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Stemming the Tide of Normalisation: An Expanded Feminist Analysis of the Ethics and Social Impact of Embryonic Stem Cell Research

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Abstract Feminists have indicated the inadequacies of bioethical debates about human embryonic stem cell research, which have for the most part revolved around concerns about the moral status of the human embryo. Feminists have argued, for instance, that inquiry concerning the ethics and politics of human embryonic stem cell research should consider the relations of social power in which the research is embedded. My argument is that this feminist work on stem cells is itself inadequate, however, insofar as it has not incorporated an analysis of disability into its considerations of the ethical and political issues that surround the phenomena. Thus, I consider claims that disability theorists and anti-disability activists have made about the research. I conclude by indicating that stem cell research must be situated within a cultural matrix that operates in the service of normalisation.

Keywords Disabled persons · Feminism · Regenerative Medicine · Models, Theoretical

Introduction

From history to philosophy, and on to biology, feminist scholars have demonstrated that what in recent Anglo-European societies has passed as value-neutral and objective knowledge and truth is actually situated, interested, and 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 practitioners in the field allege it to be. In particular, feminist scientists (and feminist philosophers of science) have indicated the ways that scientific knowledge has often been used to reinscribe two mutually exclusive natural sexes. They have shown, that is, 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, multi-site 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 [10]. Fausto-Sterling remarks that the ‘discovery’ of sex hormones early in the twentieth century heralded an extraordi-

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nary 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 characterised the socio-cultural environments in which they worked. With each choice these scientists and researchers made about how to measure and name the molecules they studied, they naturalised prevailing cultural ideas about gender [10: 147–159; see also, 17]. In short, as feminist biologists (and others) have demonstrated, the emergence of scientific accounts about sex in particular and human beings in general can be understood only if scientific discourses and social discourses are recognised as inextricable elements of a complex socio-cultural matrix that comprises institutional practices, power relations, scientific arguments and classifications, medical discourses, social policy, and intersubjective relations [25, 26].

In what follows, I assume that scientific and social discourses are imbricated in a complex (and complicated) cultural matrix in order to examine some of the discourses that surround human embryonic stem cell research. I begin by providing a brief description of stem cells and an overview of the issues that have been identified within mainstream ethical debates about research on these phenomena. Bioethical debates about human embryonic stem cell research have for the most part revolved around concerns about the moral status of the human embryo. While questions about the moral status of the human embryo and other questions typically explored in the (mainstream) bioethics literature around embryo research in general and embryonic stem cell research in particular are philosophically interesting and deserve consideration, feminist analysis of these research practices widens the critical lens of inquiry in order to encompass questions that are entirely absent from most mainstream ethical approaches to the research. Thus, I note how feminist bioethicists have indicated the shortcomings of these ethical accounts; and I point out that a feminist approach to the ethics and politics of human embryonic stem cell research would consider the relations of social power in which the research is embedded. The introduction of these feminist arguments enables me in turn to suggest that heretofore feminist work on (human) embryonic stem cells is itself inadequate insofar as it has not incorporated an analysis of disability into its considerations of the ethical and political issues that surround the phenomena. In order to redress this lacuna in feminist and mainstream ethical analyses of embryonic stem cells, I consider claims that disability theorists and anti-disability activists have made about the research. The work of these theorists and activists makes important additions to the feminist and mainstream literature that has been generated on stem cells. I suggest, nevertheless, that this work succumbs to some of the assumptions that underpin the accounts of stem cell research that anti-disability activists and disability theorists aim to oppose. I conclude by indicating that stem cell research must be situated within a cultural matrix that operates in the service of normalisation.

