important during the period after the Harper Conservatives were elected and made it clear they opposed to the facility and the approach to public health (harm reduction) upon which it is based. In contrast, *BC Centre* researchers, most notably Dr. Evan Wood and Dr. Thomas Kerr, stressed that they had published dozens of scientific publications in top peer-reviewed journals which showed that Insite was a tremendous success: from the perspective of health outcomes for injection drug users, including lives saved, as well as for the neighborhood at large. I will say more about the scientific evaluation of Insite shortly (CBC 2008; Kerr and Wood 2008).

***(ii) How social scientists have described and explained the success of Insite***

Recent attempts to analyze how Insite came about do not adequately account for the entanglement of what the STS idiom of co-production broadly conceptualizes as science and social order. As a consequence, there is no adequate explanation of how the advocacy behind the social movement was also central to the health sciences movement evaluating and ultimately defending Insite. Such an explanation would help to answer the following questions:

How does addiction become an ‘illness’ in the DTES?

How did the state of affairs in the DTES come to be viewed as a “public health crisis”?

How were the facts of harm associated with injection drug use produced?

How was the injection drug user made to articulate the scope of the ill health effects and harms associated with injection drug use?

Below I review several accounts of how harm reduction as a public health strategy, and Insite as the implementation of such a strategy, came to be adopted and accepted in inner city Vancouver. I do so to point out several important omissions from accounts of the development of Insite, omissions that leave the impression that the body of empirical evidence produced in evaluations of Insite came into being independently of social, cultural, and political thought and action—omissions that leave the impression of, in Latour's terms (1987), 'ready-made-science.' To put this point more carefully, and this is a key claim that I elaborate more fully in the rest of this chapter, is that knowledge-making as it relates to the social, cultural, and political campaign to garner acceptance of harm reduction and safe injection practices, appears only superficially in explanatory accounts of Insite. Furthermore, the integral role of advocacy and care on the part of the researchers involved is entirely absent. The accounts I review below provide straightforward answers to the questions posed above, answers that assume there is no explanation necessary for empirical 'matters of fact.'

A unifying feature of current explanatory accounts of the acceptance of harm reduction as a 'pillar' of public health policy, and of the opening of Insite in particular, is the shared emphasis on the social, cultural, and activist movement to promote harm reduction strategies in general and a safe injection site (ultimately named 'Insite') in particular (Small 2016; Harati 2015; Elliott 2014; Boyd 2013; Fafard 2012; Campbell et al. 2009; Small et al. 2006; Boyd et al. 2009). All of these accounts emphasize the multiple grassroots and activist campaigns that were forming in the 1990s in inner city Vancouver. As described in my brief historical account above, those campaigns included drug users, friends and family of drug users, neighborhood residents, politicians and city employees from various institutions, and academic researchers.



Small (2016), Harati (2015), Campbell et al. (2009), Small et al. (2006), Raise Shit! (2009) provide cultural explanations for why and how the political, social, and legal controversy over Insite was settled, if only settled temporarily. Small (2016) and Small et al. (2006), for example, use an anthropological lens to describe and explain the multiple changes in the culture of Vancouver, BC, and of national Canadian culture, with respect to tolerable and legitimate methods for addressing severe forms of addiction and homelessness. These explanations do well in acknowledging and accounting for the dynamic and heterogeneous social movement(s) that brought about the dramatic attitudinal shifts that took place over a 15-year period between roughly 1996 and 2011.

The central claim of Small et al. (2006) is that three major cultural shifts had to, and did, take place in order for Insite to be possible. The first is that conventional narratives about addiction and “the addict” had to change. Three examples of the conventional master narrative identified by Small et al. (2006) include:

- “People choose to be addicts; therefore addicts are to blame for their addiction and corrupt lifestyles.
- Harm reduction addiction services (supervised injection facilities and needle exchanges) promote addiction and keep people on drugs.
- Services for addicts attract addicts, promote and spread addictive behaviour” (Small et al. 2006, 74)

Small et al (2006) argue that such narratives and such conceptions of addicts had to undergo significant change in order for the implementation of harm reduction as public policy approach to be possible, and that this change was driven by the coalescing of social movements. Harati (2015) similarly argues that the “grassroots addict-led” social movement played a “critical role in making Insite a reality by humanizing addicted individuals and influencing public officials” (2). Campbell et al. (2009) and Raise Shit! (2009) also emphasize the humanizing impact of the various grassroots groups.

It is noteworthy that each of the three master narratives about addiction, addicts, and harm reduction that Small et al. (2006) and others emphasize as undergoing significant cultural change were also subject to empirical evaluation by the researchers tasked with evaluating the impacts of Insite. These contributors do not, however, discuss how the production of knowledge about the nature of harms associated with injection drug use was entangled with the social movement they so well describe. Each work cited above acknowledges the important role scientific researchers played in bringing Insite about, with some variation in emphasis and detail. Harati (2015), for example, points out that “robust evidence” was emphasized during each of the legal proceedings, but does not provide more detail about how the evidence was produced, or about what would count as ‘robust.’ Each work also highlights the view that a key condition of the exemption granted to Insite during the 2003-2006 period was that the site was to be rigorously evaluated, with the federally funded research contract going to the B.C. Centre, and acknowledges that “evidence” played a significant role the judicial rulings. They all, though, talk about the scientific evaluation of Insite, and the science of harm reduction more generally, in a way that makes it seem as though it was conducted outside, and independently of, the social and political controversy.

Elliott (2014), Boyd (2013), and Fafard (2012) give more attention to the role of science in establishing Insite. Elliott (2014) details how aspects of the social movement in defense of Insite inadvertently leveraged conservative and neo-liberal logics and strategies in their advocacy. For example, she highlights the way “The Science,” as an authoritative tool, was leveraged by scientists working in defense of Insite. Elliott argues that the way scientist defenders of Insite leveraged the authority of ‘Science’ as non-ideological played into the neoliberal

strategy of re-casting governing activities in “non-political and non-ideological terms” (p. 25),

She writes:

Scientists with the centre for Excellence attempted to construct their scientific evidence as being neutral and apolitical—it was ‘evidence-based’ and ‘peer-reviewed.’ They constructed their science as reified truth that stood in opposition to the clearly ideologically driven rhetoric of the state... (25-26).

This is an important and productive point to make, and Elliott makes a compelling case. But throughout her paper, Elliott fails to explain the mutual production of activism and advocacy and ‘the science’ about Insite. Although she alludes to the contradiction between the scientists’ claims to neutrality and their obvious role as politically invested advocates, she does not describe the intertwining of the scientists’ advocacy work and the production of evidence.

Finally, Fafard (2012) considers discussions within the health services literature about why knowledge translation (KT) on the part of scientists failed to convince government political actors. He is in agreement with each of the authors cited above, that the social movement to garner acceptance of harm reduction and to humanize and elicit sympathy for, injection drug users, was the main impetus for change. He writes: “...Insite is the result of coalition building, the mobilization of public opinion, lobbying, and political and ideational struggle” (912).

Fafard’s observation here is illuminating because the omission of scientific knowledge making from the list signals that he is explicitly contrasting the social movement with ‘the science’ and ‘the evidence. Fafard’s comment highlights his and others’ failure to address how the production of ‘the science’ about Insite was fundamentally intertwined with the social movement described. I now turn to my own account of the co-constitutive role of science in remaking the social order in the framework of harm reduction.

### *(iii) Insite, Science, and Advocacy*

***“I can’t just turn people into numbers, collect data and walk away. It’s hard not to get intensely involved if you care”***

***– Dr. Thomas Kerr, prolific and award-winning health researcher working with injection drug users in urban Vancouver***

I turn now to think about how the assemblage of scientific projects investigating health issues related to injection drug use was entangled with the social movement to humanize and elicit sympathy for injection drug users. Specifically, I want to consider the role of affect and emotion as one dimension of how the body of scientific knowledge and the social movement were linked. As White (2009) points out, few would deny that affect and emotion are part of scientific practice in some form: in the “passion for truth” or the “thrill of discovery” (2009, 792). But here I consider how emotions can be *integral* to scientific practice: as White (2009) puts it, integral to “the practices of observation, experiment and theory” (793).

Take, for example, advocacy work as one way in which care, affect, and emotion can manifest. Scientists can be thought of as ‘advocates’ in multiple senses. One way is to think about scientists as advocates for the uptake of research findings in decision-making; as advocates for the science they, or their colleagues, produce. Questions about whether scientists should take up advocacy positions in this sense have re-emerged with urgency in the 21<sup>st</sup> century as efforts to promote the use of science and evidence in policy and political decision making have been met, at times and in places, with resistance. One critical example is the refusal of various governments around the world, particularly several presidential administrations of the United States of America, to fully acknowledge and take action, based on climate science, to prevent climate change and global warming. The *March for Science* in the USA in the early months of 2018 highlighted competing ideas about whether scientists should become advocates for the uptake of

scientific findings in decision making on social and political issues (Weinberg et al. 2019; Mooney 2017).

In the case of policy making around establishing and maintaining a safe injection site in Vancouver, scientist evaluators clearly became advocates for their own work. Dr. Evan Wood and Dr. Thomas Kerr, for example, lobbied hard to ensure that their work was heard and taken up into policy (Grierson 2017; Kerr 2011). When it was not immediately accepted and implemented into policy, they lobbied even harder, leveraging the authority of ‘science’ to win the controversy by framing the disagreement as one of “science versus ideology.”<sup>48</sup>

Although such advocacy played an important role in the Insite case there is another sense of advocacy that I want to consider in depth. The above examples of scientists as advocates imagines advocacy as taking place after ‘the science’ has been completed. We can also look for advocacy in earlier moments of science in action. Another way of thinking of the researchers evaluating Insite as advocates is in considering their capacity as compassionate people who care about injustices faced by individuals who experience homelessness, or housing insecurity, and companion harms, including but certainly not limited to, injection drug use. Researchers such as Wood, Kerr, and Stephanie Strathdee—whom I discuss shortly—are advocates in their efforts to help give a voice to those deemed criminals, unworthy of compassion and basic dignity. They see characterizations of drug users as ‘morally corrupt individuals’ as fundamentally unjust, and in violation of human rights. Each scientist involved in health research in the DTES has their own story about why they came to care about, and work to make visible, the injustice associated with the criminalization of injection drug users. Rather than imagining personal narrative of coming to be passionate about a topic as merely biography and not related to ‘the science,’ it can provide

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<sup>48</sup> For analysis of such maneuvering see Elliott 2014

insight into the development of a critical consciousness about marginalization and oppression, in this case related to precarious living in urban Vancouver. Each of their personal stories involves activism and engagement with the larger social movement demanding dignity and basic rights for injection drug users in urban Vancouver.<sup>49</sup> They were entangled with the subjects of their research through affect and emotion, a sense of care, compassion, and advocacy; and in Shotwell's terms, they utilized implicit understanding in their capacities as research scientists in the production of knowledge.

