

Biopower, Styles of Reasoning, and What's Still Missing from the Stem Cell Debates

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Until now, philosophical debate about human embryonic stem cell (hESC) research has largely been limited to its ethical dimensions and implications. Although the importance and urgency of these ethical debates should not be underestimated, the almost undivided attention that mainstream and feminist philosophers have paid to the ethical dimensions of hESC research suggests that the only philosophically interesting questions and concerns about it are by and large ethical in nature. My argument goes some distance to challenge the assumption that ethical considerations alone must be foregrounded in philosophical discussions about hESC research by introducing a critical stance on the epistemological and ontological assumptions that underlie and condition it. A central aim of the paper is to show how Foucault's insights into knowledge-power, taken in combination with Hacking's claims about styles of reasoning, can make these assumptions evident, as well as cast light on their potentially deleterious implications for disabled people. Arguing in this way also enables me to draw out constitutive effects of research on stem cells, that is, to indicate how the discursive practices surrounding research on stem cells, as well as the technology itself, contribute to the constitution of impairment.

The question of whether the U.S. federal government should fund human embryonic stem cell (hESC) research became a pivotal issue of debate in the weeks and months leading up to the 2008 U.S. presidential election. Every American voter, it seemed, held strong convictions on a matter that, not all that long ago, had been the specialized province of embryologists, geneticists, some bioethicists, and a handful of politicians: Fundamentalist Christians and other members of the "pro-life" movement decried the destruction of the

human embryo that hESC requires; left-leaning intelligentsia argued that the current prohibitions on hESC research were a legacy of Bush-era anti-intellectualism; leaders of the American scientific community circulated the terrible truth according to which the United States was losing its ground at the forefront of genetic research internationally; so-called average Americans, under the influence of a media consistently producing hype about the successes of stem cell technology, expressed frustration about the fact that potentially life-saving medical treatments were being withheld from them; and some pro-choice feminists, convinced that Bush's restrictions on the growth of hESC lines encroached on women's reproductive rights, implied that opposition to hESC research threatened gains made in the realm of gender equality. For example, in an op-ed piece appearing in *The Los Angeles Times* on September 4, 2008, feminist icon Gloria Steinem asserted that one of the three most troubling and anti-feminist aspects of Republican vice-presidential candidate Sarah Palin's policy stances was her refusal to support federal funding for hESC research. As Steinem explained it, Palin's pledge to oppose funding for hESC research was as troubling and anti-feminist as her opposition to *Roe v. Wade* and her support for the introduction of creationism and intelligent design in public school instruction. For Steinem, it seems, reproductive freedom and other civil liberties are themselves at stake in the stem cell debates, and thus support for stem cell research should be taken up as a feminist issue.

The opening remarks of this paper identify a variety of perspectives on the development of stem cell research in the United States; however, the argument of the paper has a narrower rhetorical focus and a broader geopolitical scope than introduction of these various perspectives suggests. For it is concerned primarily with the philosophical and theoretical debate that has surrounded hESC research at the international level, as well as what has been missing from it. Until now, philosophical debate about the research has largely been limited to its ethical dimensions and implications. In their introduction to a special issue of *Metaphilosophy* devoted to the ethics of stem cell research, Laura Grabel and Lori Gruen provide one account of the ethical reflection and debate about hESC research in which a growing number of philosophers are engaged. Because of the development of the atomic bomb, they write, there have been legitimate worries that ethical debate about scientific and technological developments occurs too late. They note, however, that ethical discussion with respect to hESC research is taking place at the same time as the research is proceeding. In the United States, they explain, discussions continue about how to maintain the highest ethical standards with respect to regulation and oversight, what embryos can be used, what forms of consent must be provided, how privacy can be maintained, whether payment should be made to embryo and gamete donors, and so on. They also point out that, at the international level, philosophers increasingly enter conversations with scientists, policy makers,

religious leaders, and others about how to move hESC research forward in the most ethically defensible ways (Gabel and Gruen 2007, 137).

Although the importance and urgency of these ethical discussions and debates should not be underestimated, the almost undivided attention that philosophers have paid to the ethical dimensions of hESC research suggests that the only philosophically interesting questions and concerns about it are by and large ethical in nature. In fact, this view has seriously limited the sorts of questions about the research that philosophers have formulated and are prepared to consider. In particular, certain epistemological and ontological assumptions about disability (e.g., about its origins, etiology, effects, and so on) that underlie and condition the research and the motivation to develop it have been taken for granted as self-evidently true, remaining unexamined in mainstream and almost all feminist bioethical discussions about it. Hence, the argument of this paper endeavors to add another dimension to feminist bioethical and other philosophical discussion about stem cell research by introducing a critical stance that goes some distance to challenge the self-evidence and alleged objectivity of these epistemological and ontological commitments. I am especially concerned to explain how these ideas and beliefs about disability have the potential to devalue the lives of disabled people and thus threaten their existence. I aim, furthermore, to show how Michel Foucault's insights into knowledge-power, taken in combination with claims Ian Hacking makes about "ways of finding out," can render these epistemological and ontological commitments recognizable, as well as cast light on the deleterious implications they may have for disabled people. That neither mainstream nor feminist bioethical approaches to hESC research consider the potentially detrimental effects of these epistemological and ontological assumptions underscores the historically situated character of bioethical discourses and their conceptual objects (Tremain 2008). Thus, the argument of the paper is designed to show how these epistemological and ontological assumptions about stem cell research, as well as the research itself, play a role in the efficient and economical operation of a relatively recent regime of knowledge-power.

I motivate the argument in this way. In the remainder of this introduction, I establish a theoretical backdrop for the argument by briefly explaining Foucault's work on biopower and associating it with Hacking's ideas about styles of reasoning. Following the introduction, I offer a cursory outline of mainstream bioethical approaches to hESC research that highlights how these approaches have revolved around questions with respect to the moral status of the embryo. Feminist bioethicists such as Donna Dickenson argue that inasmuch as mainstream bioethical accounts have focused exclusively on the embryo's moral status, they have ignored the ethical issues about hESC research that directly affect women. I indicate the shape of various feminist responses to mainstream accounts of the research, as well as explain some

feminist criticisms of the way in which the research itself has proceeded in various national and geographical contexts. Finally, I combine insights gained from disability studies, as well as from Foucault and Hacking in order to shift the ground of philosophical inquiry about hESC research.

Arguing in this way enables me to draw out the constitutive effects of research on stem cells, that is, to indicate how the discursive practices about stem cells, as well as the technology itself contribute (each in its own way) to the constitution of *impairment*. Over the last several years, impairment has become a focal analytical category in the field of disability studies. In a paper that appeared in 2001,¹ I introduced an argument about the discursive constitution of impairment according to which the idea of impairment is historically specific and performative, providing the justification for the expansion and multiplication of disabling practices. Until then (and even now), discussions within disability studies and discourse about disability more generally had represented impairment as a transhistorical, biological entity, although some disability theorists allowed that the shape and character of this entity are subject to historical and cultural influence (for instance, Abberley 1996). Although my arguments have been refined since I first wrote about the constitution of impairment, I nevertheless remain committed to the claim that impairment is not a “natural” (i.e., biological), value neutral and objective human characteristic, or aspect of human existence that certain people possess or embody, but rather is the naturalized and materialized outcome of a classification initially generated in medical and juridical contexts to facilitate normalization (see Tremain 2002, 2005, 2006a). In other words, technologies of normalization—and the discourses that embody them—have been complicit in the historical emergence of the category of impairment and contribute to its persistence.

Philosophical arguments about the constitutive power of discursive practices are, apparently, always vulnerable to charges according to which such positions either (1) deny the body and its materiality in ways that are idealist or (2) recuperate traditional philosophy’s refusal of corporeality (and, by association, its exclusion of women). In disability studies, the first charge, or some variation thereof, has been repeatedly directed at Foucault in order to discount the relevance of his claims for work in the field, especially their significance for work on impairment. For example, Jackie Leach Scully argues that “Foucauldian poststructuralism’s” “exclusive commitment to uncovering discourses carries the epistemological risk of missing the stubbornly prediscursive body. (Bodies *are* before they speak or are spoken about.)” (emphasis in Scully 2008, 12). Scully allows that attention to the normalizing and naturalizing representations of discourse has been a powerful resource for disability studies; she argues, however, that the concentration on discourses becomes problematic “when the idea that there is a biological substrate to embodiment slides out of sight entirely.” Were this to happen, there would be “nothing to stop theory from

becoming untethered from materiality, forgetting that bodies have real constraints (including anatomical and biochemical ones) that limit their redescription or transformation” (Scully 2008, 7).