Stem Cells and Mainstream Bioethical Debates About Them

Stem cells can be functionally defined in terms of their ability to self-renew and their multipotency. In mammalian development, embryonic stem cells are considered to be the most multipotent of cells because they readily contribute to all three germ layers of the developing embryo and have the ability to form any differentiated cell type. Stem cells are also located in many adult tissues; adult stem cells maintain the ability to generate all of the cell types required to build the tissue, or organ, of origin [29]. For example, a neural stem cell derived from the embryonic or adult brain has the ability to generate all of the cell types needed to build a brain (astrocytes, neurons and oligodendrocytes). Whether these adult neural stem cells retain the ability to differentiate into other cell types, such as blood or muscle, remains a topic of research and debate [16].

Because stem cells have the ability to generate all of the cell types required for a given tissue or organ, scientists believe that these cells are potential sources of transplantable tissue in the occurrence of (for instance) Parkinson’s disease and spinal cord injury [14: 147; 18: 118]. Indeed, because of this potential, some have hailed the identification of stem cells as the greatest scientific discovery of the twentieth century. There is, however, some disagreement in the scientific literature about whether the different types of stem cells have equal remedial capability. For example, some have argued that although adult stem cells and stem cells derived from cadaveric fetal tissue have been shown to serve at least some of these ends, embryonic stem cells can do so more effectively. Others have argued that there is reason to believe that "knowledge to be gained from studying embryonic stem cells (ES) could not readily be obtained from cells derived from other sources, such as cadaveric fetal tissue and adult stem cells" [22: 139]. Hence, the trend is to focus research involving stem cells on embryonic stem cells.

Embryonic stem cells are typically derived from the inner cell mass of 'spare' embryos remaining after *in vitro* fertilisation (IVF) treatments. They can also be derived from embryos deemed to be 'unsuitable'[1] following preimplantation genetic diagnosis (PGD) or the use of other non-genetic evaluative criteria, such as morphology [9, 19]. Yet, the derivation of stem cells from embryos is the crux of the mainstream ethical debate and controversy that has surrounded embryonic stem cell research, for the extraction of stem cells from the inner cell mass of an embryo requires the destruction of the embryo [7: 131, 14: 147]. Indeed, that embryo research requires the destruction of embryos is the fundamental argument against research on embryonic stem cells for those who hold that embryos have the moral status of persons; and therefore, some arguments against embryonic stem cell research dovetail with anti-abortion arguments. In contrast to those who maintain that early embryonic cells are too unspecialised to constitute a unique entity, those who hold that the embryo has the same moral status as persons argue that human life begins at conception, that all human life is equally sacred, and that the destruction of the embryo during research is tantamount to "the outright sacrifice of a person to scientific knowledge" [22: 137]. That embryos have the moral status of persons is, however, a contested claim, and thus that the destruction of embryos is required in order to derive embryonic stem cells is not universally accepted as an argument against embryonic stem cell research.

Some scientists and ethicists who hold that embryos deserve special respect (though not the full respect afforded to persons) argue that the future of stem cell research is worth the sacrifice of embryos that remain after infertility treatment, though projections about the benefits of the research may not warrant the creation of embryos solely for research purposes [7: 131]. For instance, Patricia Roche and Michael Grodin argue that it would be unethical from the perspective of justice 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 studying embryonic cells. Indeed, these authors argue that there is a moral imperative to engage in research on human embryonic stem cells as a means to alleviate suffering and improve the human condition [22: 139].

In their critique of the 1994 Human Embryo Research Panel (HERP) recommendations to the United States Congress, according to which federal funding should be forthcoming for research both on embryos remaining after IVF treatments and embryos created for research purposes, George Annas, Arthur Caplan, and Sherman Elias argued that it is impossible to resolve 'the embryo research conflict' on the basis of moral properties inherent to the embryo. As these bioethicists put it, "the embryo's moral status derives not only from a property or cluster of properties it possesses, but also from the interests that potential parents and society bring to procreation and reproduction" [3]. Their argument that the circumstances under which conception occurs are morally relevant was designed to secure congressional support for embryo research; that is, these authors distinguished between research on embryos created solely for research purposes and research on embryos created for IVF procreative attempts in hope that abortion politics might no longer stall the embryo research agenda [3].