The explanatory accounts of Insite that I describe in the previous section, as most clearly articulated by Small et al. (2006), focus on the transformation of cultural understandings of injection drug users. The transformation that needed to, and did, occur, is made apparent when framed as a question: How was the moral status of the injection drug user transformed from:

*'the addicted injection drug user is a criminal with a weak will that is deserving of punishment'*

**to**

*'the addicted injection drug user has a disease that is a health concern and is deserving of help and basic human rights and dignity.'*

Two quick pieces of evidence suggest that this transformation did occur between approximately 1996-2011. The first is from Ann Livingston, a founding member of VANDU, described above, recounting that when the group first formed in 1997 "...stigmatized drug users were being treated as less than human... [i]t is hard to describe how hated drug users are and how disregarded their lives were" (Bains 2017). Skipping ahead to 2011, the broad social, legal, and political support for the advocacy movement promoting the humanity of IDUs and the need for harm reduction is

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<sup>49</sup> For Kerr see (Friesen 2003); For Strathdee see (Lane 2015); For Wood see (Grierson 2017 and Kirby 2015)

crystalized in the 2011 SCC ruling, where it is claimed that, following the lower court finding, “...addiction [in the DTES] is a disease in which the central feature is impaired control over the use of the addictive substance” (SCC ruling, 9). In combination with the judiciary’s finding that the government’s refusal to grant the exemption necessary for Insite to remain open violated IDU’s section 7 rights to life, liberty, etc., such a statement is in sharp contrast to the competing image of the injection drug user as making choices that are morally corrupt. Also, the cultural transformation is evidenced by the 2002 mayoral campaign for the city of Vancouver, in which the victorious candidate made a key platform commitment to open a safe injection site within the first months after the election (Campbell et. al. 2009).

My summary highlights the fact that existing explanations of how understandings of injection drug users shifted in the social, political, and legal culture of Vancouver and the surrounding region, ignore the entanglement of science with the social movement in bringing about this shift. I utilize the STS approach of co-production to help describe and explain this entanglement. Co-production is not a methodology but is rather an idiom that is meant to provide “a way of interpreting and accounting for complex phenomena so as to avoid the strategic deletions and omissions of most other approaches in the social sciences” (Jasanoff 2004, 3). The ‘omission’ in the case of research on Insite is any accounting of the relationship between the production of knowledge regarding harms associated with injection drug use in the DTES and the social movement, and the social and political controversy, that helped to build a coalition of supporters for a safe injection site for Vancouver. The co-production idiom is helpful because it consciously seeks to avoid categorically separating science and reason from emotion and affect, as the work reviewed above does. Jasanoff highlights this emphasis, writing: “domains of nature, facts, objectivity, and policy [cannot be separated] from those of culture, values, subjectivity,

emotion, and politics” (2004, 3). This feature of the co-production idiom lends itself well to my attempts to catalogue care, affect, and emotion in scientific practice. Co-production challenges the strategy common to the sciences and social sciences of assuming that natural and social orders require different and separate explanations. Such a strategy is apparent in the work discussed above. Co-production, on the contrary, claims as a foundational premise that natural and social orders are produced, and must be explained, together (Jasanoff 2004). The co-production framework “refuses to take truth for granted or to separate politics and knowledge, and requires an explanation for any stabilization of facts and standardization of scientific practice” (Thompson 2005, 50).

In the case of Insite, existing explanatory accounts of how the safe injection site came about make this separation between knowledge and politics, they separate the ‘social’ and the ‘natural’ order:

1)(social order) a substantial social and cultural shift occurred in how drug users and addicted drug users were viewed by society and the government; and

2)(natural order) scientists in the region produced an empirical body of evidence that delineated the harms associated with injection drug use, and made it clear that a safe injection site did not make the problem of injection drug use and addiction worse, but rather helped to alleviate it.

The empirical body of ‘evidence’ produced about the impacts of Insite on the DTES, in point (2) above, is largely explained, even perhaps inadvertently, as having been produced and as existing independently of the social and political movement and controversy. Utilizing the co-production idiom, I explain below how the scientific and social facets of the Insite case are fundamentally intertwined. Such an account helps to make affect and emotion, and advocacy and care, visible as constitutive elements of knowledge making not just social action.

### ***Health research in urban Vancouver***



Contemporary health research is typically conducted in teams and partnerships, and research investigating how to address the public health crisis in the DTES follows this model. Health research in the DTES has been conducted by dozens of researchers over the past several decades. The campaign to open a safe injection site in Vancouver can be understood as the crystallization of many years' worth of research into the varied harms associated with the precarity of life for residents of the DTES. Such precarity includes homelessness or housing insecurity, poverty, involvement in sex trade work, mental illness, risk of violence, and gendered and racialized forms of each, especially for indigenous peoples.

#### *How to gain leverage?*

Social activism worked to humanize addicted individuals and to influence political leaders; these efforts were key to gaining support for a harm reduction approach to the problem of injection drug use. But additionally, for the problem to be re-imagined as a *health problem*, researchers had to identify sites for health services interventions that highlighted connections between injection drug use and health. Health researchers working in the DTES worked to correlate behaviors, lifestyles, social and psychological conditions, and social structures with harms associated with injection drug use. To help facilitate the shift from understanding injection drug use as a law and order problem to a health and public health problem the following question needed to be answered: How can health related harms associated with injection drug use be made visible in terms and in discursive forms that are credible and authoritative in the particular time and place? Once those health-related harms are made visible, and once the conditions that lead to harm are empirically isolated, sites for health services interventions emerge. And once the harms of injection drug use are made visible -- harms that are different in nature from, and beyond, criminality - health research scientists can talk with more authority on injection drug users and

how to help them than anyone else in society. This capacity is made possible because activists and scientists—certainly not mutually exclusive categories—together reframed how proposed solutions to the problem of injection drug use in urban Vancouver should be evaluated.

In order to highlight how affect and emotion were integral to scientific practice I focus on the adoption of a harm reduction framework for addressing the problem of injection drug use. And, in order to explain the significance of this framework I briefly summarize two studies with publication dates separated by six years: 1997 and 2003. The earlier study (Strathdee et al. 1997) articulates the founding of an influential epidemiological cohort that becomes the basis of most empirical claims about the harms associated with injection drug use in the DTES, and also initiates a harm reduction framework as a key evaluative benchmark. The second study (Wood et al. 2003) highlights the authority and success of the establishment of a harm reduction framework as the baseline against which possible solutions to the problem are measured.

Before getting to the two studies, I want to say more about the moral and political underpinnings of the harm reduction framework as a social movement. Health research in the DTES was conditioned by the guiding questions: how to make the harms of injection drug use visible; and how can harms associated with intravenous drug use be reduced? This is, from the beginning, a possible question only within a particular moral framework that prioritizes the human rights and dignity of the people in question, namely injection drug users. The moral framework operative in the background of health research in this case is ‘harm reduction’: a health services framework and strategy begun in the 1980s, although similar practices had occurred elsewhere earlier, without being named as such. In Liverpool, England, in the 1980s a public health effort to limit overdose and HIV/AIDS transmission via injection drug use was attempted (O’Hare 2007). There were various motivating factors, including a police force

frustrated by repeatedly re-arresting the same people. But worry about the basic human rights of users led to concern that existing strategies did nothing to minimize or prevent the harms associated with injection drug use; and, in fact, some harms associated with injection drug use were seen to be the result of, or be exacerbated by, existing policing practices. The first efforts to change how the problem of injection drug use was addressed by activists, clinicians, and researchers included a needle exchange program (O'Hare 2007).

A survey of published articles in the peer-reviewed *Harm Reduction Journal*, and elsewhere, reveal a recurrent preoccupation with how to position the 'harm reduction strategy' with respect to values, morality, and politics. An internal argument runs through these manuscripts about whether to position harm reduction as a value-neutral *or* as a morally committed scientific health care strategy. The argument is less about whether harm reduction is in fact morally and politically grounded and is more about whether it is politically beneficial to hide the framework's values-based roots (See for example Keane 2003; Fry et al. 2005). Fry et al. (2005), for example, argue that a more robust and clear articulation of the ethics that guides harm reduction is needed for the harm reduction movement to gain wider acceptance. Keane (2003) captures a key point about the value-laden nature of the harm reduction approach within the academic harm reduction community, and about how to position the moral grounding of the field and health services strategy. She writes:

[T]he crucial point masked by the strong discourse of value-neutrality is that in a context where drugs are predominantly identified as bad (or even evil) and drug use as pathological, a view that drug use is neither right nor wrong is not neutral, but is itself a committed and critical standpoint. Humanistic values, respect for the rights and dignity of the drug user and even a libertarian foundation are listed by others in the field as important characteristics of harm reduction (Keane 2003).

Other scholars have claimed that the harm reduction movement in North America began as a "clandestine, grassroots social movement" (Reinarman 2005), premised on "anarchist principles

of mutual aid, distrust of hierarchy, and anti-authoritarianism (Smith 2016, 214). According to Smith (2016), the first harm reduction interventions in North America were organized by ‘underground’ grassroots activist groups, and were later de-politicized and adopted as public health policy (214). One end goal is understood to be total legalization of illicit drugs, based upon the claim that it is predominantly the illegality and social stigmatization of injection drugs that are the source of most harms (Hathaway and Tousaw, 2008). The first legitimate harm reduction intervention in Vancouver was the opening of a needle exchange program in 1988, although underground illegal ‘pop-up’ programs often precede legal offerings (Smith 2016). In April 2019, the B.C. Chief Health officer called for the legalization of all illicit drugs (Woo 2019). The main point I aim to establish in this section is that the harm reduction framework is a thoroughly morally and politically invested approach to health services. This point becomes important in my discussion below about how the scientific project of evaluating Insite was entangled and inseparable from the broad social movement advocating for harm reduction strategies in urban Vancouver.

Many health researchers involved with projects in the DTES in the 1990s were committed to and participated in the wider harm reduction movement. This involvement can be observed through a survey of published papers committed to harm reduction, through conference presentations, and participation in wider harm reduction research networks, and in consistent choices about study design, framework, and methodology among the DTES researchers. Kerr, for example, conducted studies working with community advocacy groups and he explicitly advocated for safe injection sites and better health services for injection drug users (Friesen 2003). Working within the harm reduction framework requires a value-laden commitment on the part of the researcher. It is researchers who are committed to foregrounding the basic human

rights and dignity of injection drug users that engage in harm reduction related projects. This is a position of care, advocacy, and compassion. It seems reasonable to assume that without such compassion on the part of the researcher, projects focusing on reducing the harms of injection drug use may not be possible, in a literal sense, because no one would care enough to carry them out.

In addition to personal stories used to humanize and garner sympathy for injection drug users, which are often stories of tragedy, researchers accumulated a large body of empirical evidence related to injection drug use and harm reduction strategies. This evidence base that began accumulating in the second half of the 1990s and continues today, was and is largely derived from a prospective longitudinal cohort study of injection drug users in the DTES. This study, which is ongoing in 2019—although it has been sub-divided—is known as VIDUS: Vancouver Injection Drug User Study. VIDUS began in 1996-97 and involved recruiting active injection drug users living in the DTES who agreed to participate in periodic check ins with study researchers who would take various health measures, including blood samples, and who would respond to survey questions about their drug use, housing status, sexual practices, and other aspects of their lifestyle and social circumstances. Dozens if not hundreds of academic journal articles have now been published using VIDUS as a primary dataset, the first of which appeared in 1997 (Strathdee et al. 1997).

A central transformation integral to the political success of Insite is the re-making of the natural and social orders in the framework of harm reduction. The social and scientific movements transformed ‘natural’ representations of drug users and associated harms; and transformed the governing of drug use and of drug users. The establishment of VIDUS was crucial to these transformations, in particular to making the harms of injection drug use visible.