Note that these criticisms of Foucault (or, at least, “Foucauldian post-structuralism”) assume the existence of a (material) body that stands apart from, and is ontologically and temporally prior to, the discursive practices that come to describe that body. Indeed, that is just what it means to say that there is a “prediscursive” body (a body that “is *before* it speaks or is spoken about”). I want to point out, therefore, that the body (and its materiality) cannot be dissociated from, nor is it ontologically or temporally before, the historically contingent practices that bring it into being—that is, bring it into being as that sort of thing (see Tremain 2001). In fact, the notion of an allegedly prediscursive material body that imposes limits on the redescription and transformation of disabled people’s bodies is precisely what disability theorists ought to contest. To take one example, the material “constraints” (including anatomical and biochemical ones) that Scully thinks threaten to go unrecognized if theory becomes detached from materiality have themselves been brought into being *as constraints* on bodies only within the terms of a historically specific, normative conception of the body, its materiality, longevity, performance, biochemical composition, appearance, anatomical structure, and so on. Truth discourses that purport to describe phenomena (e.g., the human body, its materiality, constraints, and vulnerabilities) contribute to the constitution of their objects. In other words, the redescription and transformation of bodies are not limited by their putatively “prediscursive” material constraints *per se*; rather, the extent to which, and even whether, redescription and transformation of bodies can take place has already been circumscribed and delimited by the historically specific and normative conception of the body (and the “style of reasoning” from which it emerged), which effectively brought into being the facts, laws, and norms about its constraints, limitations, strengths, and so on in the first place.² In short, the materiality of the body is not the antecedent *a priori* of the body’s categorization, but rather its regulative and performative consequent. As Judith Butler puts it, “there is no reference to a pure body which is not at the same time a further formation of that body” (Butler 1993, 10). Nor are scientific facts about the human body beyond the reach of the critical approach to it I recommend. To the contrary, as my discussion below of the inscription of sexual dimorphism into arguments of the life sciences suggests, the articulation of scientific accounts about the anatomy and biochemistry of human beings is an embedded and value-laden human enterprise that can be appropriately understood only if scientific discourses are recognized as intertwined with social discourses in a complex sociocultural matrix comprised of institutional practices, asymmetries of social power, social policy decisions, instruments of medical discourses, scientific arguments, models, classifications, intersubjective relations, and so on.

The argument of the paper is part of a larger project in which I show how impairment is naturalized and materialized by and through a cluster of historically emergent biotechnologies (of which hESC research is one novel example) among other social objects and events. These biotechnologies are products and effects of a certain style of reasoning (Hacking 1992, 1; 2002) that has brought into being new types of objects, individuated with the style, that had not previously been noticeable among the things that exist (Hacking 1992, 10–11).³ Hacking claims that the idea of styles of reasoning is what we need to understand what gets called objectivity, not because styles are objective, but because what is obtained by conducting a certain sort of investigation are truths of a certain sort, answering to certain standards. Each style of reasoning is the canon of objectivity about the phenomena—new types of objects, new types of evidence, new ways of being a candidate for truth and falsehood, new types of laws, and new types of possibilities—which the style has itself brought into being as those types of things. Styles of reasoning settle what it is to be objective. As Hacking explains it, “The truth of a sentence (of a kind introduced by a style of reasoning) is what we find out by reasoning using that style. Styles become standards of objectivity because they get at the truth. But a sentence of that kind is a candidate for truth or falsehood only in the context of the style. Thus styles are in a certain sense ‘self-authenticating’” (Hacking 1992, 13). Hacking acknowledges that there is an apparent circularity in the self-authentication of styles of reasoning; however, he maintains that this circularity goes some distance to explain why styles of reasoning are stable and enduring. Each style of reasoning, he writes, has its own characteristic techniques of self-stabilization and persists, in its own unique and peculiar way, because it has harnessed these self-stabilizing techniques. He claims, furthermore, that understanding the self-authenticating character of styles of reasoning is a step toward grasping the quasi-stability of science (Hacking 1992, 14–16). Among the styles that Hacking and others have thus far identified are these: the laboratory style, the statistical style, and the psychiatric style.⁴

To understand the historically contingent, self-authenticating character of a style of reasoning, one must assume an anti-foundationalist approach to human history and practice. In *Dits et Écrits*, Foucault described the assumptions of such an approach, as well as their critical import:

[T]he recourse to history . . . takes on its import to the extent that history has for its function to show that that which exists didn't always exist, that is to say, that it is always at the confluence of encounters, accidents, through the course of a fragile, precarious history that things are formed that give us the impression of being the most obvious. What reason experiences as its necessity or rather what different forms of rationality present

as their necessary condition one can perfectly well do the history of, and recover the networks of contingencies from which it has emerged; which does not mean however that these forms of rationality were irrational; it means that they rest on a base of human practice and of human history and since these things have been made, they can, provided that one knows how they were made, be unmade. (Foucault 1994, 448–449, in Davidson 2001, 189)

The emerging biotechnologies that have contributed to the constitution of impairment comprise a new strategic apparatus of the form of knowledge-power that Foucault called “biopower” (Foucault 1978). Foucault defined biopower as the endeavor to rationalize (usually by “authorities” of some kind) the problems that the phenomena characteristic of a group of living human beings, when constituted as a population, pose to governmental practice: problems with respect to the birthrate of a population, its health and longevity, race, sanitation, and other conditions of its environment, and so on. Since the late eighteenth century, these problems have occupied an expanding place in the government of populations and individuals. Foucault claimed that the governmental rationality (biopower) that emerged at the end of the eighteenth century has worked toward increasingly efficient and economical management of these problems by taking as its object “life itself,” the life of the human being qua living being, that is, the life of the human being insofar as it is a living being.

Thus, biopower’s management of life has entailed the introduction of a novel set of measurements, including the ratio of births to deaths, the rate of reproduction, and the fertility of a population. Foucault argued that as these phenomena began to be taken into account, a new type of medicine quickly developed whose main function was public hygiene, and whose institutions centralized its power, normalized its knowledge, and coordinated the care distributed under its auspices. There were campaigns to educate and medicalize the population, which introduced the notion of a “health risk” and from which, in turn, population-based interventions such as immunization and urban sewage systems emerged. Charitable institutions and economically rational mechanisms (such as insurance, individual and collective savings, and safety measures) were also established in order to deal with accidents, illnesses, and various anomalies. As the phenomena with which biopower is concerned become salient only on a mass level, constants that pertain to the collective were established. In addition, censuses and other mechanisms that intervene at the level of the collective or group were developed to provide forecasts, statistical estimates, and overall measures. These regulatory concerns in turn brought into being other mechanisms in the form of guidelines and recommendations that

prescribe norms, adjust differentials to an equilibrium, maintain an average, and compensate for variations within the “general population” (a group of living human beings whose constitution as a “population” is in large part due to this form of power). In fact, the consolidation of the concept of “the normal” legitimized and occurred in tandem with the new statistical knowledge and dividing practices that initially stemmed from biopower (Foucault 2003, 238–63; see also Hacking 1990).

In short, both the broad outlines of human life and the minutiae that shape it in all its multiplicity, together with a whole set of related economic and political problems, have become biopower’s first objects of knowledge and the targets that it seeks to control. As François Ewald (one of Foucault’s students) explains, the juridical mode of governance, which was characterized by forcible seizure, abduction, or repression, has been steadily replaced by biopower, “which aims to produce, develop, and order social strength,” and which exerts a more positive influence on life, undertakes to administer it, to multiply it, and to impose on it a system of regulations and precise inspection. The norm has accomplished this expansion of discipline by enabling it to develop from a simple set of constraints into a mechanism and by transforming the negative restraints of the juridical into the more positive controls of normalization (Ewald 1991, 138, 141; cf. Shildrick 2009). Indeed, Foucault regarded normalization as a central—if not *the* central—mechanism of biopower. In the final chapter of *The History of Sexuality*, volume 1, provocatively titled “The Right of Death and Power over Life,” Foucault explained the historical transformation from the juridical exercise of power to regulatory power:

[A] power whose task is to take charge of life needs continuous regulatory and corrective mechanisms. . . . Such a power has to qualify, measure, appraise, and hierarchize, rather than display itself in its murderous splendor; it does not have to draw the line that separates the enemies of the sovereign from his obedient subjects; . . . it effects distributions around the norm. . . . [T]he law operates more and more as a norm, and . . . the juridical institution is increasingly incorporated into a continuum of apparatuses (medical, administrative, and so on) whose functions are for the most part regulatory. A normalizing society is the historical outcome of a technology of power centered on life. (Foucault 1978, 144)

The maximization of efficient and economical regulation and administration of life relies on the cost-effective facilitation of death and its timely administration. Hence, normalization has become the central means through which biopower takes charge not only of life; it is also the mechanism by which productive forms of power take charge of death: through social

cleansing, racial purification, elimination of defectives, and other eugenic strategies. Whereas some authors contend that Foucault's claims about these historical developments are outdated and have been surpassed, I continue to believe that his ideas about these phenomena were in large part prescient, and moreover, are even more pertinent now—that is, in the early twenty-first century—than they were when he first introduced them.