Feminist Bioethics and Embryonic Stem Cell Research

The claim that the moral status of the embryo derives (at least) in part from personal and societal interests implies the social constitution of that status and hence

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[1] A research survey of IVF clinics in Canada conducted by Françoise Baylis, Brenda Beagan, Josephine Johnston, and Natalie Ram [4] suggests that these 'unsuitable' embryos are those that preimplantation diagnosis has predicted to be 'impaired human beings'. This implication of stem cell research has not been interrogated by disability theorists and researchers who have concentrated their critiques of the research on the aspects of it that I discuss below.

the value-laden character of ethical debates about research on embryonic stem cells. Below I will argue that the moral status of the embryo is not the only dimension of the embryo that is socially constituted and value-laden, for the projection onto the embryo of properties in addition to those implicated in its moral status is also a process of social (and political) constitution. In this context, however, I am concerned to underscore that although Annas, Caplan, and Elias point to the value-laden, socially constituted character of the embryo's moral status, they do not seem to think that embryo research should itself be regarded as a product and an effect of particular interests and values. Indeed, these authors point 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 engaged. In other words, the assumption that underlies their critique of the HERP recommendations is this: While the moral status of the embryo might be a site of social and political contestation, embryo research itself can be a morally and politically neutral endeavour and should be allowed to stand apart from the noise of these public debates.

As I note above, however, feminist scientists and feminist philosophers of science (among others) have shown that the biological sciences are not the disinterested domains that many practitioners in the field purport them to be. With regard to embryonic stem cell research in particular, Lisa Sowle Cahill has remarked that analysis of stem cell research must place embryo research within "global institutions of medicine, biotechnology, and economics" [7: 132]. Cahill has observed that there are 'huge profits' to be gained by corporate investors and the researchers whom they support if stem cell studies can be successfully turned into therapeutic interventions. These entrepreneurial and market investment aspects of stem cell research, she argues, must be made subject to moral restraints, and should come under legal and regulatory limits that enable societies, international bodies and alliances, and transnational institutions (which includes markets and corporations) to retain, or if necessary, reinvent the legal and ethical standards of behaviour that safeguarded both individual rights and the common good in an ostensibly simpler biomedical age [7: 134].

In short, feminist analysis of stem cell research should interrogate the relations of social and economic power that circulate within the socio-discursive matrix that has produced the phenomena of embryo research, in general, and embryonic stem cell research, in particular. As Suzanne Holland (among others) argues, debate over the ethics of research on human embryonic stem cells must not only focus on the moral status of the embryo, but must also take account of the relations of oppression and domination that exist within the social context of which that research is a part. Holland notes that while American bioethicists (among others) have had much to say about the embryo, they have said comparatively little about the effects of stem cell research on women and poor people in the context of the larger system of access to health-care in the United States and the unequal allocation of resources. Given these inequities, she asserts that the 'benefits' of stem cell research are not likely to touch the lives of women and people on the margins; thus, she argues that debate over the ethics of the research must also consider *whose* 'suffering' the research is likely to alleviate, that is, *whom* the research will benefit [15: 73–74; emphasis in the original]. In addition, Holland agrees with Susan Sherwin, who remarks that research should be evaluated not only in terms of the subject of a given experiment, but also in terms of its connection to power asymmetries (as cited in [15]: 73). In a discussion of the ethics of medical research, Sherwin writes: "The political implications of research cannot be overlooked in any ethical review. Thorough ethical evaluation of medical research requires consideration of how the knowledge that is sought is likely to affect those who are especially disadvantaged in society" [23: 170]. In other words, feminist ethical analyses of scientific inquiry and medical research (as well as of the ethical debates that surround these endeavours) must take account of the ways that these contingent social phenomena circulate in a complicated cultural network that comprises practices, power, and public policy.