As I explain below, an examination of the establishment of VIDUS is a good point of entry for understanding the entanglement of the social and scientific movement working to transform cultural understandings of injection drug users, and a good entry point for considering, in particular, the role of advocacy, care, and compassion in the co-production of the social and scientific movements.

It is difficult to exaggerate the importance of VIDUS to the success of Insite. VIDUS was and continues to be critical to establishing a scientific defense of safe injection sites in Vancouver and beyond; and the empirical evidence base leveraged in arguments over the fate of Insite and safe injection facilities in Canada was and continues to be dependent on VIDUS. The mid 1990s were the early days in the localized and shifting cultural perception of injection drug use, from being widely understood as a criminal matter to a health matter. In the mid-1990s the grassroots social movement(s), at this point heterogeneous but not yet as organized or as coalesced as it was by 1997-98, was bringing attention to the basic human dignity of injection drug users, and of the harms they and their relations—friends, family—were experiencing. Health researchers were very much part of this phase of the social movement. They were also aware of and participants in the global harm reduction movement. Scientific research into the nature of the harms was a strategic tool to draw attention to the suffering and the loss of humanity endured by injection drug users. If the existence of harms can be empirically established, then follow up research asks: how can harms be reduced? A safe injection site is only, as an experimental trial, empirically justifiable once health researchers have established authority over the nature of harms: this authority was dependent on VIDUS. The VIDUS cohort study is the pathway for building the moral and value-laden framework of harm reduction *into* what becomes the source of empirical knowledge about the health of injection drug users living in the DTES.

VIDUS was motivated by, and theoretically and methodologically based in, a harm reduction framework, grounded in a moral commitment to the value, respect, dignity and basic humanity of injection drug users. A core aim of harm reduction-based health research is to figure out associations between various behaviours, lifestyles, and health harms, with the prospect of then reducing harm. Many of the research questions asked by health researchers utilizing VIDUS data reflect an implicit commitment to harm reduction, thus embedding the value-laden framework of harm reduction into the empirical results of the research.<sup>50</sup> Such implicit commitments can be observed in the titles and content of articles published using VIDUS data, often focusing attention on harm, which also works to focus attention on the basic humanity of IDUs. For example, the first study published by the founders of VIDUS, utilizing VIDUS data is: “Needle exchange is not enough: lessons from the Vancouver injecting drug use study” (Strathdee et al. 1997). This study assessed the prevalence of HIV and HEP-C and certain ‘risky’ behaviours among IDUs in the DTES, and focused on the effectiveness of a needle exchange program (NEP) to reduce infectious disease transmission. Needle exchange programs are one of many possible health services that fall under a harm reduction approach. They are often the first health service, or intervention, provided as a means of reducing the harms associated with injection drug use, largely because NEPs are the least politically controversial. The NEP in Vancouver began in 1988. In their study Strathdee et al. (1997) focus on risks associated with injection locations. The authors conclude that needle sharing—risky behaviour—appears to increase when IDU housing is unstable or precarious (Strathdee et al. 1997). They found that, although they are helpful and a good first step, NEPs were not sufficient to control the spread of infectious disease. The authors write:

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<sup>50</sup> For example Wood et al. 2003, which I describe shortly.

Our results do not argue against the overall effectiveness of NEP as an HIV intervention, but rather, they lead us to propose that without adequate and appropriate community-wide interventions...stand-alone NEP may be insufficient to maintain low HIV prevalence and incidence...Our study suggests that the concept of harm reduction requires a broader perspective beyond NEP alone (F64).

Strathdee et al. (1997) is the first of more than 100 published articles using the VIDUS cohort, and in this first publication there is an allusion to safe injection sites as required for reducing harms. Also, harm reduction measures, from the beginning of the development of a harm reduction approach in the 1980s, by definition include a vast array of interventions ranging from, at one end of the spectrum of what is generally more politically feasible, NEP, and at the other, complete legalization of all currently illegal drugs (Hathaway and Tousaw 2008).<sup>51</sup> Empirical evidence is not necessary for making the case that measures beyond NEP are needed to implement a broader conception of harm reduction, since such breadth is included in definitions of harm reduction. Once harm reduction measures have been introduced, however, the empirical evidence presented by Strathdee et al. (1997) helps to disconnect harm reduction health services from their inherently value laden moral and political agenda. The authors also note that similar findings have been reported in other studies, suggesting that harm reduction measures beyond NEP are required to address the harms of infectious disease transmission. The ‘other studies’ referenced refer to a safe injection site in Amsterdam. Working within the harm reduction framework requires a commitment on the part of the researcher because it is researchers who are committed to foregrounding the basic human rights and dignity of injection drug users who engage in such a project. This is a position of care and advocacy and compassion. Without such

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<sup>51</sup> In 2019, the BC Chief medical officer proposed legalization of all illicit drugs as a measure to address the opioid overdose crisis in the province, and particularly in the DTES (Ref.).



compassion on the part of the researcher, the project of focusing on reducing the harms of injection drug use may not have been possible.

That the VIDUS project is imbued with care and affect is further evidenced within the dominant methodology of the study. There are two points to make: the first is that the methodology of the study is largely qualitative in nature, and in the mid-1990s, qualitative research was belittled within biomedical research at large, especially as they contrast with the standing of quantitative research methods. In the mid-1990s, the evidence-based medicine (EBM) movement was coming to dominate definitions of reliable empirical biomedical science, with the Randomized Controlled Trial (RCT) becoming the ‘gold standard’ (Ref.). The empirical and ‘scientific’ status of research based on interviews with study participants (qualitative data) was hotly contested. Although researchers working in urban Vancouver—including Kerr and Wood—relied on and leveraged the hegemonic status of EBM to win political controversy—by claiming the authority of their evidence over political ideology—they were nevertheless making methodological choices that were, at the time, on the fringes of the EBM movement within biomedical research. The second point to make is that Kerr includes study participants— injection drug users in the DTES—in the research process: he did so by consulting users on what questions should be included in questionnaires for use in the VIDUS study, and by employing active users and residents of the DTES as research assistants, helping to gather data (Friesen 2003). Both of these methodological aspects of the VIDUS cohort study suggest that lead researchers were motivated to utilize techniques that were outside the norm for research conducted according to EBM standards. Such moves gesture towards my earlier discussion about what it means to ‘achieve’ a critical standpoint on knowledge production. Making methodological choices that fall outside the mainstream signals, perhaps, a critical awareness of the politics of knowledge and the

need to generate counter-narratives, in this case narratives about injection drug users, using techniques of social activism and utilizing authoritative tools within the dominant epistemic imaginary. It is difficult to justify precise claims about why researchers would take such risks, but indirect evidence suggests that they were at least partly motivated by care and affect more generally. Kerr, for example, looking back to the epigraph included at the opening of this section, states explicitly that he intends his research to function as a form of advocacy and activism on behalf of precariously living folks in the DTES (Friesen 2003). Kerr is considered a “public health hero” for his research and activism in the DTES (Johal 2008). In the period prior to the opening of Insite, Kerr worked as a social work counselor in the DTES, working primarily with patients living with HIV/AIDS, including many injection drug users (Johal 2008). He recounts experiencing “first-hand the frustration of dealing with their challenges without being able to deal with their addictions” (Johal 2008).

I mention these aspects of what motivated Kerr in his research to help establish the significance of affect as a necessary condition for his health research. There are similar personal stories for other lead researchers involved in establishing Insite. The lead author on Strathdee et al. (1997), and one of the founders of the VIDUS cohort, was Dr. Stefanie Strathdee, who in 1997 was a post-doctoral researcher at the University of British Columbia. Before the legal struggle for Insite took hold, Strathdee left Vancouver for a faculty position at John’s Hopkins University. Her research on HIV/AIDS and injection drug use in the DTES was pivotal for establishing both the VIDUS cohort and evidence that there was an ongoing public health crisis. At the core of Strathdee’s work in Vancouver was advocacy and care. There is information in the public record, in publications and interviews, that can help to establish the extent to which Strathdee is motivated by advocacy and care.

In an interview article profiling Strathdee for the *Lancet*, she recounts formative experiences that contributed to her desire to participate in HIV/AIDS research, and particularly with subjects from vulnerable populations (Lane 2015). She explains that as an undergraduate student in microbiology in Toronto, Canada, she learned that one of her professors, after missing class for a week, had died of HIV/AIDS. She also recounts that her PhD supervisor and her best friend both died from HIV/AIDS. Strathdee says that coming to work on HIV/AIDS research was a ‘calling,’ something she had to do (Lane 2015). This wording recalls de Bellacasa’s emphasis on care as “an affective state, a material vital doing, an ethico-political obligation” (Bellacasa 2011, 90). One aspect of Strathdee’s post-doctoral research in the mid-1990s in Vancouver focused on the role of childhood and adolescent sexual abuse in HIV/AIDS risk for people working in the sex trade, and for injection drug users. Strathdee won an early researcher award for this research. She recounts that the need for such a research project struck her while volunteering at an HIV/AIDS hospice in Toronto. Working with sex trade workers and injection drug users at the hospice, Strathdee cites the confidential stories she would hear about histories of sexual abuse, and recounts how they struck a chord with her because of her own experience with similar abuse. Strathdee recounts: “This was an under-researched area of HIV epidemiology at that time, which I found compelling, not least because I had experienced sexual abuse myself in adolescence” (Lane 2015, 20). Strathdee’s now very successful academic career as an HIV/AIDS researcher with a focus on vulnerable members of society demonstrates that a founding and lasting motivation for her chosen research is her compassion and care for her research subjects, and for her desire to make a difference in the lives of those at risk of exposure to HIV/AIDS. What is also apparent is her desire to be an advocate on behalf of people who can benefit from authoritative representation by someone with socially derived authority and credibility. With

respect to my claims about the entanglement of the health research program and the social movement Strathdee's personal story is significant. It helps to demonstrate that her motivations are threaded with the broader research program she was involved in, as well as with the social movement advocating for Insite.

*Wood et al. (2003)*

In September 2000 police services in the Vancouver area recorded Canada's largest ever seizure of illicit drugs (Dawson 2000). Wood et al. (2003) evaluate whether this seizure had any impact on the health of injection drug users in the DTES. Proponents of a criminal justice approach to addressing injection drug use argue that government resources should go to law enforcement. Wood et al. (2003) attempt to undermine such arguments by providing evidence that even the greatest enforcement victories have a negligible impact on the harms associated with injection drug use.<sup>52</sup> The paper is titled: "Impact of supply-side policies for control of illicit drugs in the face of the AIDS and overdose epidemics: investigation of a massive heroine seizure" (Wood et al. 2003). The title makes it clear that policies related to illicit drugs should be measured against health harms for users, indicated in the title by reference to 'AIDS' and 'overdose.' We see here that the framework for evaluating a policy's effectiveness ought to be harm reduction. The emphasis comes out throughout the paper. In their introduction, the authors write:

At the national level, a recent report from the Canadian auditor general estimated that of the \$454 million spent in 1999/2000 to deal with illicit drugs in Canada, \$426 million (93.8%) was devoted to reducing supply. Despite the expenditures on supply reduction, high HIV incidence rates persist in many Canadian cities, and overdoses of illicit drugs have been a leading cause of death. (Wood et al. 2003, 165)

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<sup>52</sup> The strategy taken by Wood et al. (2003) I describe is only one of many possible examples. The following pattern was common in the case of Insite: A politician who is against safe injection sites makes a specific claim about why they believe Insite to cause more harm than good, and in the months or year following this claim a study would be published, relying on VIDUS data, that worked to refute that claim. See for example: Wood and Kerr 2006; Kerr et al. 2007; Milloy et al. 2009.