STEM CELLS AND MAINSTREAM BIOETHICS

Stem cells can be functionally defined in terms of their ability to self-renew and their multipotency. In mammalian development, embryonic stem cells (ESCs), which are undifferentiated (i.e., unspecialized), are considered to be the most multipotent cells because they contribute to all three germ layers of the developing embryo and have the ability to form any differentiated (specialized) cell type. Adult stem cells (ASCs), which are differentiated (specialized) and located in many adult tissues, maintain the ability to generate all of the cell types required to build the tissue, or organ, of origin (Van der Kooy and Weiss 2000). For example, a neural stem cell derived from the adult brain has the ability to generate all the cell types required to build a brain (astrocytes, neurons, and oligodendrocytes).⁵ Scientists believe, therefore, that stem cells can provide ideal models for understanding the bases and developments of specific diseases and are potential sources of transplantable tissue to be used to treat, for instance, Parkinson's disease and spinal cord injury (Gruen 2007, 285). Most scientists working in the area of stem cell technology argue, however, that although ASCs and cells derived from cadaveric fetal tissue have been shown to serve some of these purposes, ESCs can do so more effectively. Hence, the trend is to focus research involving stem cells on ESCs. Gruen writes that to realize its full promise hESC research would ideally entail the creation of cell lines with specific genotypes that could (1) model particular diseases (e.g., Alzheimer's or Parkinson's) and (2) provide histocompatible transplantation therapies able to resist rejection and minimize the need for immunosuppressive drugs. These developments will require oocytes⁶—some researchers estimate a lot of oocytes—in both the research and therapeutic phases of the work (Gruen 2007, 286).

hESCs are typically derived from the inner cell mass of embryos that remain after *in vitro* fertilization (IVF) treatments. They can also be derived from embryos deemed to be “unsuitable” following preimplantation genetic diagnosis (PGD) or with the use of other non-genetic evaluative criteria, such as morphology.⁷ Because the derivation of stem cells from the inner cell mass of an embryo requires the embryo's destruction, the moral status of the embryo has been the crux of public debate and controversy about hESC research. Until recently, mainstream bioethical discussion about issues in hESC research has

also focused almost exclusively on the question of the embryo's moral status, suggesting that this is the only relevant question to ask about the technology. (The judgment according to which some embryos are "unsuitable" for implantation and the criteria on which such a judgment is predicated have gone unquestioned by both mainstream critics and proponents of hESC research, though they are increasingly issues of concern for a growing number of disabled people and authors in disability studies.) Thus, mainstream bioethical opposition to hESC research has generally been grounded in one of two assumptions: the embryo is a human being or the embryo is a potential human being. Although most embryologists and geneticists maintain that early embryonic cells are too unspecialized to constitute a unique identity, bioethicists who hold that the embryo has the same moral status as persons argue that human life begins at conception, that all human life is sacred, and that the destruction of the embryo during research is tantamount to the sacrifice of a person to scientific knowledge.

In an article with the evocative title "The Point of a Ban, or, How to Think about Stem Cell Research," Gilbert Meilander (2001) demonstrates that at one time the question of the embryo's moral status was indeed the only question that mainstream bioethicists regarded as important to ask about the research. As Donna Dickenson explains it, although Meilander attempted to provide a more nuanced consideration of the assertion that it is wrong to destroy an existing or potential human being than other opponents of the technology do, he nevertheless remained preoccupied with the harms that the research poses to the embryo. Meilander had claimed that in order to take the notion of respect for the embryo seriously, we may need to regard the relief from suffering through scientific progress that stem cell research promises as a "real but not supreme imperative" (Meilander 2001, 15, in Dickenson 2007, 62). Thus, Dickenson remarks that although Meilander set out to widen the debate beyond "a seemingly endless argument about the embryo's moral status," he did not widen it much at all. To the contrary, respect for the embryo remained the sole ethical issue in relation to hESC research, with the only difference being that the important question to ask became this: Is respect for the embryo an absolute imperative when consequentialist arguments about the relief of human suffering are weighed against it, or is it not? (Dickenson 2007, 63). Whereas Meilander suggested that the counterweight of relief from human suffering might render scientific progress in the area of stem cell research a *prima facie*, rather than absolute, imperative, some bioethicists who believe that embryos deserve special respect, though not the full respect afforded to persons, have argued that the future of hESC research is worth the sacrifice of embryos that remain after infertility treatments. For example, Patricia Roche and Michael Grodin have argued that from the perspective of justice it would be unethical to rank respect for embryos over the good that might accrue to actual

living human beings by virtue of the knowledge that scientists hope to gain from hESC research: the good of actual living human beings always outweighs the good of potential human beings (Roche and Grodin 2000, 139). Note that although these authors seem to have shifted discussion of the ethics of hESC research away from consideration of harms to the embryo by moving the goalposts of argumentation in a more consequentialist direction than Meilander's, their argument nevertheless presumed that such a move must be made with reference to the embryo's moral status.

Roche and Grodin notwithstanding, one might have expected mainstream proponents of hESC research to bypass or even avoid claims about the moral status of the embryo; however, they have not really done so. In 1994, the Human Embryo Research Panel (HERP) in the United States recommended that federal funds should be forthcoming for both research on embryos remaining after IVF treatment and on embryos created solely for research purposes. In a paper that appeared in the *New England Journal of Medicine* in 1996, American bioethicists George Annas, Arthur Caplan, and Sherman Elias, who wished to secure congressional funding for embryo research while avoiding hurdles erected by the American anti-abortion movement, critiqued the HERP recommendations by drawing a distinction between embryos created for IVF procreative attempts and embryos created for research only. They distinguished between embryos in this way by arguing that "the embryo research conflict" cannot be resolved solely on the basis of moral properties inherent to the embryo because the circumstances under which conception occurs are also morally relevant considerations. As they explained it, "the embryo's moral status derives not only from a cluster of properties it possesses, but also from the interests that potential parents and society bring to procreation and reproduction" (Annas et al. 1996). The rhetorical strategy of these authors interests me for the following reason. Although they argued that the "embryo research conflict" cannot be resolved on the basis of a set of moral properties inherent to the embryo because the moral status of the embryo is socially constituted, they nevertheless assumed that the product of such constitution (namely, the embryo's moral status) is the single most important factor that needs to be addressed in resolving the question of whether or not hESC research should be publicly funded.

Insofar as Annas and colleagues argued that the moral status of the embryo is socially constituted, deriving at least in part from personal and societal interests, they acknowledged the value-laden character of the public and bioethical debates about hESC research that revolve around and constitute that status. I will eventually show that through a process of social and political constitution certain properties are projected onto particular embryos in addition to the properties that combine to constitute the embryo's moral status. In this context, however, I am concerned to underscore that although Annas and

colleagues pointed to the interested and value-laden character of the embryo's moral status, they did not seem to think that embryo research itself should be regarded as a product and an effect of particular interests and values. Rather, these authors pointed to the social constitution of the embryo's moral status and its value-laden character in order to argue that these contingencies should not hamper the putatively value neutral and objective domain within which embryo research is undertaken. In other words, one of the assumptions that underpinned their critique of the HERP recommendations is this: Although the moral status of the embryo might be a site of social and political contestation, embryo research itself is a morally and politically neutral endeavor and should be allowed to stand apart from the noise of these public debates. Contra Annas and colleagues, however, many feminist bioethicists have compellingly argued that embryo research, like a host of other scientific and medical research endeavors, is a value-laden enterprise.