Holland's remarks notwithstanding, feminist analyses of embryonic stem cell research have, with few exceptions, focused almost exclusively on concerns related to gender, and in particular, on women's reproductive autonomy and the circumstances surrounding egg donation and retrieval. To be sure, some feminist investigations of embryonic stem cell research consider how the development of the research variously threatens the autonomy of *diverse groups of* women and how the circumstances under which egg donation and retrieval take place may vary for these different groups (e.g. [8, 9]). In other contexts, moreover, a number of feminist bioethicists have argued that the development and deployment of genetic testing and reproductive technologies threaten the interests and well-being of disabled people. To date, however, these concerns have not been extended to encompass embryonic stem cell research; that is, none of the feminist work on embryonic stem cell research has considered the ostensible implications of this research for the lives of disabled people. The argument of this paper is that a politically astute feminist treatment of embryonic stem cell research, one that embeds the phenomenon of embryo research in a complicated network of global power relations, policy and profit, would consider the impact of the research on various marginalised and disadvantaged constituencies that it will likely affect, and would consider the impact on disabled people in particular; for the scope of a feminist analysis of scientific or medical research should not be limited to consideration of how the research impacts upon only ‘women’. Indeed, feminist examination of a given state of affairs, problem, or issue that employs only gender as a category with which to analyze that phenomenon recapitulates a number of the egregious flaws of androcentric accounts. When, by contrast, the scope of feminist (bio)ethical analysis is widened in ways that incorporate a number of subjectifying axes of power, what results is a kind of critical examination whose complexity clarifies the stakes of a state of affairs or issue and whose situated approach has far-reaching application and relevance.

When the analytic frame of feminist examination is enlarged from an exclusive focus on the category of gender, furthermore, there are (predictably) correlative shifts in the breadth of what exactly comes to be regarded as problematical, and how it comes to be seen as such. To enable recognition of the deleterious social consequences for disabled people that can be predicted to follow from the expansion of embryonic stem cell research, feminist examination of the research must be informed by a political analysis of disability, and the breadth of the discussion must be widened to encompass claims about genetic technologies, as well as claims about reproductive technologies.

Embryonic Stem Cell Research and a Political Analysis of Disability

Erik Parens has pointed out that in the United States public policy conversations about reproductive technologies and genetic technologies have been conducted at a distance from each other [18]. Because these discussions have taken place in separate domains, he remarks, the extent to which these technologies are converging with each other has gone almost unnoticed by both the public and policy makers. Reflection upon advances in embryonic stem cell research provides an excellent opportunity to identify the point of that convergence. What is an expected outcome of the convergence between human embryonic stem cell research and genetic technologies? Parens suggests that the convergence of reproductive technologies and genetic technologies is a strong indication that the prospect of genetically altering offspring with these technologies is rapidly approaching [18: 116].

Mainstream public and political attention to embryonic stem cells has for the most part focused on their pluripotentiality, that is, their potential to differentiate into most (if not all) specialised cell types and thus to become sources of replacement tissue. The feature of embryonic stem cells that has been largely neglected due to this narrow focus on their pluripotentiality is their capacity for “prolonged undifferentiated proliferation” ([24, as cited in 18: 118]). Antonio Regalado notes that because embryonic stem cells “grow tirelessly in culture, ...they give researchers ample time to add or delete DNA precisely” ([20, as cited in 18: 116]). Citing Regelado in this context, Parens points out that inasmuch as researchers could more easily make precise gene insertions in embryonic stem cells than they can make these insertions in other kinds of cells (including zygotes and somatic cells), embryonic stem cells “are powerful vehicles for germ-line interventions” [18: 118–119]. That is, first a hES cell could, with relative ease, be genetically altered. In turn, somatic cell nuclear transfer (SCNT) could be used to fuse the genetically altered embryonic stem cell with an enucleated egg, and the product of this fusion would be an embryo that will develop into a genetically altered child. As Parens emphasises, therefore, a thoroughgoing consideration of the ethics of embryonic stem cell research should reflect upon the very distinct possibility that embryonic stem cells will some day soon be combined with cell fusion and gene transfer technologies in order “to shape children reprogenetically” [18: 119].