Again, the study is implicitly arguing that policy and action related to illicit drug supply should be evaluated with respect to its impacts on harm to injection drug users. The harm reduction framework is assumed as the obvious framework for evaluating illicit drug policy. ‘Harms’ to drug users, seen as the penultimate evaluative benchmark, are implicitly assumed to be value-neutral and a-political. But within my analysis here it becomes apparent that such a study and strategic maneuver can also be understood as a form of activism and advocacy. The authors utilized data from the VIDUS cohort to perform their evaluation. They compared several variables in the 30 days before and after the seizure. They used questionnaire and biomedical data from VIDUS to analyze: whether the seizure affected the source of IDU’s drug supply; whether the seizure changed patterns in overall use of heroin; frequency of heroin use; and experience of non-fatal overdose (168). Over 100 VIDUS participants had been interviewed in the before and after period. The authors concluded: “we observed no beneficial public health effects of Canada’s largest-ever heroine seizure” (168).

As in Strathdee’s case, Wood, the lead author on this paper, is an outspoken advocate for harm reduction generally and safe injection sites in particular (see for example Grierson 2017). In a profile for the *Lancet*, Wood is referred to as one of North America’s leading researchers on harm reduction strategies for injection drug users (Kirby 2015, 2131).<sup>53</sup> An editor of a leading journal in the field says of Wood:

Evan’s dogged effort to assess the impact of harm reduction measures for HIV-infected injection drug users is notable...[P]erhaps what distinguishes his remarkable career the most is the energy and effectiveness he consumes had as an advocate while maintaining scientific objectivity and integrity about the issues for which he studies” (Kirby 2015, 2131)

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<sup>53</sup> For his work with HIV infected individuals and injection drug users Wood received several awards, including the Ron Gitter Award in Human Rights from the University of Calgary (Grierson 2017).

Statements such as this imply an affective and emotional charge permeating Woods scholarship and advocacy efforts, which I am arguing were essential to making his work possible.

## **Conclusion**

It is clear that researchers working on health research in the DTES, such as Strathdee, Wood, and Kerr are emotionally and affectively invested in their research. All three are advocates for the well-being of those they study. I want to suggest that they have developed a form of critical consciousness and a standpoint on knowledge production. Their experiences of participating in the social movement to humanize injection drug users provide, in Shotwell's terms, resources for "developing the ability to think and act outside of oppressive or inadequate norms" and for understanding ideological oppression. Resistance to Insite and harm reduction in general is regularly framed as ideological: it is immoral to condone the use of illicit drugs, and that inability to abstain from drug use is seen to be indicative of moral failure.<sup>54</sup> Affective and emotional aspects of participating in the social movement opens new understandings of the conditions of oppression for those living in the DTES and also informs efforts to resist such oppression. Strathdee, Kerr, and Wood (among others) have developed a critical understanding that injection drug users have no voice in a society that recognizes them as criminals. They also understand that by focusing on the inherent dignity of users, and the harms they experience, the authority of empirical science can be leveraged to speak on behalf of injection drug users.

Without care, affect, emotion, and advocacy, the empirical foundation upon which scientific claims about Insite are made would not exist. I am here thinking about Code's claim

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<sup>54</sup> See for example Alberta Premier Jason Kenney's 2019 comments on harm reduction strategies for addressing the opioid crisis (Gerein 2019).

when she writes: “advocacy often makes knowledge possible, in the strongest sense of that word” (2015, 4; 2006). She is not referring to ‘knowledge in general’ but rather to situation specific instances wherein “people who need to know perhaps cannot...be expected to know for themselves by their independent efforts, for diverse reasons” (2015, 4-5). In thinking about the specific circumstances of injection drug users in urban Vancouver in the 1990s into the 2000s, some of those reasons included “constraints on their expertise, access, or understanding.” Injection drug users organized and engaged in social activism to speak on their own behalf, and to gain uptake.<sup>55</sup> Their efforts were limited, however, due to many factors, but including entrenched structures of power and privilege that dehumanize and criminalize them, and that deny them legitimacy as authoritative testifiers about the nature of their own experience, and what kind of help they might need. Health researchers such as Strathdee, Wood, and Kerr, and there are many others, managed to translate the voices of injection drug users into a vernacular that is socially credible and authoritative: the language of empirical biomedical science. Health researchers as, and with, activists in urban Vancouver managed to translate the demands of a social movement and managed to add scientific and empirical authority to efforts to challenge and scrutinize pre-suppositions about the nature of addiction and injection drug use and users. In so doing, activists and scientists together reframed how proposed solutions to the problem of injection drug use in urban Vancouver both could and should be evaluated. The effect of this entanglement of the production of empirical knowledge and the social movement was to cumulatively build an empirical body of evidence that was circumscribed by the original moral and political commitment to a harm reduction framework. Yes, the various empirical findings

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<sup>55</sup> In the DTES, for example, injection drug users formed an advocacy ground VANDU—Vancouver Area Network of Drug Users.

meet epistemic criteria of coherence, empirical adequacy, replicability (consistency), but the entire empirical body of evidence is permeated by a fundamental value-based commitment to harm reduction.

Returning to my questions in the first half of this chapter about what it means to ‘achieve’ a standpoint, and remembering that ‘achievement’ includes a certain kind of ‘epistemic engagement,’ how should the health researchers I describe in urban Vancouver be understood as ‘epistemically engaged’? Concern to incorporate input from injection drug users in questionnaire design, input from study participants, suggests that researchers knew that beginning research from the perspective of the oppressed was essential to the production of knowledge that would reflect both the needs of those thought to be the beneficiaries of the research but also to assist the social movement in mobilizing and vocalizing the voices of those who stood to benefit from state intervention.

In part, my project is about assisting efforts to create the conditions wherein the potential of prospective transformative anti-oppressive critique in the sciences is maximized. In the first two chapters I consider proposals to generate such critical potential through the promotion of social diversity in research communities, on the presumption that social diversity means diverse ‘perspectives’ and ‘points of view.’ I point out that the desired critical ‘perspectives’ are best thought of as deriving from critical standpoints, or critical consciousnesses, best articulated by feminist standpoint theorists. In this chapter I have suggested that implicit in feminist standpoint theory—within what it means to ‘achieve’ a standpoint—according epistemic significance to affect and emotion, also captured by ‘care’ and ‘advocacy,’ that is largely left unexplored in epistemic discourse. Without being precise with claims about the motivations of health researchers in urban Vancouver, it seems clear that these lead researchers were advocates for the



interests of those they were studying. This advocacy was motivated by affect and emotion, which facilitated their capacities for understanding and working against the ideological conditions that exacerbated the social and material plight of those for whom they advocated, and that also denied them credibility as experts of their own lives and what forms of assistance could help them.

## **Chapter 4: ‘Gendered Innovations’ and Social identity: Who is positioned to generate criticism?**

### **Introduction**

The international collaboration known as Gendered Innovations is perhaps the most comprehensive attempt to expose, prevent, and correct sex and gender bias in all facets of academic sciences. The project, led by Londa Schiebinger, is a coalition of over 60 experts—including science, social science, and humanities scholars—aiming to change the historic and on-going under-representation of women in science, the hostile or chilly culture of science for women, and the consequent sex and gender based omissions, gaps and inaccuracies in the content of scientific knowledge that have had real world negative consequences on the lives of women and men. The project is well established with scholars and political allies in the United States, Europe, and Canada, with emerging support in South Korea and Japan. The project hosts a central website—[genderedinnovations.org](http://genderedinnovations.org)—and has published many documents, including a key initial edited scholarly volume (Schiebinger 2008), individual academic journal articles, and co-authored government papers (EU expert report 2013). Schiebinger has also given many presentations on the project (Schiebinger 2013; Schiebinger 2017).

Schiebinger defines the gendered innovations project as “...transformations in the personnel, cultures, and content of science and engineering brought about by efforts to remove gender bias from these fields” (Schiebinger 2008, 4). She distinguishes three levels of analysis that represent the multiple problems associated with gender and science. Schiebinger labels the ‘levels of analysis’ with the following titles: 1. Fix the number of women: Participation of Women in Science and Engineering; 2. Fix the Institutions: Gender in the Cultures of Science and Engineering; 3. Fix the knowledge: Gender in the results of science and engineering” (2008,

5). The first level of analysis addresses what we might think of as the classic problem of the under-representation of women in science. This includes doing the empirical work to reveal the status of women in science in every field and across levels and positions of seniority and authority. This first level also includes developing solutions to ‘fix’ under-representation when and where it is found. There has, over the past several decades, been significant work done on the participation, and mechanisms of exclusion, of women in science (For example, see Nittrouer et al. 2018; Dutt et al. 2016; Moss-Racusin et al. 2012; Steinpreis et al. 1999; Wenneras and Wold 1997). Displays of gender bias in many different spheres of scientific evaluation (of students, job and grant candidates) most often favour males over females. Moss-Racusin et al. (2012) found, for example, that science faculty exhibited a gender bias against female applicants for a laboratory manager position. Many policy initiatives have been implemented to address similar and other biases and mechanisms of exclusion, including a recent example by France Cordova, the director of the National Science Foundation (NSF) of the United States, to prevent NSF funded faculty who have been found to be guilty of gender harassment from continuing to receive public funding for their research (Harmon 2018).

‘Fix the culture,’ a second level of analysis, is again part empirical, part theoretical, part practical and policy oriented. The aim is to uncover and reveal the mechanisms by which women have been systematically impeded, or outright thwarted, in attempts to become scientists, and to proceed through to higher ranks of authority in academic science. Once mechanisms have been uncovered, strategies are developed to resist and eliminate such mechanisms. For example, in her lecture for the popular TED series (Schiebinger 2013), and in other work (Schiebinger 2017), Schiebinger points out that CV studies in which evaluators are asked to rank academic candidates using CVs alone, male and female evaluators consistently rank CVs with male gendered names

higher than identical CVs with female gendered names (For example see Steinpreis et al. 1999). Male gendered CVs score higher on assessed competency and have higher suggested salary offers. The CV studies are just one example of many discriminatory practices, sometimes unconscious discrimination and bias, that function to marginalize and thwart career prospects for women in science. The gendered innovations project is explicitly aiming to develop strategies to eliminate such discriminatory practices.

The third level of analysis focuses on sex and gender bias in the content of scientific knowledge and is referred to as ‘fix the knowledge.’ To introduce this third level of analysis Schiebinger asks:

Does the exclusion of women from the sciences and engineering have consequences that go beyond the issues [of representation and discrimination]? Is the question of gender in science and engineering merely one of institutions and opportunities for women, or does it impact the content of these disciplines as well? (2008, 15).