FEMINIST APPROACHES TO STEM CELL TECHNOLOGY

One of the guiding assumptions of a great deal of feminist scholarship and practice is that questions and claims are always situated and interested (see Haraway 1991). Thus, feminist scholars have sought to demonstrate that much of what in recent Anglo-European societies has been accepted as value neutral and objective knowledge and truth actually reflects androcentric biases. In the context of the life sciences, for instance, feminist biologists (among others) have shown that science is not the value-free and disinterested domain that most of its practitioners allege it to be. To take one important example, feminist scientists and feminist philosophers of science have indicated the ways that scientific knowledge has often been used to inscribe (and reinscribe) two mutually exclusive natural sexes. In particular, they have shown how social and political discourses on sex—gender have contributed to the production of evolutionary arguments and descriptions used in the physiology of reproduction, as well as to the identification of the objects of endocrinology (hormone science). Feminist biologist Anne Fausto-Sterling notes, for example, that by defining as “sex hormones” groups of cells that are in effect multisite chemical growth regulators, researchers gendered the chemistry of the body and rendered nearly invisible the far-reaching, non-sexual roles these regulators play in “male” and “female” development (Fausto-Sterling 2000; see also Oudshoorn 1994). Fausto-Sterling remarks that the “discovery” of sex hormones early in the twentieth century heralded an extraordinary episode in the history of science. She points out, however, that the scientists and researchers who investigated hormone science could make “hormones” intelligible only in terms of the social and political struggles around gender and race that characterized the sociocultural environments in which they worked. With each choice these

scientists and researchers made about how to measure and name the molecules they studied, they naturalized prevailing cultural ideas about gender. In short, as feminist biologists (among others) have demonstrated, the emergence of scientific accounts of sex in particular and human beings in general can be understood only if scientific discourses and social discourses are recognized as inextricable elements of a complex and complicated sociocultural matrix that comprises self-authenticating styles of reasoning, institutional practices, asymmetrical gendered power relations, scientific arguments and classifications, medical discourses, and social policy (among other phenomena).

Feminist critiques of abstraction and of the theoretical gesture that elevates a specific historical experience to the level of an absolute universal have informed feminist approaches to bioethics. From its inception, feminist bioethics has been suspicious of how this logic of abstraction operates in medicine, as well as in ethical and bioethical inquiry. Furthermore, feminist bioethicists have sought to dethrone the abstract principles assumed in mainstream ethics and bioethics by scrutinizing the concrete consequences for women (and other marginalized groups) of certain scientific and medical practices, as well as the bioethical discussions about them (e.g., Sherwin 1992, 2008). As Mary Rawlinson explains, feminist approaches to bioethics have challenged mainstream bioethics for its reliance on abstract principles disconnected from the material conditions of action and the specificities of the relationships in which ethical urgencies arise. From the beginning, she continues, feminist bioethics also insisted on turning to women's experience and women's bodies as points of departure in science, politics, and philosophy, and as resources or sites for the production of concepts that might function generically, informing us about human (not just women's) experience (Rawlinson 2008, 2).

Given that feminist bioethics has precipitated a conceptual and theoretical shift away from abstraction and false universalism to consider the bioethical questions and concerns that arise when women's lives are fully accounted for, it is not surprising that feminist bioethicists have challenged the almost exclusive attention that mainstream bioethical approaches to hESC research had at one time paid to the moral status of the embryo. Dickenson, for instance, argues that this "obsession" with the embryo's moral status has obscured regulatory and other issues that pertain to women whose ova will make the research possible. She notes that it is widely assumed that if techniques in stem cell research could be developed that did not require embryos, the technologies would be ethically unobjectionable. One of the techniques proposed thus far involves injecting a genetically manipulated adult cell, some of whose genes have been deactivated, into an enucleated ovum that, because it lacks essential material, would not develop into an embryo. Another of the proposed "de-embryoed" techniques involves inserting a somatic cell nucleus into an enucleated ovum, which, because some of its genes have been programmed in certain ways, would

not develop to the embryo stage. That ova will still be required for these, and the other “embryo-lite” techniques proposed, seems to have gone unnoticed (Dickenson 2007, 59–60).

Only in the aftermath of the scandal involving Dr. Hwang Woo Suk did mainstream bioethicists begin to consider what sorts of measures should be enacted to protect the women from whom the ova required for the research would be taken. Hwang, who at one time was revered as a pioneer in hESC research, used over 2,200 eggs from 129 women, some of whom were his junior researchers, in what was eventually exposed as fraudulent research. Heather Widdows reports that over half the women who supposedly gave their eggs to Hwang had actually *sold* them to him, many of these transactions taking place through a profit-making international agency, the DNA bank, which recruited Malaysian, Chinese, and other Asian women in addition to Korean women (Paik 2006, in Widdows 2009, 12). More than half of these women, she notes, were paid an average of 1,400 USD for their eggs (Joung 2006, in Widdows 2009, 12). With these inducements in view, some of the women underwent the “donation” process (which carries risks of ovarian hyperstimulation and other sequelae) as many as three times, with one woman providing forty-three eggs (Widdows 2009, 12).

Although the case of Hwang is the best-known example of (among other things) the unethical use of female members of an embryo research team for their ova, many recent reports have documented a flourishing trade in human ova for IVF, where eggs are contracted for extraction from Eastern European women and sold to infertile couples in wealthier countries such as Britain, Germany, and Israel (Dickenson 2007, 58–60). Reports have also been made in the European Parliament according to which eggs have been removed without parental consent from babies post-mortem in the Ukraine (Ballantyne and de Lacey 2008, 155). Because of the very public furor over egg donation that has ensued due to the Hwang scandal, and in light of the international nature of most stem cell research teams, there has been growing pressure to produce harmonized standards on egg procurement. Although some specific guidance for research-oriented human egg procurement has been produced, disagreements with regard to the ethics of egg donation and ongoing controversies about payment for ova nevertheless persist, and have prevented the construction of binding international governance on the matter among interested countries (Dickenson and Idiakez 2008, 129).

That failure to develop international norms on research-oriented egg procurement is in large part due to controversies revolving around payment throws into relief the extent to which ova have been commodified, and assimilated into a system of global capitalism. Because ova have become a much sought-after commodity, in some jurisdictions they are extracted at an alarming rate for sale to IVF clinics—up to seventy in one cycle. Multiple egg extraction

has in fact become the norm in IVF because it increases the chances of success. Were only one egg extracted, fertilization would be less likely to occur. In the context of IVF, then, intensive ovarian stimulation to enable the extraction of multiple eggs might mean that a woman can avoid repeated treatment cycles in the future. Although this ethical ground for hyperstimulation and multiple extraction does not exist in the context of stem cell research, there is an even greater temptation to extract multiple eggs for use in such research (particularly somatic cell nuclear transfer) than there is in IVF. Regulatory protocols and standards rarely apply to egg extraction, however, in large part because the process often goes unnoticed, and is even more likely to go unnoticed when the extraction is performed on vulnerable women in Eastern Europe or the developing world. Dickenson points out that inasmuch as the enucleated ova used in stem cell research would contain no genetic material, the skin color and other racial signifiers of the women from whom the ova may be extracted need not be considered (as they are in IVF), making the continued lack of oversight paid to egg extraction an open invitation to exploit women in the global South (Dickenson 2002, 2007, 66–67). As Widdows explains, “If the genetic content of ova is irrelevant for SCNT [somatic cell nuclear transfer] research, researchers are likely to ‘source’ the huge quantities of eggs required from the cheapest donors, namely, poor women in First World countries, or—even more cheaply—still poorer women in the global South” (Widdows 2009, 13). This set of circumstances has recently been reinforced by the guidelines of the International Society for Stem Cell Research, which offer some protections for egg “providers” in the context of IVF, but expose egg “sources” for stem cell research to much more “permissive” and potentially exploitative conditions (Baylis and McLeod 2007, in Widdows 2009, 13).