Though Parens’s worries about the eugenic character of embryonic stem cell research are at this time speculative, the expansion of research that capitalises on the pluri- or multipotentiality of embryonic stem cells and their reprogenetic capacity foretells adverse consequences for disabled people, and a feminist analysis of the research should track these. In order to see why this research is particularly threatening to disabled people, we must consider the conception of disability that underlies the motivation to develop the research. Not surprisingly, this conception also underlies the motivation to develop prenatal testing and screening and preimplantation diagnosis. Hence, in some important respects, reproductive technologies and genetic technologies have emerged in tandem, though their ‘convergence’ is only now becoming more evident.

Much of the sensationalism evoked by scientists, ethicists, and policy makers who argue that embryonic stem cell research ought to be furthered revolves around claims according to which the therapeutic interventions that can be expected to follow from the research promise to repair or cure a range of ‘disabilities’. These arguments assume a medicalised model of disability that represents that state of affairs as the inevitable consequence of, and hence in effect equal to, a biological defect or lack; in short, an ‘impairment’. On this medicalised conception, impairments are real entities, that is, intrinsic characteristics or attributes of individuals, which exist prior to, and independent of, social norms, practices, and policies. Several prominent bio-ethicists who assume this conception argue that justice demands the genetic correction or enhancement of embryos and fetuses with ‘defects’ in order that the persons whom they will become can “fully participate in the co-operative framework of society,” where a ‘fully cooperating citizen’ is one whose ‘opportunity range’ is compatible with ‘normal species-typical functioning’ ([6], *passim*). An analogous argument is advanced with respect to actual living human beings who have congenital and acquired impairments (and ‘functional disabilities’).

Disability theorists and anti-disability activists eschew this ‘personal tragedy theory’ of disability because it naturalises and individualises what is actually a social relation of power. In addition, they argue that the aforementioned conception of impairment and disability has an expressivist function, for it puts into public discourse a discriminatory message that disabled people’s lives are not worth living, nor worthy of support. There is a concern that the expressivist function of this medicalised conception could have dire consequences for many disabled people. One question that disability theorists and anti-disability activists have asked is this: If the scientific and clinical hurdles that now plague stem cell research were to be surmounted, and if remedial interventions that utilise these phenomena were to become widely available, would governments introduce policy to make these interventions mandatory for certain disabled people as a way of reducing projected long-term social service expenditures? Indeed, the sort of argument that concerns many disabled people has been made with respect to Deaf people and cochlear implants. Bonnie Tucker has argued, for instance, that Deaf people who refuse cochlear implants should be seen to forgo any claims upon the state insofar as they chosen to remain deaf, rather than get one of these devices [28].

Many theorists and activists who oppose the ‘personal tragedy theory’ of disability advocate a ‘social model’ definition of disability that conceives that state of affairs as the socially constructed form of disadvantage that is imposed on people who have impairments, and that entails their exclusion from full participation in society. In the terms of the ‘social model’ approach, impairments are not intrinsic flaws or deficits that demand to be corrected or eliminated, but rather are descriptively neutral characteristics that are nevertheless a fundamental – and integral – element of human existence. Thus, while Holland thinks that feminists should ask *whose* ‘suffering’ stem cell research is intended to alleviate, anti-disability theorists and activists problematise *what* gets identified as ‘suffering’ in the first place. Social model theorists (and activists) argue that the appropriate means by which to address the ‘problem’ of disability is not to ‘cure’ or ‘repair’ individuals with impairments, but rather to reorganise the social environment in ways that ensure their inclusion in social life. Various disability theorists and researchers have noted that this conception of disability is rarely proposed as a legitimate and authoritative alternative to the dominant scientific and medical views advanced by members of the biotechnological industry and others in the public debates that surround reproductive and genetic technologies.