To explain what such an analysis means Schiebinger relies on historical case studies of transformative critical gender analysis. The ‘best’ example, Schiebinger explains, comes from the biomedical sciences in the United States beginning in the 1960s. A revolution took place in women’s health care after critical gender analysis revealed the androcentrism endemic to biomedical research. The majority of research subjects in biomedical research until well into the 1980s were men, based on the presumption, rarely explicitly stated, that male bodies are representative of all human bodies. The withdrawal of several pharmaceutical drugs related to heart health from the market revealed that women disproportionately experienced adverse reactions to heart medications. Analysis revealed that these failures were related to the assumption that what is true for male research subjects must also be true of female patients. Medications developed based on clinical trials and other research involving male subjects did not

have the same effects when taken by female patients. Much harm, including unnecessary death, resulted from gender biased health research. A women's health revolution began as a result (Rosser 1994; Ruzek et al. 1997).

Proponents of the gendered innovations project cite biology as a second major field to have been transformed by critical gender critique in the last decades of the 20th century. There are many examples in the biological sciences of critical sex and gender analysis being transformational for the field but the 'gold standard' example referenced in nearly all of the gendered innovations literature is work by Sarah Richardson on the history of the genetics of sex determination (Richardson 2008; See also Richardson 2014). Richardson chronicles the 1990s history of the SRY gene being claimed by geneticists as the 'master gene' involved in sex determination. She chronicles the crucial role of specifically feminist oriented critique in exposing the flaws of SRY master gene theory. I describe Richardson's case study in detail later in the chapter.

The aspect of the gendered innovations project on which I focus in the remainder of the chapter has to do with the place of social identity and the standpoint of researchers in descriptions of, and prescriptions for, how critical gender analysis has been, and is to be, carried out. The claims made by proponents of the gendered innovations project are similar to those made by Fehr (2011) and others that I discussed at length in chapters one and two. In chapters one and two I summarized and analyzed Fehr's claim that increasing the inclusion of women in research communities is not only good for achieving fairness but is also good for knowledge. The general claim is that social diversity in research communities allows for greater objectivity in the results and claims made by such a community. Fehr (2011) makes this claim directly but it is also implicit in many policy initiatives in Canada, the US, and Europe that are aiming to promote the

representation of groups that have historically been, and continue to be, under-represented in the sciences. The gendered innovations project seems to be aligned with such a claim about the epistemic benefits of social diversity when Schiebinger writes:

Emerging evidence reveals that women will not become equal participants in science and engineering until we have fully investigated and solved the knowledge problem...we need to be open to the possibility that human knowledge—what we know, what we value, what we consider important—may change dramatically as women become partners (2008, 6).

There is, however, a significant point of disagreement between explicit claims that social diversity is epistemically beneficial, such as those made by Fehr and in policy initiatives, and the gendered innovations project. Even though Schiebinger appears to hint at agreement with the claim that social diversity can be epistemically beneficial, in statements such as I include above, the gendered innovations project explicitly denies that epistemic advantage arises out of social identity, specifically denying that women are uniquely positioned to perform critical gender analysis. Even though Schiebinger's above observation seems to implicitly suggest epistemic consequences arising out of women's participation in greater numbers in the sciences, she explicitly rejects such an interpretation. In her introduction to the gendered innovations project Schiebinger addresses this point, writing: "I want to emphasize from the beginning that gender analysis is not attached to the X or Y chromosome—that, if properly trained, most researchers successfully master its theory and practice" (2008, 4).

In this chapter I outline Schiebinger's denial of social identity and standpoint as having significant epistemic consequences for critical gender analysis. I argue that this denial amounts to a flawed and significant omission in the articulation of both the theory and the case history upon which the gendered innovations project is based, and the remedying methods developed to prevent future gender bias in the sciences. In section one I provide more background on the gendered innovations project. I describe each level of analysis in more detail and I outline the

consequences of gender bias in science according to project authors. I discuss proposed methods for implementing critical gender analysis. In section two, I provide an overview of how the social identity of those performing critical gender analysis figures in articulations of the gendered innovations project, including in proposed methods for implementation and in historical case studies used as examples. In the third section I point out several undesirable consequences of omitting acknowledgement and discussion of the epistemic significance of the standpoint of researchers in generating critical gender analysis. I argue that the epistemic significance of social identity and standpoint needs to be acknowledged and accounted for in the gendered innovations project.

## **Section One**

The ‘innovations’ of ‘gendered innovations’ is intended to suggest that critical sex and gender analysis in the sciences has, and can lead to, innovations of various types: technological innovations; innovations in rooting out and addressing gender bias in the workplace and culture of science; and innovations in knowledge. In her popular TED talk outlining the project, Schiebinger asks as an opening question: How do we harness the creative power of gender analysis to discover new things? (Schiebinger 2013). The history of critical analysis is used to show the presence of gender bias in the culture of science and in scientific knowledge, but the gendered innovations project is focused on harnessing this history of critique to prevent future bias and to develop cultures of science and scientific knowledge that are better—‘better’ suggesting less or no discrimination against women pursuing careers in the sciences, and suggesting less gender bias in the results of scientific research. In a 2013 expert group report prepared for the European Commission titled “Gendered Innovations: How Gender analysis contributes to research” (EU expert report 2013) the authors performed a comprehensive review

of how a critical sex and gender analysis might lead to innovations. The report offers recommendations and practical tools for scientists to perform gender analysis in order to “...foster re-thinking of concepts, how to formulate gender sensitive and relevant questions, and to develop appropriate methodologies” (EU expert report 2013, 5). The authors write:

The case studies presented in this report demonstrate that differences between needs, behaviours and attitudes of women compared to men really matter, and accounting for them in research makes it relevant to the whole of society. They also show that these differences can vary over time and across different sectors of society and require specific analyses (5).

The aim is to design sex and gender analysis into research.

The authors and participants in the gendered innovations project argue that there are significant consequences of gender bias in science. In the ‘fix the numbers’ and the ‘fix the culture’ levels of analysis gender bias significantly limits and circumscribes the scope of options available to women in science. Gender bias in these levels also has a significant impact on shaping the experience of being a woman in science. In the ‘fix the knowledge’ level of analysis there are significant consequences of gender bias on the content of scientific knowledge, which often has detrimental health implications for both women and men.

#### *Methods.*

For each level of analysis methods are provided for performing critical gender analysis. I focus here on methods and strategies for ‘fixing the knowledge.’ Four domains for applying critical gender analysis are suggested, including: Granting agency application requirements; Editorial boards for journals; Academic hiring and promotion committees; and teaching.

#### *Granting agency application requirements*

As a strategy for implementing critical sex and gender analysis the gendered innovations project has worked with publicly funded granting agencies on incorporating reflection on sex and gender dimensions of research into funding application requirements. This strategy has been very



successful, as many major public funding agencies in the United States, Canada, and Europe have instituted such requirements (Schiebinger et al. 2016). In their requirements for applications, the NIH writes: “Sex and gender play a role in how health and disease processes differ among individuals, and consideration of these factors in research studies informs the development and testing of preventive and therapeutic interventions” (Schiebinger et al. 2016).

#### Editorial boards for Journals

The gendered innovations project has also worked to have academic journals require evidence of reflection on the relevance and place of sex and gender in submitted research articles (Schiebinger et al. 2016). These efforts have been somewhat successful in biomedical health related journals, especially with respect to requirements that the sex of research subjects be reported, whether human, animal, cell or tissue.<sup>56</sup> The European Association of Science editors provides recommendations for how to report the ways sex and gender figure in study design, data analyses, results, and interpretations of findings (Schiebinger et al. 2016). Suggesting that the next step is consistency across journal requirements, Schiebinger writes: “authors should specify how they analyzed for sex and gender, and indicate where it is not possible to know whether a finding is driven by sex, gender, or both” (2016, 2481).

Schiebinger et al. (2016) propose guidelines for incorporating sex and gender analysis in editorial requirements for journal articles. Some proposals include:

--“Require correct use of the terms sex and gender”

--“Require the reporting of the sex, gender, or both of the study participants, and the sex of animals or cells”

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<sup>56</sup> Schiebinger et al. (2016) define ‘sex’ as a biological variable determined by chromosomal assignment and manifesting as male, female, or intersex, and define ‘gender’ as “...a constellation of sociocultural processes that interact with and have the potential to influence human biology” (2841).

--“Consider analyzing data by sex, gender, or both, where appropriate, or providing the raw data in the main manuscript, supplemental material, or in an accessible data repository.”

--“Analyse the influence (or association) of sex, gender, or both on the results of the study where appropriate, or indicate in the methods section why such analyses were not performed.”

--“If sex or gender analyses were performed post-hoc, indicate that these analyses should be interpreted cautiously. Negative post-hoc analyses may be underpowered, leading to a false conclusion of no-difference.”

In a section titled “Methods of sex and gender analysis” in the 2013 expert panel report for the European commission, recommendations are provided for how to identify sex and gender related bias or assumptions in the formulation of research questions (EU expert report 2013, 109-110). The methods are intended to force critical reflection by researchers by having them ask themselves, and answer questions, about their own research. Examples of such questions that a researcher is to pose and answer include:

--“What do we not know as a result of not analyzing sex and gender?”

--“How have sex and gender functioned to limit the research questions being posed in this field?”

--“Have assumptions been made about sex and gender? Are these justified in light of available evidence?”

--“What research questions would lead to more robust research designs and methods? For example, in studies of sexual differentiation, geneticists have revealed the shortcomings of scientific models that portrayed the female developmental pathway as ‘passive.’” (EU expert report 2013, 110)

In several places critical sex and gender analysis is described as increasing the critical rigour of science. Critical gender analysis is, thus, best understood as “processes of continuous critique that is a part of the ordinary and remarkable workings of science” (Sims et al. 2010, 156).

Furthermore, Schiebinger writes: “it must be emphasized that gender analysis required rigorous

training; there is no recipe that can simply be plugged into the design of a research project”

(Schiebinger 2008, 15). And finally:

Training in gender analysis is something that must become part of undergraduate and graduate education in the sciences and engineering. Gender analysis acts as yet another experimental control to heighten critical rigour (Schiebinger 2008, 15).

## Section Two

After having provided an overview of the gendered innovations project and some of its methods, in this section I ask: according to proponents of the gendered innovations project, who is positioned to carry out critical gender analysis? The gendered innovations project aims to implement strategies that have a sweeping impact; one that systematically pushes researchers and institutions to force critical reflection on whether and how elements of sex and gender relate to all types of research. The proposed methods of the gendered innovations project tell us who will be in the appropriate position to carry out and evaluate critical sex and gender analysis. First, the gendered innovations project imagines all researchers as being responsible for, and capable of, critical gender analysis. Training is said to be required: “...if properly trained, most researchers successfully master [critical sex and gender] theory and practice” (Schiebinger 2008, 4). Besides researchers directly, people that are part of funding and granting institution evaluation committees, board members of journal editorial teams, hiring and promotion committees, and those who carry out the teaching of critical gender analysis in undergraduate and graduate science teaching are to be responsible for carrying out critical sex and gender analysis.

The important point made by Schiebinger that informs the remainder of my analysis is that performing critical sex and gender analysis is not a capacity that only women can carry out. This is the point that separates the broad claims of the gendered innovations project and that made by Fehr (2011). Schiebinger is explicit about this point in several places. As I noted above,

Schiebinger claims that the capacity to carry out critical gender analysis is not dependent on having an X or Y chromosome, it is not dependent on sex or gender essentialism, and by extension, on social identity (2008, 4).