What are the consequences of hyperstimulating a woman’s ovaries for the purpose of multiple egg extraction? The drugs used to hyperstimulate ovaries have reportedly caused symptoms ranging from breathing and chest pain, nausea and depression, to enlargement of the ovaries, potentially fatal fluid retention, kidney damage, and ovarian twisting. As Angela Ballantyne and Sheryl de Lacey note, specialists in reproductive medicine acknowledge that there is insufficient data about the long-term effects of these drugs. They also note that the relative risks of rounds of ovulation stimulation subsequent to the initial round are not well understood by practitioners in the field (Ballantyne and de Lacey 2008, 153). It is well documented, however, that (in the commercial U.S. environment in particular) women who sell their eggs are insufficiently informed about the risks that ovarian hyperstimulation procedures pose, as well as the extent of uncertainty that surrounds them. Furthermore, many clinics downplay the fact that women who wish to sell (or “donate”) their eggs must undergo an invasive surgical procedure, the long-term consequences of which remain largely unknown, in addition to participating in pharmaceutical regimens. In all cases, the

risk is iatrogenic and is imposed on women who derive no clinical benefit themselves from the procedure.

Dickenson remarks that because the women derive no therapeutic benefit themselves from the pharmaceutical and surgical interventions that egg extraction involves, it is worth asking whether doctors who perform them contravene their duty to “do no harm.” She responds in the affirmative to the question she rhetorically poses by arguing that women who undergo egg extraction are used solely as means to another’s ends in contravention of both the Kantian Categorical Imperative and the medical duty of non-maleficence, regardless of whether informed consent has been obtained from them (Dickenson 2007, 65–67; see also Ballantyne and de Lacey 2008, 149). Can women give informed consent when the risks of egg extraction are still insufficiently known? Some feminists believe they can. For example, Grabel and Gruen advocate a regulated market in oocytes. They maintain that if a regulated market in oocytes were to prevail, it would provide public recognition and validation of women’s autonomy, promote their options, and be a partial remedy for the current racial discrimination that permeates “egg donation” (Grabel and Gruen 2007, 148; see also Gruen 2007). Other feminists contend, however, that many arguments that appeal to informed consent and payment in order to justify claims according to which the procedures have been freely chosen conceal the deception and exploitation that surround them (Dickenson and Idiakez 2008, 134).

My overview of feminist responses to hESC research and mainstream bioethical approaches to it has been designed to introduce some of the philosophical feminist interventions into the stem cell debates to readers unfamiliar with the form the debates have taken in academic contexts, as well as to highlight the challenges these interventions pose to the expansion of the research. However, I have also introduced these feminist contributions to the debates in order to demonstrate that they too are subject to criticism and in need of improvement. In particular, the complexity of feminist contributions to the debates on hESC research is at present limited insofar as these interventions into the debates focus almost exclusively on how the research (actually or potentially) affects women, that is, on the ethical (and political) questions and concerns surrounding the “sourcing” and “harvesting” of ova from women, as well as on the fact that these questions and concerns remain largely overlooked in mainstream bioethical accounts of the research. Although some feminist bioethicists have argued that the development and deployment of genetic testing and reproductive technologies threatens the interests and well-being of disabled people, their arguments have thus far not been extended to encompass stem cell research. With few exceptions, the work on hESC (or other embryo) research that feminist bioethicists have produced does not critically examine the cluster of epistemological and ontological assumptions that comprise the

conception of disability that drives the impetus to develop the technology. In short, something is missing from current feminist bioethical work on stem cells, which a critical perspective about the work should include. Feminist examination of a given state of affairs, problem, or issue that employs gender (construed as the binary relation between women and men) as the almost exclusive category with which to analyze phenomena recapitulates some of the egregious flaws of androcentric analyses. To avoid repeating the (past) mistakes of mainstream philosophy and bioethics, as well as to more closely approximate its promise of inclusivity, feminist bioethics must move toward a more complex, intersectional analysis of hESC research by encompassing reflection on the epistemological and ontological assumptions about disability that condition the research, as well as reflection on the consequences for disabled people that are likely to follow from them. In the remainder of this paper, therefore, I consider neglected assumptions that underlie the impetus to develop stem cell technology and that, not coincidentally, have also motivated the development of prenatal testing and screening and PGD.

DISABILITY AND THE DIAGNOSTIC STYLE OF REASONING

As remarks by Grabel and Gruen at the outset of this paper suggest, some mainstream bioethicists have revised their early approaches to hESC research in response to feminist criticisms of them. Although mainstream bioethics is now more apt to at least acknowledge the potential and actual harms of hESC research and technology for women, it has yet to acknowledge the potentially, or actually, harmful effects of the research and technology for disabled people; that is, mainstream bioethics has not critically examined the epistemological and ontological understandings about disability underlying the research, nor the detrimental consequences these assumptions may have for disabled people. On the contrary, mainstream proponents of stem cell research, and even some of its opponents, take for granted and indeed have contributed to the conviction that the development of stem cell research is both inherently good (insofar as it promises to minimize or eliminate certain forms of disease and disability) and value neutral (insofar as it is an outcome of disinterested and objective scientific knowledge). With few exceptions, feminist bioethicists too have implicitly or explicitly endorsed the taken-for-granted conviction that stem cell technology is inherently good and value neutral, assuming that disabled people universally regard its development as a desirable and unequivocally momentous outcome of scientific progress. This conviction—stem cell technology is inherently good and value neutral—is propped up by news agencies and other media that widely and frequently report the poignant testimonies of disabled people who urgently argue that they have a human right to benefit from stem cell research and that opponents to it are in effect condemning them to a diminished

life, if not serving them a death sentence. By contrast, disabled people who articulate concerns about and objections to the technology are largely ignored by or discounted in the press and other media, which foster the public perception that their views are eccentric, if not unintelligible (see Tremain 2006b; Goggin and Newell 2004).

The belief that hESC research is the pinnacle of current scientific and medical progress whose development should be actively promoted relies on a particular conception of disability comprised of certain epistemological and ontological assumptions. On this conception, disability is assumed to be the inevitable consequence for functioning of an objective biological defect or lack, namely, an impairment. As biological human attributes or characteristics, furthermore, impairments possess transhistorical and transcultural properties that exist before and independent of social norms, practices, and policies. In short, impairments are the objective, biological precursors to disability, that is, intrinsic characteristics (deficits) of individuals that manifest in remarkably uniform kinds of disabilities (limitations or abnormal functioning). That a person with an impairment has a lower quality of life and fewer opportunities for the future than a person without an impairment is taken to be the self-evident consequence of an impairment's intrinsically negative character. Hence, this conventional, medicalized, and individualized conception of disability recommends that social resources be directed to the development of medical interventions that eliminate and prevent impairment that entails disability, with its attendant limitations on life prospects. Several prominent bioethicists who assume this conception of disability have argued that justice demands the genetic correction or enhancement of embryos and fetuses with impairments in order that the persons whom they will become can "fully participate in the cooperative framework of society," where a "fully cooperating citizen" is one whose "opportunity range" is compatible with "species-typical functioning" (Buchanan et al. 2000). In the literature of disability studies, something like (what I call) the conventional conception of disability is referred to as "the medical model."

The idea that impairment (construed as an intrinsic human deficit) is a stable and distinct category, a real entity, with transhistorical and transcultural properties, presupposes that there is a scientifically indisputable category of "normality" from which the former category can be distinguished. Whereas earlier medical, philosophical, and scientific doctrines defined normality in terms of ideal or absolute characteristics, modern notions of normality focus primarily on "functional ability" (Cho et al. n.d.). The notion of *species-typical functioning*, imported into bioethical discourse from the work of philosopher of science Christopher Boorse, is a good example of the modern understanding of normality (see, for instance, Boorse 1977). Although the use of the word "typical" in the term "typical function" may seem to suggest statistical assess-

ment—that is, what constitutes the common or usual function—philosopher of developmental biology Ron Amundson has pointed out that Boorse actually intends the notion to imply the *normal* function of members of a species. Boorse claims that the distinction between “normal” and “abnormal” functions is an empirically grounded implication of biomedical science. Normal and abnormal functions are distinct natural kinds, objective facts of the natural world. “Normal function” carries a double implication. First, normal function is statistically common in the species; abnormal function is rare. Second, normal function is the most successful, or (in Darwinian terms) the most fit. The claim is that the more an organism diverges from its species average, the worse it will function.

Amundson asserts that Boorse misrepresents biomedical science. Neither functional uniformity nor the association between statistical typicality and excellence of function is a scientific discovery about the biological world. Amundson explains that information supplied from a wide number of biological disciplines suggests that we should expect a wide range of functional variation, not a narrow match between functional typicality and functional success. To take one example, evolutionary biology does not imply functional uniformity as an outcome of evolution; to the contrary, functional variability is a *basic* assumption of Darwinian natural selection. To take another example, conformity among members of a given species is not implied by the facts of developmental biology; rather, developmental plasticity and functional adaptation suggest that we should expect *variation* in the functional organization of the bodies of species members, *not* strict conformity. As Amundson puts it, there is so much functional variation among humans, and it is so multidimensional, that the belief in an objective dividing correlation between typicality and functional success is scientifically untenable (Amundson 2005, 4–5; see also Amundson 2000).