In "Uniting the Nation? Disability, Stem Cells, and the Australian Media," Gerard Goggin and Christopher Newell assume a version of this conception in order to examine the media representation of disability in recent Australian debates regarding stem cells [13]. For Goggin and Newell, disability is a cultural and political category and space, a dynamic entity produced by social relations which operates as a structuring cluster of concepts, figures and structures in discourses [13: 47]. They regard their research, which is an analysis of over three hundred news and feature items from Australian print media in the period from March to June of 2002, as a fascinating case study of how disability is constructed in discourses of nationhood and biotechnology. Science and technology's centrality to national politics, they note, is evident in this piece of dramaturgy. They point out that the assumptions that underlie the narrative structure of these media representations include the following: First, disability is an individual experience; second, 'people with disabilities' must be acted upon; third, technology is both value-neutral and also inherently good for people with disabilities; fourth, the moral trump card in the debates surrounding biotechnology is the heroic delivery of people with disabilities from the personal catastrophe of disability. In particular, the media representation of disability as a signifier of 'catastrophe' is crucial to securing government funding and endorsement of biotechnology. Indeed, in the coverage of stem cell research and biotechnology, these authors note, 'the social tragedy of disability' is consistently deployed and the technology is promoted as what offers deliverance from this catastrophe.

Goggin and Newell also point out that within the three months of media coverage that they studied, "people with disabilities were almost never quoted as authorities in news stories about stem cells" [13: 52]. When people with disabilities were quoted or reported upon at all, this was usually to deliver a first-hand testimonial about how biotechnology in the form of stem cell research was a means to some sort of 'salvation', either in the form of an improved quality of life or an escape from disability itself. As they explain it, very few dissenting voices were allowed discursive space in which to convey messages on stem cells that differed from those that upheld biotechnology and the Australian government's support for it; therefore, the range of views about biotechnology in general and stem cell research in particular that circulate within disabled constituencies, and which bear some correlation to (for instance) disabled identity formation, the age at which one became disabled, whether one was born with an impairment, the extent of one's association with other disabled people, and so on, were never explored [13: 47–54]. Indeed, in Australia as elsewhere, Goggin and Newell remark, "there has been a conspicuous lack of investigative journalism, as well as media and communication studies scholarship, exploring the nuances and marked differences within the disability community about biotechnology" [13: 51–2].

While the arguments of these and other social model theorists must be given a prominent place in the global discussions about stem cell research, some of the assumptions about disability that these theorists make bear an unexpected resemblance to presuppositions that are generated from within the domains of biotechnology, biomedicine, and most mainstream bio-ethical discourses themselves. For although the former *do not agree* with the latter about the disvalue of an impairment, they are *in agreement* inasmuch as they assume that impairments are real entities, that is, intrinsic properties of individuals, which exist prior to, and independent of, social norms, practices, and policies. As I have argued in another context, 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 circumstances; that is to say, disability actually *precedes* the idea of impairment, which is an idea that provides the justification for the multiplication and expansion of the regulatory effects of disabling practices. Furthermore, impairments are *materialised* as universal properties of subjects through the iteration and reiteration of regulatory norms and ideals about (for instance) human function and structure, competency, intelligence, and ability. As universalised properties of subjects, impairments are *naturalised* as an interior identity or essence *on which* culture acts in order to camouflage the historically contingent power relations that materialised them as natural in the first place. That the discursive object called 'impairment' is claimed to be the embodiment of some natural defect, deficit, or lack conceals the fact that the constitutive power relations that define and circumscribe 'impairment' have already put in place the broad outlines of the forms in which that discursive object will be materialised [25].