In her introductory chapter (2008) that is intended to describe and defend the gendered innovations project Schiebinger writes at some length about why she believes social identity should be left out of the epistemology that provides the foundation for critical gender analysis. She provides some history of feminist theory and practice in North America, pointing out that there are many competing feminist approaches to science and technology. Of those approaches Schiebinger describes 'liberal' and 'difference' feminism. Both have, she writes, their strengths and weaknesses. Liberal feminism is about supporting "equality and professional opportunities for women," and has been very successful.

Schiebinger is troubled by the sex and gender essentialism she seems to see as inherent to difference feminism. On the one hand difference feminism has been valuable to feminism: it has helped to illuminate "cultural differences between men and women and to show how these have worked against women in the professions, including the professions of science and engineering" (2008, 10). One example illuminated by difference feminism that Schiebinger discusses is motherhood and birthing. Although it is biological that females of the species give birth, that workplace norms and culture in North America and beyond are not designed to accommodate the needs of women who give birth and women and parents who engage in child care is a cultural difference that disadvantages women in particular and parents in general. Differences in cultural gender norms that disadvantage women in various workplace cultures tend to apply exclusionary pressure on women. Schiebinger writes that in supposedly 'equal' professional settings "birthing is supposed to take place exclusively on weekends or holidays, not to disrupt the rhythm of

working life. Consequently women have tended to hide pregnancy, or even ‘schedule’ babies” (2008, 10). Schiebinger credits difference feminism with illuminating cultural gender practices that are oppressive for women. What is troubling to Schiebinger is what she understands as the inherent identity essentialism of difference feminism, imagining that all women, by virtue of being women, share cognitive and affective capacities and aptitudes. She writes:

Difference feminism can be especially unhelpful when applied to knowledge. In the 1980s much difference feminism promoted the notion that women had a lot to contribute to science and engineering because, it was said, women hold different values and think differently (2008, 15).

I here quote Schiebinger at length since it is the following reflections that I address. She continues:

In romanticizing traditional femininity, difference feminism does little to overturn conventional stereotypes of men and women. Women’s historically wrought gender differences cannot serve as an epistemological base for new theories and practices in the sciences. There is no ‘female style’ or ‘women’s ways of knowing’ ready to be plugged in at the laboratory bench or clinical bedside. Women—as females of the species—do not do science differently; science should not necessarily be ‘for women, by women, about women.’ Difference feminism or standpoint theory, as it is sometimes called, can tend to exclude men from understanding how gender operates. Everyone—men and women—must contribute to reforming knowledge (2008, 15).

I quote Schiebinger here at length because it is important to be clear on how she, and, as a chief representative, the gendered innovations project, understands the relevance, or lack thereof, of social identity in efforts to ‘fix the knowledge.’ Such clarity is essential for making my argument that the outright denial of the epistemic significance of social identity is misguided and inconsistent with the body of work upon which the ‘fix the knowledge’ dimension of the gendered innovations project is based. Notice that Schiebinger’s main concern is that imagined fixed gender differences, postulated according to Schiebinger, by difference feminism, cannot “serve as an epistemological base.” I return to this point later to show that it is not fixed gender differences but rather historically contingent, empirically verifiable, patterns in the experiences of

people who are culturally assigned to marginalized social identity categories, and engaged with as such, that can serve as an epistemological base. Notice another concern of Schiebinger's stated in the quoted paragraph above: that the epistemological theory that underpins the gendered innovations project cannot exclude men as participants in transformative critique. Schiebinger is concerned that grounding the gendered innovations project in difference feminism or standpoint theory would lead to the conclusion that only women can perform critical gender analysis. Although I do not share her rejection of standpoint theory based on the assumption that it presupposes gender essentialism, I do share her concern about grounding the gendered innovations project in an epistemology that allows for the possibility that men persons who do not identify as women can perform critical gender analysis.

While Schiebinger explicitly denies the epistemic significance of social identity in performing critical sex and gender analysis she also implicitly contradicts this position by alluding to the epistemic value women specifically can provide. She writes:

“We need to be open to the possibility that human knowledge—what we know, what we value, what we consider important—may change dramatically as women become full partners” (2008, 6). In several places Schiebinger notes that the biological sciences provide many examples of the transformative impact critical gender critique can have. She notes that this is perhaps “...because biology has been open to women (45 percent of PhDs are currently women), biologists have moved more swiftly than others to remove glaring cultural bias” (2008, 16). Furthermore, later in the same work, Schiebinger writes: “It is intriguing that sciences such as biomedicine, primatology, archeology, and biology, where gender analysis has flourished, have relatively high numbers of women” (2008, 21). And in an expert group report for the EU, the authors write that an EU group focused on ensuring gender equity in the sciences—the European Research Area—

“seeks to capitalize on the diversity of views and approaches that foster excellence in research” (2013, 41). Here the referred to ‘diversity of views’ is the result of increased inclusion of women in the sciences.

In addition to ambiguous comments that allude to the epistemic significance of social identity, case studies provide the basis for a central argument used by proponents of the gendered innovations project to convince readers of the value of critical gender analysis. Most documents describing the gendered innovations project use case examples to illustrate the potential of critical gender analysis. Schiebinger writes:

Perhaps the best way to understand how gender analysis works is to study examples where this type of analysis has brought important critiques of bias and developed new perspectives or insights in particular areas (Schiebinger 2008, 16).

Many of the examples to which proponents of the gendered innovations project refer involve women researchers, often of feminist political orientation, at least initiating the gender-based critique, if not entirely carrying it through. For example, one canonical example of the impact of gender assumptions and stereotypes on knowledge is from reproductive biology: descriptions of the egg/sperm interaction in fertilization. Literature in the gendered innovations project regularly uses this example to illustrate the ‘innovative’ potential of critical gender analysis (See for example EU expert group report 2013, 18). Before the work of Emily Martin (1991) it was widely accepted in reproductive and developmental biology that the male reproductive system plays a more active role in fertilization than the female reproductive system. Building on interviews with women (Martin 1987) and critical analyses of science textbooks and academic articles in the field (Martin 1991), Martin argued that the ‘passive female/active male’ model used in reproductive biology was an example of cultural gender stereotypes shaping how biologists described and explained the natural world. Martin’s work became widely influential,

both in encouraging more critical sex and gender analysis of scientific claims, but also in leading to the rejection of the ‘passive egg/active sperm’ model in reproductive biology. Martin’s critical sex and gender analysis stimulated internal critique that led to descriptive and explanatory transformation in reproductive biology. What is interesting about this case for my purposes here is that Martin was, in addition to being a practicing academic anthropologist, a committed feminist, and her feminist commitments were central to enabling her to make her critical gender analysis. The significance of her feminist politics to establishing the conditions of possibility for making her critique are entirely left out of accounts of her work within gendered innovations project literature.

A second example of the celebration of feminist inspired critical analysis in work by the gendered innovations project without emphasis on the significance of feminist politics, is the case of American primatologist Linda Marie Fedigan. In the EU expert group report (2013) Fedigan’s work is described as exemplary of critical sex and gender analysis of assumptions that lead researchers to adopt particular standards and reference models. Fedigan criticized the dominance of the ‘killer ape’ model of primate behaviour that was popular in primatology in the 1990s. She argued that “...the pervasive image of primates engaged in bullying aggression toward females and violent infighting among males” (EU expert report 2013, 125) was based on the impact of gender norms on which primate behaviours were emphasized and those that were overlooked (Fedigan 1986). As well, the ‘aggressive primate’ “...image was derived almost exclusively from studies of Savannah baboons,” mistakenly taken as the reference for all primates. Similar to the case of Martin (1991), Fedigan’s critical work was inseparable from her critical feminist politics. In her canonical critical history of American primatology *Primate Visions* (1989), Haraway dedicates a chapter to exploring intimate linkages between Fedigan’s work as a primatologist and



her explicitly feminist politics. Although arguments defending the importance of the gendered innovations project are heavily grounded in examples such as these, the epistemic significance of the feminist politics in each case is left out. In her review of the 2008 gendered innovations volume Kristen Intemann (2009) similarly notices the omission of more detailed explanation of the epistemic significance of increased gender diversity among researchers in the supplied case studies. One chapter of the volume tells the story of the development of an all women team at Volvo—designers, marketers, engineers—developing a concept car (Temm 2008). The team came up with several unique innovations in the car’s design, described in the article as valuable. But Intemann notes: “Were the innovations made in designing the car related to the fact that all the Volvo engineers working on the project were women?” (2009, 643). It is implied in the article that, yes, the innovations were the consequence of an all women team, but this claim is not explicitly laid out or explained.

There is certainly a case to be made for such an omission on a strategic level. Convincing a wide audience of scientist and policy makers, among others, that explicit feminist political commitments are good for science would be daunting in the climate of an epistemic imaginary that is dominated by the legacy of positivism, in which objective ‘good science’ is dependent on the value neutrality of researchers.

A third and final example—although there are many others—is what appears to be, after surveying gendered innovations literature, the ‘gold standard’ of examples of critical sex and gender analysis: the work of Sarah Richardson on the genetics of sex determination. There are two points I want to make with respect to this case. One is the same as the point I make about the two case studies discussed above, that there is a critical feminist politics in the origin of the transformative critique that is under-analyzed in gendered innovations literature. The second

point relates to reflexivity on the part of scholars who are members of the gendered innovations project. As I will describe, Richardson's case study describes the transformative role critical gender analysis had in genetics of sex difference research but her work itself is also an excellent example of critical sex and gender analysis.

Richardson has written extensively on the history of the genetics of sex determination, with emphasis on the ways in which cultural understandings of gender and sex are intimately linked with, and shaped, this history (See Richardson 2014 for example). Her work on the history of the SRY gene in the genetics of sex determination "documents the contribution of gender analysis to the field of sex determination genetics" and documents "how gender criticism became a cognitive resource in the field of sex determination genetics during the 1990s and contributed to a significantly revised genetic theory of sex determination" (2008, 22).

Research in the genetics of sex determination focuses on the genetic pathways and mechanisms by which testis and ovarian development occurs. Ovarian development, up to and into the late 1990s, was widely thought to be a 'passive' or 'default' outcome. As a result, processes of ovarian development were largely ignored by geneticists. Research focus was on processes of testis development, and in 1990s the SRY gene on the Y chromosome gained acceptance as the 'master gene' in control of male gonadal development, and thus as in control of sex determination in general (Richardson 2008, 22). The SRY gene was widely accepted as the 'master gene' and generated excitement in the field in the early part of the 1990s (Richardson 2008, 22). By the late 1990s this excitement subsided as its role in sex determination was criticized on multiple fronts, including from critical gender analysis (Richardson 2008, 22). "Today," Richardson writes, "the SRY gene is understood as one among many essential

mammalian sex determining factors involved in the genetic pathways of both testicular and ovarian determination” (2008, 22).

In her work Richardson catalogues the role that gender criticism played in the rejection of the SRY as the ‘master gene’ in control of sex determination. She outlines three ways that critical gender analysis contributed to revision of the role of SRY and the development of new models. The timeline involved the emergence of a gender-focused criticism, which was at first ignored, then taken up by a female geneticist with feminist commitments. The critical tools of gender analysis used in critique of the SRY then became ‘normalized’ in the field such that their roots in feminism came to be forgotten. The result is that contemporary research in sex determination genetics uses the critical tools of gender analysis without any awareness that it is doing so. Richardson’s article focuses on how gender analysis became normalized as part of mainstream sex determination genetics. Her work does not focus on the epistemic implications of the explicit role feminist politics played in the formulation and making of the original transformative critique. I want to draw attention to this omission.