Although Boorse presents his theory as an empirical claim about biology, it is widely used to support normative consequences in the bioethical writings of Norman Daniels, Dan Brock, Allen Buchanan, and others, according to which disabled people have a lower quality of life (by virtue of their impairments) and that such lives should be prevented.⁸ These conclusions seem to be contradicted, however, by a wealth of empirical data and the first-person reports of disabled people which indicate that the majority of them do not experience a lower quality of life than non-disabled people, while some of them actually experience a better quality of life than non-disabled people (Amundson 2000, 2005). Nevertheless, Brock, in particular, has cast considerable doubt on the credibility of such first-person reports when, for example, he asserted that “*our* notion of how good a person’s life is [isn’t] fully determined by their own subjective assessment” (see Tremain 2006a, 51, n. 3), despite the fact that in other contexts he has expressed a very different view of one’s subjective assessment of her or his quality of life. With respect to the quality of life of someone who is critically ill or dying, that is, Brock has stated that “there is *no objective standard*,

but only the competent patient's judgement" (Brock 2009, 166). Notwithstanding this inconsistency, a certain application of the notion of "adaptive preferences" has been used to support the conclusions of Brock and these others, further discrediting the reliability and significance of disabled people's assessments of their own quality of life. Put briefly, the argument from adaptive preferences is that people in disadvantaged situations adapt their personal preferences and desires to fit the compromised or diminished circumstances in which they find themselves.

When the argument from adaptive preferences is applied to the quality of disabled people's lives, the result is invariably the following: Because of the diminished circumstances of their lives, disabled people lower their expectations about the amount of satisfaction and happiness they should achieve, as well as compromise their standards about which occupations, pastimes, and activities they should pursue in order to attain these goods. In short, the argument from adaptive preferences assumes that there is an objective and universal standard for assessing the quality of human life, below which the quality of disabled people's lives (objectively) falls. In effect, the application of the notion of adaptive preferences to disabled people's lives begins from the judgment (bias) that their circumstances are undesirable and proceeds to put a high burden of proof to show that they are not undesirable on parties who argue in some way that such generalizations cannot be made.

Many of the theorists committed to the argument about the allegedly compromised character of disabled people's preferences (and satisfactions) are utilitarians who rely on John Stuart Mill's distinction between higher and lower pleasures to motivate their arguments; however, they seem to tendentially set aside Mill's dictum according to which the best judges of the quality of preferences (and satisfactions) are the individuals who have experienced "both sides of the question." Nevertheless, we can employ Mill to counter claims about the allegedly diminished character of disabled people's lives by arguing that people who have become disabled at some point in their lives, that is, people who know both sides of the question, are better judges of the quality of disabled people's lives than are people who have never been disabled. Would the subjective assessments of people disabled from birth remain discredited if we employ this argument? I suggest that they need not remain so if we combine the use of Mill's argument with an argument that takes seriously the insights of feminist epistemologists (among others) according to which the well-being and very survival of people in oppressed situations often depends on knowing and understanding well the privileged circumstances and characteristics of the people to whom they are socially subordinated. Indeed, feminists should recognize this application of adaptive preferences as one move among many in the theoretical repertoire of a particular situated perspective that has elevated itself to the level of a universal.

Theorists in disability studies and disabled activists have responded to some of the assumptions about disability described in the previous paragraphs by developing an interpretation of the phenomena of disability that locates their origins in the interaction between certain people and the social and political practices and processes of the environment in which they are situated, not in human biology alone or even necessarily. Two versions of this sociopolitical interpretation—one developed in Britain and the other in the United States—have been dominant, directly influencing work done in disability studies (and disabled people's activism) in other countries around the world.

Disability theorists and activists in the United States, spurred on by the successes of the women's and civil rights movements, as well as by the ideological assumptions of liberal individualism, fought long and hard for legislation that would institutionalize a tripartite conception of disability into U.S. domestic policy. This conception, which also underlies a classification system once used by the World Health Organization, makes roughly the same epistemological and ontological assumptions about the categories of impairment (i.e., as biological deficit) and disability (i.e., as functional limitation) as the conventional, medicalized conception, but adds a third category—initially termed *handicap*—to represent the social disadvantages (e.g., discrimination, prejudice, and forms of exclusion) that can be predicted to accrue to individuals who meet the criteria for either or both of the other categories. Despite their initial efforts, however, disability theorists and activists in the United States came to reject the term of reference (*handicap*) originally used to designate this third category, before the conception's institutionalization in the Americans with Disabilities Act (ADA) of 1990.⁹ For according to a contemporary myth that was widely accepted by the disability studies community in the United States and elsewhere, the term *handicap* was at one time associated with the social practice of begging in public; by using the term, it was thought, authors in disability studies inadvertently demeaned disabled people. Although this association has since been shown to be unfounded, the term *handicap* has never been revived in American disability studies. Nevertheless, the third category, concerned with disadvantage and exclusion, is nonetheless preserved in the ADA (and the Americans with Disabilities Amendment Act of 2008) through its broad definition of “disability discrimination” (which includes the failure to “reasonably accommodate” people with disabilities), despite the fact that these documents make explicit use of only two categories, namely, “impairment” and “disability.”

Harlan Hahn's sociopolitical definition of disability also played a role in the early days of disability studies in the United States, influencing the formulation of disability that eventually became entrenched in the ADA. Hahn's definition assumes that disability stems from the failure of a structured social environment to adjust to the needs and aspirations of citizens with disabilities, rather than

from the inability of a given individual with a disability to adapt to the demands of society. The devaluation of people with disabilities, he argued, is due to the reluctance of society to recognize their dignity and worth as human beings and to grant them civil rights as members of a political community. Hahn claimed that his definition of disability provided a foundation for the emergence of a “minority-group model,” which would enable a major change in the direction of research on disability (Hahn 1985, 93). Research that assumed the minority-group model of disability would not concentrate on the economic or functional implications of disability, but rather would focus on the attitudinal and behavioral significance of perceptions formed on the basis of visible and permanent characteristics. On the minority-group model, “disabilities” are among the many other bodily attributes (such as skin color, gender, and age) that have historically been used as means with which to differentiate between people and to discriminate against some of them. Thus, the minority-group model has precipitated the emergence of the idea that disabled people constitute a historically disenfranchised group and should be recognized as such under the law.

In the last decades of the previous century and the first decade of this one, a growing number of disability theorists in North America and worldwide have adopted the epistemological and ontological commitments made on the version of the social interpretation of disability produced in Britain. The British “social model” (as it was dubbed) uses the same terms of reference as the conventional conception, though it redefines disability in important ways (see, for instance, Oliver 1990, 1996).¹⁰ It also redefines impairment, although this redefinition has until recently gone unnoticed (see Tremain 2006a). In the terms of this approach, impairments are not intrinsic defects that demand to be corrected or eliminated (as the “medical model” assumes), but rather are descriptively neutral human characteristics fundamental to human existence. The authors of the social model’s key principles, as well as many of its more recent leading proponents, have more or less endorsed historical materialism; thus, they argue that the restricted opportunities that disabled people confront are not the inevitable consequences of their impairments, but rather are created by social and economic arrangements and conditions that can be transformed. Michael Oliver (one of the first proponents of the British social model) explains that the “cultural production of disability” is dependent on a variety of factors, including the type of economy in a given cultural context, the size of the economic surplus, and the values that influence the redistribution of this surplus. In more concrete terms, disability is comprised of the innumerable aspects of social life that impose restrictions on disabled people, including personal prejudice, inaccessible public buildings, unusable public transportation systems, segregated education, exclusionary workplace arrangements, and so on. Indeed, the claim that there is no causal connection between impairment (a neutral human characteristic) and disability (a form of social

oppression) has been regarded as the important innovation of the social model. Proponents of this model of disability argue that the most appropriate way for governments to increase the opportunities available to disabled people and improve their quality of life is to supply the resources required to reorganize the environment in ways that ensure the inclusion in social life of people with impairments, rather than allocate huge sums of money and other resources to the development of technologies aimed at correcting and eliminating impairment (and hence, people with impairments).

A number of British disability theorists and disabled authors sympathetic to the social model have, nevertheless, been critical of it, calling for revision of some of its fundamental assumptions. In particular, British disabled feminists (among others) have argued that insofar as the social model focuses exclusively on architectural barriers and other forms of social disadvantage that comprise disability, it neglects to account for the experience of impairment, especially unwanted aspects of it (pain, fatigue, functional limitations, and so on) that would remain even if discrimination against disabled people were eliminated (see, for instance, French 1993; Crow 1996; Morris 1996; Thomas 1999). In Carol Thomas's effort to repair the social model, she introduced the term "impairment effects" to refer to the dimensions of living with impairment that she and other sympathetic critics of the social model claim it ignores. Thomas's material-feminist approach to disability also seems to eschew the uncritical foundational status that the model assigns to the category of impairment. For instance, she argues that a materialist perspective on impairment would explain how pathologized, morphological, anatomical, and genetic differences, bodily variations defined in Western medical discourses as "impairments," are shaped and changed temporally and spatially through the dynamic interrelationship between human bodies and social and physical environments (Thomas 1999, 33). In addition, Thomas has agreed with Paul Abberley (1996) that what is assigned to the category of impairment is neither transhistorical nor universal in character, but rather "historically and spatially specific" ("what is and what counts as impairment is always socially located, situated in time and place") (Thomas 1999, 132–33, emphasis in Thomas). Note, however, that with these remarks Thomas implied that the category of impairment itself is transhistorical and transcultural. With these remarks, that is, Thomas seemed to recuperate the foundationalism of the social model that she appeared at first to avoid. Nevertheless, Thomas (2007) now seems to be in agreement with my own view according to which a complex and complicated network of social power brings impairments (and "impairment effects") into being as those kinds of things (see Tremain 2001). This revision of her original argument about the category of impairment and the phenomena of impairment effects is certainly an improvement, not least of all because although the initial notion of impairment effects has been lauded by some disability theorists as a sort of "missing

link” in analysis of disability, it has seemed strikingly similar to, if not merely a new incarnation of, the category of (functional) disability used on the tripartite conception once favored in American disability circles.

Although the arguments of these various disability theorists ought to be given a prominent place in the global discussions about stem cell research, it must be pointed out that some of the epistemological and ontological assumptions they make bear a remarkable resemblance to assumptions made on the conventional, medicalized conception used in the domains of biotechnology, biomedicine, and most bioethical discourses themselves. Although not all of these disability theorists agree with the assumption made on the medicalized conception about the disvalue of an impairment, they (implicitly or explicitly) concur with that conception’s assumption according to which impairments are intrinsic properties of individuals that exist before and independent of social norms, practices, and policies. To be sure, the social model of disability seems to improve on the conventional, medicalized and tripartite conceptions of disability insofar as it refuses to accept the assumption they share according to which the social disadvantages that disabled people confront are a direct consequence of impairment. The relation of entailment between impairment and disability is indeed more complicated than either the medicalized conception or the tripartite conception suggests. Proponents of the social model err, nonetheless, by denying a causal connection between impairment and disability altogether. In order to understand why this is so, we must revisit Foucault’s insights into the operations of social power.

Foucault argued that juridical forms of power that once governed political life through repression and control have been replaced by biopower, which exerts a more positive influence on life. He asserted, therefore, that political theory “must cease once and for all to describe the effects of power in negative terms: it ‘excludes,’ it ‘represses,’ it ‘censors,’ it ‘abstracts,’ it ‘masks,’ it ‘conceals.’ In fact, power produces; it produces reality; it produces domains of objects and rituals of truth” (Foucault 1977, 194). Biopower produces the subjects of its power by guiding, influencing, and limiting their actions in ways that accord with the exercise of their freedom. By drawing on this argument according to which modern relations of power produce—that is, form and define—the subjects whom they subsequently come to represent, I have argued elsewhere that the impairments that proponents of the social model claim to exist apart from disabling social arrangements are actually produced in accordance with certain requirements of those arrangements; that is, disabling social and political arrangements preceded and enabled the coalescence of the idea of impairment, which idea has provided the justification for the multiplication and expansion of the regulatory effects of disabling practices (see Tremain 2001, 2002, 2005, 2006a). As I will endeavor to explain below, a relatively recent style of reasoning has emerged that materializes impairments as universal

properties of subjects through the iteration and reiteration of regulatory norms and ideals about human function and structure, competency, intelligence, ability, and so on. In addition, this style of reasoning naturalizes impairments as an interior identity or essence of the subject on which culture acts in order to camouflage its own contingency, that is, the contingency of the style of reasoning that materialized them *as natural* in the first place. That the apparent universality of the entity called “impairment” is assumed to be evidence for its prediscursive existence, furthermore, conceals the fact that the constitutive knowledge-power relations that circumscribe impairment have already put in place broad outlines of the forms in which that discursive object will be materialized. Thus, insofar as proponents of the social model claim that disablement does not follow necessarily from impairment, they misunderstand the productive constraints of modern power. For the category of impairment emerged and in part persists in order to legitimize the style of reasoning (and its associated disciplinary practices) that generated it in the first place.

In short, “impairment” is a new conceptual object introduced by the *diagnostic style of reasoning* that biopower created and caused to emerge in the late eighteenth century. I have coined the phrase “diagnostic style of reasoning” to refer to the way of finding out whose clinical discourses created the modern body as a product of medical examination (see also Duden 1991). New modes of perceiving and understanding that the diagnostic style of reasoning introduced have effectively brought the modern body and its materiality into being, that is, brought the modern body into being as that type of thing. Furthermore, new clinical and administrative discourses, introduced by the diagnostic style, have, in effect, formulated, categorized, and delimited this body, in turn subjecting it to new laws, measurements, and causal relations in order to ensure the stability of its state of health, promote its longevity, and improve its productive success. Hence, the diagnostic style has created and caused to emerge new objects of knowledge with respect to this body (among which impairment is only one), new sentences about its functions, characteristics, forces, elements, and capacities, and new evidence with which to evaluate these candidates for truth and falsehood. Insofar as styles of reasoning are self-authenticating, the diagnostic style (and the medical, juridical, and scientific authorities who employ it) has, therefore, become the arbiter of the truth and knowledge about the modern body which the style itself brought into being—including the new objects, sentences, laws, and evidence with respect to—settling what it is to be objective about it.

The etymology of the term *impairment* lends support to my claims in the previous paragraphs. Since the thirteenth century, the term *impaired* has been used to refer to any obstacle or impeding force. In the late seventeenth century, the term *impairment* appeared as a noun related to the *general state* (health, well-being, and so on) of an individual. It was not until the late eighteenth century

(the historical context in which biopower emerged), however, that the term *impairment* came to refer to a specific physiological deficit, that is, a *particular attribute or property* of an individual (OED, entry for *impairment*). Recall Hacking's claim that styles of reasoning naturalize and materialize objects, individuated with the style, that were not previously noticeable among the things that exist. Drawing on this insight, I wish to argue, in short, that until their formation in and articulation by and through the diagnostic style of reasoning at the close of the eighteenth century, impairments (as properties and attributes of individuals) did not exist.

Thus far, I have indicated that in the context of stem cell research, a cluster of associated ideas about restoration, repair, health, and cure provide the impetus to develop the research, while simultaneously contributing to the materialization of impairment. Given my claims immediately above, it should now be evident that these ideas and their materializing effects are generated in accordance with the requirements of the diagnostic style of reasoning. In what follows, I advance a set of claims to show that hESC technology itself (an outcome of biopower's diagnostic style) significantly contributes to the constitution of impairment, that is, to its materialization and naturalization.