On Richardson’s account, the first critical gender critique of SRY as ‘master gene,’ and of over emphasis on male gonadal development, was made by Anne-Fausto Sterling in her paper “Life in the XY Corral” (1989). Richardson writes that Fausto-Sterling’s work “analyzed gender beliefs in theories of sex determination and argued that researchers had ignored explanatory gaps in their theories and failed to consider viable alternative models for sex determination” (2008, 28). In her paper, Fausto-Sterling cited and suggested a neglected model of sex determination that included those aspects left out of dominant models. Although Fausto-Sterling’s critique was not taken up by specialists in the field, it anticipated the gender-based criticism and alternative model that came later in the 1990s. Richardson identifies Fausto-Sterling as a “biologist, feminist

science critic, and intersex patient activist” (Richardson 2008, 27). By the time of the publication of her 1989 paper Fausto-Sterling was established as a respected scientist but also as a feminist science critic, especially following the publication of her earlier work critical of sex differences research in psychology *Myths of Gender* (1985).

Richardson then writes about geneticist Jennifer Graves, who first published work critical of SRY ‘master gene’ models in 1990 (Graves and Short 1990). Throughout the 1990s she remained critical of the SRY theory, and she based some of her criticisms on claims similar to those made by Fausto-Sterling. In 1999 Graves publicly self-identified as a feminist and articulated the feminist grounding of her research in a 2000 paper (Graves 2000) in which she argued against the SRY model. Richardson writes: “Graves argued that researchers’ unreflective assignment of masculine qualities to SRY led them to ignore contradictory evidence and prefer an unsustainable model of Y chromosomal sex determination over alternative models. Researchers clung to this model even when countervailing evidence should have led them to abandon it” (Richardson 2008, 32-33). Graves even refers to the dominant model as conferring a ‘macho’ identity to the Y chromosome. Richardson highlights that part of the gender-based critique made by Graves was a repetition of the argument made by Fausto-Sterling 10 years earlier.

In her work on the history of the SRY gene, Richardson is guided by the following question: “What part did gender analysis play in this remarkable transformation in models of sex determination?” (2008, 22). As my summary above suggests, Richardson answers by arguing that gender analysis played a significant role, and indeed such a significant role that gender analysis has now been ‘normalized’ as a regular part of sex determination genetics. But an additional question which she could have asked, or that could be asked by others working in the gendered

innovations project, is: to what extent was a feminist standpoint on the part of those researchers who made gender based critiques—in this case Fausto-Sterling and Graves—a necessary condition for them making this critique in the first place? It seems clear from Richardson's account that both Fausto-Sterling and Graves were working from a feminist standpoint. But when it comes to considering how to replicate the potential for performing critical gender analysis, this feature of the case study, which is a feature common to most case studies of successful examples of critical gender analysis, is omitted from the discussion. And in Schiebinger's work, and thus within the framework of the gendered innovations project, this feature is explicitly denied because of what Schiebinger believes to be inherent gender essentialism.

### **Section Three**

I have shown that the gendered innovations project does not deem the gender identity, or standpoint, of researchers to be epistemically relevant. And I have argued that the position taken by the gendered innovations project is in tension with implicit and ambiguous sporadic references to potential epistemic benefits of social identity, and in tension with the unacknowledged role that a feminist standpoint plays in many of the case studies used to advance the claims and importance of critical sex and gender analysis in the sciences. If the point of the gendered innovations project is to prevent gender bias in the sciences in the future, and if the framework for doing so is based on how systemic gender bias was revealed and critiqued in the past, the gendered innovations project needs to acknowledge and account for the role of critical feminist standpoints that key researchers in historical case studies held.

Failing to account for the epistemic importance of the standpoint of researchers in key cases, and at early stages of critique, has several implications. One is internal ambiguity and inconsistency in the theoretical grounding of the gendered innovations project, which opens the

project to criticisms that it implicitly endorses gender essentialism, or that proposed solutions will fail to capture some kinds of gender bias in the sciences. Implicit gender essentialism is evidenced by implied reference to epistemic benefits resulting from increased inclusion of women in the sciences, such as when Schiebinger writes “...what we know...may change dramatically...as women become partners [in the sciences]” (2008, 6), but without an explanation of how epistemic benefits might derive from increased inclusion. In the absence of an explanation it is fair to assume that Schiebinger is implying that epistemic benefits result from the inclusion of women per se. A second consequence of omitting a discussion of the role of, and epistemic significance of, standpoint is that there is the appearance that the methods proposed by the gendered innovations project are complete; there is the impression that the scope and extent of the tools for such analyses are all-inclusive and comprehensive. Such an implicit commitment is unwise. A core strategic method developed by the gendered innovations project for implementing critical gender analysis is to provide a list of questions researchers are to pose from the beginning of research projects intended to reveal unacknowledged assumptions and commitments (EU expert group report 2013). Without acknowledgement that the original standpoint-derived critique(s) upon which the methods and questions are based, one is left with the impression that the methods and questions now developed are comprehensive and complete. As is, the methods of critical sex and gender analysis proposed by gendered innovations proponents use questions that have proved to be helpful in the past and require they be applied widely to current and future research. Such questions will prove to be helpful, but there are limitations. Questions such as the following are omitted from gendered innovations writing: *why* did key researchers in exemplary case studies of transformative critical gender analysis ask the questions that ended up revealing unwarranted assumptions? And the follow up: why did other researchers not ask the same

questions? The omission of these questions will limit methods of the gendered innovations project from adapting as new critical sex and gender insights emerge.

The impression of comprehensiveness also emerges from gendered innovations work because there seems to be the assumption that at some point there was an initial critique, or critical realization, and following this ‘a-ha’ moment one can develop a comprehensive list of questions to force critical reflection that may not otherwise occur. Gendered Innovations literature, however, does not discuss how and why the historical critiques and examples of critical sex and gender analysis occurred, by particular people at particular historical-social-material moments. But the original critiques were in part the product of the ‘situation’ of the person or persons who made them. The historically contingent social-material circumstances in which the researcher existed were significant, enabling a situated capacity for critical vision and consciousness (thinking about du Bois’ ‘double consciousness’ as well as the critical consciousness of standpoint). As social-material circumstances shift and develop, so too does the horizon of potential situated critical consciousness. Assuming that utilizing a set of critical questions as a method for forcing critical reflection is effective for revealing gender bias, in order for such a set of questions to achieve breadth of potential and relevance over time, such a set of questions cannot be static but must respond to developing and expanding situated capacities for critical consciousness. Without incorporating a space for social-identity-grounded situated critical consciousness, the gendered innovations project limits its own capacity for innovation. The critical consciousness itself is an innovation.

Historical developments and contestations of feminism as a critical political and theoretical project(s) suggest it would be naïve to assume that the state of accepted positions is complete at any time. Imagining proponents of the gendered innovations project would agree that

the methods of critical sex and gender analysis have and can change, it is not obvious how the existing framework could accommodate or explain how such change could occur. Sure, new or honed critical questions could be added to the toolbox, but how do those new questions come about? Who develops and asks them? Developments in the tools of critical gender analysis have been the products of researchers who incorporate their feminist commitments into their research. The gendered innovations project implicitly acknowledges this by placing so much emphasis on case studies that highlight the work of feminist politics in generating critical insight. But without formally acknowledging the role of the critical standpoint of key researchers in the history of feminist science studies, it is not clear how the tools and scope of gender critique may change going forward.

A key issue in feminist and gender studies today, for example, is the extent to which not just gender but sex is socially/culturally co-produced in relation to material bodies. Beauvoir separates sex and gender by pointing out that one must have something besides a uterus to be culturally recognized as a 'woman.' In other words, Beauvoir points out that having a female sexed body is not sufficient for meeting cultural expectations of being a 'woman.' 'Sex' is then thought to be biological while 'gender' is cultural. Judith Butler later contests the biological stability of 'sex,' arguing that one cannot stand outside culture to view the body independently of gendered assumptions, and as a consequence 'sex' may turn out to have been gender all along. Fausto-Sterling (2000) presents a similar argument, further critiquing scientific attempts to find the biological essence of sex. Others develop these points further. My point is that analysis of the nature of sex is one of several hotly contested and unsettled discussions in critical sex and gender studies literature, and that developments here will have implications for the methods of the gendered innovations project.



The case of trans identity presents an example of developments in gender analysis that could have implications for the gendered innovations project. How can trans-focused critique be incorporated into the methods of sex and gender analysis proposed by the gendered innovations project? What are the mechanisms through which the current tools for sex and gender analysis might be expanded to incorporate trans concerns? I do not have the answers to these questions, but my point is that the gendered innovations project does not currently have answers to questions such as these either. Based on the template of the case studies that the gendered innovations project relies upon, it would seem researchers with critical consciousnesses or standpoints grounded in trans experience might be needed to make initial critical insights. This might not mean that only people who identify as trans can perform trans related critical gender analysis, but it likely does mean that such analysis might have to begin with an accounting and understanding of trans lived experience. Such a proposal is outside the limits of the present theoretical and epistemological grounding of the gendered innovations project.

Another important question to ask, in part because of the success of the gendered innovations project at gaining uptake, is: Can the gendered innovations project be used as a model for extending and implementing critical analysis in the sciences to other anti-oppressive projects, for example race or sexuality? A quick response might be that the same, or structurally similar, methods questions can be modified to inquire about assumptions surrounding, for example, sexuality. Take the following methods question proposed by the gendered innovations project:

“Have assumptions been made about sex and gender? Are these justified in light of available evidence?” (EU Expert group report 2013, 110)

The question could be re-written with ‘sexuality’ substituted in place of ‘sex and gender’?

Attempting such a substitution of concerns highlights that answers to the question about whether

assumptions have been made depends on who is responding. The question pre-supposes a critical awareness of the range of possible assumptions one might make—or that a culture might make—about sexuality. The gendered innovations project stipulates that training in critical analysis is required for all researchers, but the question of who is responsible for developing initial critical insights about the sorts of assumptions that are made about sexuality is left undiscussed. The application of gendered innovations methods to other anti-oppressive projects is not a matter of simple substitutions. Silence around how critical insights originally come about makes it difficult to know how the methods of the gendered innovations project could be modified to function as tools for critical analysis in other anti-oppressive projects.

## **Conclusion**

In this chapter I have argued that the gendered innovations project omits a discussion of the epistemic significance of social identity, or more precisely, of the standpoints of researchers. In fact this significance is outright denied—there is no epistemic significance attributed to the standpoint of researchers. Given the interpretation, or version, of standpoint theory Schiebinger imagines is necessary to attribute epistemic value to standpoint her rejection is reasonable. But as I have shown in chapters one and two there is a way of understanding feminist standpoint theory and epistemic advantage that does not inherently entail the social identity essentialism that Schiebinger rightly rejects.