As we have seen, medical, scientific, and virtually all bioethical discourses on stem cell research presuppose that impairment is a stable and distinct human attribute or characteristic, with transhistorical and transcultural properties, from which a recognizable and scientifically indisputable notion of "normality" can be distinguished. In the terms of these discourses on stem cell technology in general and hESC research in particular, such allegedly transhistorical and transcultural properties, and the attribute that they comprise (impairment), must be eliminated from the actual living subjects who currently embody them, and must also be "de"-selected to prevent the future existence of bearers of them. Within the context of hESC research, that is, the process of normalization that is constitutive of impairment begins in the lab with the allegedly value-neutral clinical perception of an objectively detrimental human characteristic (a "defect") and its projection onto the embryo, followed by the determination that any given embryo that manifests such a characteristic is unsuitable for implantation and hence should be donated for research purposes.¹¹ Often this perception and impending decision are based on criteria—"morphology"—that are no more objective than the judgment according to which the embryo "doesn't look nice" (J. Nisker, personal communication, early 2005; see also Ballantyne and de Lacey 2008, 149). The evaluation of unsuitability may also be based on PGD, which itself is an interpretive process. Although several feminist bioethicists have drawn attention to the value-laden character of these judgments, they have, nevertheless, overlooked their constitutive effects. Ballantyne and de Lacey have asserted, for instance, that embryo grading practices are "contentious," and that the process of evaluating and

grading gametes and embryos is arguably grounded in “subjective opinions”; however, these authors are only concerned to show that the practices of grading and evaluating ova heighten the vulnerability of women undergoing IVF by increasing the pressure on them to donate their “low-quality” ova for research. That is, these authors neglect to consider the extent to which such grading and evaluating practices contribute to the constitution of the very prenatal defects, abnormalities, and other discursive objects they are claimed to innocently identify and represent (see Ballantyne and de Lacey 2008, 149).

THE GOVERNMENT OF NORMALIZATION

As a governmental rationality that aims to harness the vagaries of life, biopower normalizes people in order to make them governable. Within the constraints of this normalizing governmentality, certain differences among populations have been materialized and made perceptible as pathology, while the subjects who come to bear them are rendered as “abnormal” and “defective,” are disabled, and signified as less than fully human (Tremain 2008). Such subjects are in effect produced as the embodiment of a “problem” that must be resolved or eliminated (Tremain 2008). Hence, the function of technologies of normalization is to isolate these so-called anomalies, which can in turn be normalized through the therapeutic and corrective strategies of other, associated technologies. This is not to say that technologies of normalization are merely a benign, or even a benevolent response to these anomalies in the social body; on the contrary, technologies of normalization are instrumental to the systematic creation, classification, and control of such anomalies. Thus, I have argued that the grading and evaluating practices of hESC research not only mobilize technologies designed to eliminate embryos unsuitable for implantation by virtue of impairment, but also systematically contribute to the constitution of the perception of impairment in the first place.

In Foucault’s 1979 lecture entitled “The Birth of Biopolitics” (Foucault 1997), he remarked that the phenomena that from the eighteenth century onward began to appear as problems that require management cannot be dissociated from the framework of liberal governmentality within which they emerged as problems and developed their urgency. From the eighteenth century forward, in fact, the government of living populations has generated specific dilemmas for liberalism, which Foucault construed as a principle for the rationalization and exercise of government based on a conception of autonomous legal subjects endowed with rights and individual freedoms (see Rabinow and Rose 2003, xi). Because the phenomena whose management biopower is directed toward emerged as urgent within the framework of liberalism, such a strategic movement of power must operate in ways that maximize the efficiency of the state and minimize its political, economic, and social costs, while at the

same time guiding, influencing, and limiting people's actions in ways that seem to enhance their capacity to be self-determining (Tremain 2005).

Biopower has made the government of people operate efficiently and economically in this way by establishing mechanisms of normalization in domains not traditionally associated with the state. That is, the government of individuals and populations that had at one time been the responsibility and jurisdiction of juridical and state institutions has been steadily assumed by apparatuses of control (medicine, the university, education, administrative discourses, and so on) that guide and manage people's actions in ways that make such actions appear to be the self-originating outcomes of their capacity to choose from a set of possible actions. Managing and administering people's actions in ways that accord with the exercise of their freedom is most effectively and efficiently done from a distance, through the distribution and prescription of norms and standards that they more or less freely endeavor to approximate. Under such a regime, a strategy of eugenics functions best that operates not through actions associated with state repression or control, but rather by enlisting individuals to become self-governing, that is, to take responsibility for managing and maximizing the prospects of their own lives and the lives of future generations.¹² The collective urge to develop stem cell technology, which a particular style of reasoning has brought into being, is one element of this eugenic strategy. The normalization of prenatal genetic testing and screening practices, which normalization has contributed to the stabilization of previously unrecognized laws, the emergence of new types of evidence, and the constitution of new types of objects distinguished by the style, is another.

NOTES

I am grateful to Susan Sherwin and Françoise Baylis who initially motivated me to consider the impact of stem cell research on disabled people. I would like to extend special thanks to my friend and colleague David Wasserman for offering his input and suggestions on two arguments of the paper. I would also like to thank two reviewers for *Hypatia* who provided provocative and stimulating responses to my work.

The title of my paper is an adaptation of "The Lady Vanishes: What's Missing from the Stem Cell Debate," which is the title of a chapter in Dickenson 2007.

1. I published the argument in Tremain 2001. However, I actually introduced the argument to the international disability studies community in a presentation entitled "Feminist Approaches to Naturalizing Disabled Bodies: Or, Does the Social Model of Disability Rest Upon a Mistake?" I gave at the Society for Disability Studies conference in Berkeley, California in 1998.

2. It should be pointed, perhaps, that this conception of the body is steadily unraveling due to the introduction of new forms of (among other things) assistive technologies (such as prostheses) and enhancement technologies (such as hESC

research) increasingly generated by the very style of reasoning to which the conception's emergence can be attributed.

3. Ian Hacking was the first to use the idea of a "style of reasoning," which he adapted from historian of science Alistair Crombie's work on styles of thinking in science. "Each new style," Hacking explains,

brings with it new sentences, things that were quite literally never said before. . . . The truth of a sentence (of a kind introduced by a style of reasoning) is what we find out by reasoning using that style. Styles become standards of objectivity because they get at the truth. But a sentence of that kind is a candidate for truth or falsehood only in the context of the style. Thus styles are in a certain sense "self-authenticating." Sentences of the relevant kinds are candidates for truth or for falsehood only when a style of reasoning makes them so. . . . There simply do not exist true-or-false sentences of a given kind for us to discover the truth of, outside of the context of the appropriate style. (Hacking 1992, 12–13)

4. Medical anthropologist Margaret Lock has drawn on Hacking's and Arnold Davidson's discussions of styles of reasoning in order to explain how in a relatively short period of time systematization of the methods and reasoning used to determine brain death have changed radically and thus the *significance* of brain death has likewise been radically transformed (see Lock 2002).

5. My thanks to Mary Sunderland who helped me formulate these points about the science of stem cell technology.

6. Biologists use the term *oocyte* to refer to the female germ cell (reproductive cell) in the process of developing into an ovum, or egg.

7. My thanks to Françoise Baylis for explaining this procedure to me.

8. In feminist bioethics, and feminist philosophy more generally, assumptions about the allegedly diminished character of disabled people's quality of life have typically motivated arguments according to which certain women and men (i.e., women and men who will reproduce disabled infants or who are "at risk" of reproducing such infants) have a moral imperative not to reproduce. See especially, Laura Purdy 1995, 2009 and Lisa Cassidy 2006; cf. my argument in Tremain 2006a.

9. Although the ADA itself did not use the term *handicap*, the term was used in its precursor—the 1973 Rehabilitation Act—which also introduced the broad notion of discrimination found in the ADA.

10. Jackie Leach Scully calls this particular version of the sociopolitical interpretation "the *strong* social model of disability" in order to distinguish it from the more generic way in which the label "social model of disability" gets used. I want to argue, however, that this title is a misnomer for the British social model. A strong *social* model of disability would assume something like the claim that disability is socially constructed/discursively constituted "all the way down." With its foundationalist underpinnings, the British social model cannot be said to fit this description. Indeed, something like my own antifoundationalist approach to disability would be more

appropriately referred to as a “strong social model of disability” than the British version of the sociopolitical interpretation (see Scully 2008).

11. My claim is not that the perception and determination of “unsuitability” is the sole reason for the donation of embryos, as one reviewer (mis) interpreted it to be. On the contrary, as my discussion of mainstream bioethical and feminist approaches to hESC research demonstrates, I am aware that some embryos donated for the research have been “left over” from IVF procreative attempts and that, in some jurisdictions, other embryos are created solely for research purposes. At this place in my argument, I am concerned to point out how a certain aspect of the process of one mode of the donation of embryos for hESC research contributes to the constitution of impairment.

12. At endnote 8 above, I indicate how some feminist philosophical arguments operate in this way, that is, in the service of the eugenic strategies of this regime.

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