I have argued that undesirable consequences for the gendered innovations project arise as a result of omitting a more thorough discussion of social identity and standpoint. The gendered innovations project is clearly motivated by a desire to use the valuable work of critical feminist science studies of the past several decades to prevent the sciences from playing a role in sex and

gender-based oppression and marginalization. On one level, and I think the gendered innovations project is a good example of this, such a desire forces practical science studies folks, and other critical scholars, to confront a tension between making concrete real-world gains and remaining consistent with the internal logic of, and advancing, critical theory and scholarship. Science studies scholars in general are grappling with this tension, which is turning out to be crucial in the opening decades of the 21<sup>st</sup> century (See for example Baker and Oreskes 2017; Jasanoff 2017; Latour 2004). Grappling with this tension is particularly challenging in feminist science studies because a key insight after several decades of scholarship is that the theoretical under-pinnings of mainstream conceptions of the nature of scientific knowledge are significantly flawed and need to be re-imagined. But, in a political era where ‘truth’ is the strategic target of rightwing politics, both affirming the value of the sciences and critiquing its core assumptions is a difficult thing to do. My intention in this chapter has been to point out how to strengthen the gendered innovations project by focusing on how the transformative potential of critical sex and gender analysis could be made even stronger.

## Chapter 5: Conclusion

The goal of this dissertation is to defend and support the idea that social diversity in research communities is good for scientific knowledge. Because I aim for my work to have practical implications, my analysis includes considerations of policy-oriented efforts to address and prevent gender bias in the sciences. When I initially encountered the claim that social location diversity in research communities can be epistemically beneficial, in the work of Helen Longino, Carla Fehr, Kristen Intemann and others, it seemed to me that it encapsulated key themes and findings from the preceding decades of feminist philosophy of science, epistemology, and science studies. In particular, Fehr's (2011; 2007) articulation of this claim struck me as giving substance to a key feminist science studies insight: that "who does science, and who is excluded, matters" (Martin 2011). It matters as an issue of social justice, of power, but is also an epistemic issue, and the two are intertwined. In this dissertation I aim to continue and build on this line of thought, thinking more about who, exactly, is excluded, what are the mechanisms of such exclusion, and why it matters. I intend this dissertation to contribute to building arguments pertaining to these questions and concerns.

The urgency of addressing questions about the epistemic value of social diversity in research communities struck me as I was awaiting the occasion of my PhD oral defence. In early winter 2020, I met with a senior member of NSERC's Equity, Diversity, and Inclusion (EDI) team. NSERC is Canada's primary, publicly funded, natural science and engineering research funding body, and the EDI team is dedicated to building EDI considerations into NSERC funding programs and policy. During our conversations, this EDI team member told me that they often get pushback from scientists about why they should have to bother caring about EDI concerns. I

was struck by the similarity between this statement and the pushback that Carla Fehr writes about having received in her work on the under-representation of women and girls in the sciences. She writes that following a presentation about the problem of under-representation, given to an audience of primarily academic scientists, she was questioned about why they should care about diversity. “What’s in it for me?” is the way she phrases their response. It is striking that these comments from similar audiences are 10 years apart, and I think the persistence of this resistant sensibility suggests that work to develop more robust arguments regarding social diversity in research communities is urgently needed.

Although philosophy has been my formal home discipline, I have always imagined myself as an inter-disciplinary scholar, and I intended for this thought to come through in the dissertation. At the proposal stage, I was reading widely beyond philosophy—in Science and Technology Studies generally, and in feminism, gender studies, and critical race studies, for example. Anecdotally, as a first year PhD student, my scholarly interests were heavily influenced by my experiences with the 2008 York University strike,<sup>57</sup> learning from new friends in other departments about critical humanities and social sciences, thinking about how their approaches could speak to the questions I was interested in addressing. I am particularly motivated to use an inter-disciplinary approach to think about how to use insights from various fields to address questions about why ‘who does science?’ matters. It would be too much to list all of my more academic sources of inspiration for this project but here are two: Within philosophy I draw inspiration from many aspects of Lorraine Code’s work, particularly her efforts to de-centre observational simples, such as ‘this pen is blue,’ and physics, as the focus of epistemological

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<sup>57</sup> The 2008 York University strike was between the union representing research assistants, teaching assistants, and contract faculty of York, and the schools administration. The strike lasted for 85 days, one of the longest strikes in Canadian history.

analysis. Instead, her work re-centres analysis on what it means to know other people, and more generally, on what it means to know well, in messy, socially and politically consequential, circumstances. I am also inspired by a co-authored introduction by Fehr and Plaisance (2010) for a special issue of a philosophy journal, *Synthese*, on ‘Socially Relevant Philosophy of Science.’ This special issue was part of a larger project they helped lead, to create and legitimize a new sub-field<sup>58</sup> for philosophers interested in socially oriented approaches to thinking about scientific knowledge making and politics. I was inspired by their insistence on carving out space for work in philosophy of science that is “directly relevant to public welfare, to address concerns about the distribution of harms and benefits of scientific research, and to expand disciplinary boundaries and possibilities for collaboration.” This call to action felt like an invitation to imagine new ways of doing philosophy of science and engaging with socially and politically charged topics, as well as with scholars in fields like STS already involved in similar projects.

Many of the elements of the final version of my dissertation were present in my original proposal, but in the early stages, I had not worked out a clear argument. I was not sure what my contribution would be. For example, I had the intuition that I would draw from feminist standpoint theory to more clearly articulate the mechanisms through which social identity and location might function as an epistemic resource, but in my early writing, I did not know what that would look like. Actually, the central argument I end up developing occurred to me while teaching. For several years, I was contract faculty in an undergraduate STS program. For a syllabus I developed on feminist science studies, I positioned classes on feminist critiques of primatology, feminist standpoint theory, and Fehr’s 2011 paper in succession. With the readings ordered this way it became clear to me that it was more than increasing inclusion of women in

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<sup>58</sup> SRPoiSE: Socially Relevant Philosophy of/in Science and Engineering

primatology that led to the generation of transformative sex and gender critique. Fehr (2011) builds on Longino (2002), making the claim that social location diversity in research communities can be epistemically beneficial because it makes it more likely that background assumptions will be brought to light and exposed to a wider range of criticism. In my first two chapters, I push this claim further by arguing that in most examples of transformative gender criticism, such as primatology I discuss at length, those who generated the initial criticisms were committed to feminist politics, and that this commitment was not incidental but was vital.

Additionally, my teaching led me to develop a sense of urgency to address the history of the complicity of many of the sciences in various forms of oppression, sexist, racist, and otherwise. Focusing on developing and defending the social location diversity claim came to be wrapped up, for me, in doing the sort of work Fehr and Plaisance (2010) call for in their paper. I imagine a central goal of proponents of the social location diversity claim, including myself, is to replicate the conditions of past cases of social diversity as being leveraged to generate transformative critique. I think the gendered innovations project that I describe in chapter four is a clear example of this goal.

I saw, and see, my project, then, as not just theoretical but as having social and political implications. The goal of my dissertation is to provide additional argumentative resources for promoting equity, diversity and inclusion in the sciences, in order to increase a capacity for critical reflection. I achieve this goal in moments in my dissertation, but it might be most clear in chapter four, in my attempt to supportively critique the gendered innovations project by refining the account of how critical gender analysis could be implemented. I argue that If the point of the gendered innovations project is to prevent gender bias in the sciences in the future, and if the framework for doing so is based on how systemic gender bias has been exposed and critiqued in

the past, the gendered innovations project needs to acknowledge and account for the role of critical feminist standpoints that key researchers in historical case studies have held.

In chapters one, two, and four I make an effort to clarify the epistemic implications of concerns about who gets to participate and who is excluded in the sciences. In chapters one and two I summarize and analyze arguments defending the claim that increasing social diversity in research communities can make it more likely that unnoted background assumptions, theoretical perspectives, and prejudices will be noticed and subjected to critical evaluation. I argue that, as they stand, arguments defending this claim are to explain how social identity and location can prove to be an epistemic and cognitive resource. Further, I argue that this explanation is best made using the resources of feminist standpoint theory, particularly the theory's three core theses: the situated knowledge thesis, the inversion thesis, and the achievement thesis. I explore each of these theses in some detail and suggest how they can be used to understand successful examples of critical sex and gender transformation in cases drawn from the histories of the sciences.

In chapter four I analyze an international collaboration known as 'gendered innovations,' conducted by a group committed to addressing the under-representation of women and girls in the sciences, and to preventing gender bias in scientific knowledge. I focus on their proposed policies for promoting critical sex and gender analysis as a means of preventing gender bias. I argue that current scholarship defending this project inadequately discusses the epistemic significance of the critical standpoint of those performing critical gender analysis. Overall, in these three chapters I provide needed clarification of how social location diversity can be an epistemic resource for generating transformative critical analysis in various sciences. I also provide a compelling case for why we should think more carefully about how social identity and



location figures as an epistemic resource. In addition, my argument is meant to provoke further and refined thinking about how to expand approaches to promoting diversity and inclusion in the sciences. In these chapters, though, there are lingering questions for me, two of which include: How does my argument connect with thinking about forms of exclusion and marginalization beyond gender? Particularly racial exclusion. And second: Can all scientific research communities equally gain epistemic benefits from social location diversity? (Physics, chemistry for example?) Or only areas of research dealing with human subjects? A common intuition is that social diversity for the sake of epistemic concern is not relevant to physics. But I would urge caution over adopting this intuition. Overall, there are very few people who do the work of uncovering gender or other social bias in the sciences. It is not surprising that those who have done so have focused on those sciences that have immediate and profound consequences on social life, on sciences such as primatology. It is not the case that people have been looking and cannot find sex or gender bias in physics. There is scant research on this topic. The little we do have, however, suggests that it would be worth further investigation. Sharon Traweek's (1988) ethnographic study of high-energy particle physicists at one of the world's renowned particle physics research centres persuasively argues that the culture and community of particle physics is structured and organized around gendered norms and conventions. I suggest that the use of the pre-cautionary principle, imagining that it would be better to assume there might be gender or other social bias rather than assuming there is none.

Chapter three was an experiment for me in conducting socially relevant philosophy of science by engaging with sciences operating outside the laboratory or the biologist field site, sciences that are consequential in peoples' lives and that are intensely politicized. In this chapter, I furthered my analysis of the importance of feminist standpoint theory to defend the epistemic

benefits of the social diversity claim by arguing that there is an affective dimension to cases of successful transformative gender critique in the sciences, to what it means to ‘achieve’ a critical standpoint on knowledge production, and that thinking about affect and care as epistemically productive needs to be further explored. I consider scholarship that imagines how affect and emotion can function as epistemic resources, rather than exclusively as a hindrance, speculating on how feminist standpoint theory might be bolstered by this discussion. I then perform an extended analysis of a real-world case study involving affect and advocacy as epistemically beneficial, that of the development of the social and scientific movement to defend Insite, a safe injection facility in Vancouver, Canada.

The chapter was an experiment in socially relevant philosophy of science but it was, moreover, for me, an experiment in bridging disciplinary approaches, merging philosophical analysis with sociological and anthropological quasi-empirical ethnography. It was also an experiment in applying Sheila Jasanoff’s co-production framework from STS to health sciences and advocacy. My goal in the chapter was to push philosophical and science studies thinking on the role and place of affect, advocacy, and care in knowledge making projects. Because I am also deeply interested in the science/policy interface, and in the safe injection issue in particular, I felt that no one has yet adequately explained why and how Insite’s proponents and supporters managed to win the controversy. Existing accounts position the social movement in support of Insite and the empirical body of evidence evaluating Insite as independent. I argue that the two are produced together, and that advocacy and care are central elements to consider in this production.

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