In a recent paper, I argued that a particular discourse on 'risk' in the context of genetic counseling and other practices surrounding prenatal testing and screening contribute to the objectivisation of impairment [27]. My argument in this paper is that in the context of stem cell research the discourse of 'cure' that provides the impetus to develop the research contributes to the objectivisation of impairment. In these, and a host of other contexts, 'impairment' is a product and effect – an artifact – of an ever-expanding socio-cultural matrix that works toward normalising the population. For the idea that impairment is an intrinsic characteristic (rather than a subjectifying construct), a stable and distinct category, that is, 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. The aforementioned category of *normal species typical functioning*, which has gained considerable currency in mainstream bioethics, is a case in point. I contend that this category, a category that underpins many recent arguments for the development of reproductive and genetic technologies, is in fact a mechanism of the matrix of power that began to emerge at the end of the 18th century.

The category (that is, mechanism) of 'species-typical functioning' does not originate from within bioethical discourse itself, but rather has been imported from the work of philosopher of science Christopher Boorse (e.g., [5]). Philosopher and historian of biology Ron Amundson remarks that although the use of the word 'typical' in the term 'typical function' seems to suggest statistical assessment – that is, what constitutes the common or usual function – Boorse actually intends the notion to imply the *normal* function of members of a species. Boorse claims that the distinction between 'normal' and 'abnormal' function is an empirically grounded implication of biomedical science. Normal and abnormal function 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 more statistically average an organism's body is for its species, the better the organism will function. The more that the organism diverges from its species average, the worse it will function. Amundson points out, however, that biological theory does not imply the normal/abnormal distinction that Boorse draws. Neither functional uniformity nor the association between statistical typicality and excellence of function is a scientific discovery about the biological world. Indeed, 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 organisation 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 correlation between typicality and functional success is scientifically untenable (e.g., [2]: 107; see also [1]).

When the distinction between normal and abnormal function is recognised as untenable, the ontological status of the category of 'normal species-typical functioning' should be recognised as inflated, evaluative, and suspect. Indeed, the uses to which the category is put in bioethical discourse should be identified as motivated and pernicious. As Amundson explains, 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, and others [2: 103–110]. These normative conclusions imply that disabled people have a lower quality of life (by virtue of impairment) and that such lives should be prevented or remedied.[2] As Amundson puts it, however, these conclusions, and indeed, this entire discussion in biomedical ethics is biased against disabled people and their civil rights interests because philosophers have failed to come to terms with the political conceptions of disability that the disabled people's movement has developed [2: 101].

Rather than an objective biological designation, the category of normal species-typical functioning should be regarded a naturalising mechanism of the form of power that Foucault called *biopower*. Foucault argued that this new technology of power takes as its object life itself, the life of the human *qua* living being, that is, the life of the human insofar as it is a living being. In his lecture of 17 March, 1976, Foucault remarked that this new technology of power – this biopower – that began to establish itself in the late 18th century involves a set of processes such as the ratio of births to deaths, the rate of reproduction, and the fertility of a population. These processes, together with a whole set of related economic and political problems, were biopower's first objects of knowledge and the targets that it seeks to control [12]. In short, biopower is directed at the increasing management and administration of the life of the individual and populations, and with its emergence in the late 18th century, juridical institutions were increasingly replaced with forms of government that guide and manage people through the distribution and prescription of norms. In *The History of Sexuality, Volume 1*, Foucault explained biopower's normalising strategies in this way:

> [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 hierarchise, 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 normalising society is the historical outcome of technology of power centered on life [11: 144].

Not only should feminist and other bioethicists conceive of the category of *normal species-typical functioning* as a mechanism of biopower; they should also recognise that embryonic stem cell research and its cohorts, prenatal testing and screening and preimplantation diagnosis, are technologies of this form of normalising power.

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[2] See, for instance, Dan Brock's remarks in a presentation entitled, "Genetic Testing and Selection: A Response to the Disability Movement's Critique," that he gave to the 10th "Genetic Technology & Public Policy in the New Millenium" symposium in November 2002. Addressing criticisms from the disabled people's movement, according to which he has ignored what disabled people say about their own lives, Brock asserted that "*Our* notion of how good a person's life is [isn't] fully determined by their own subjective assessment." Even with modifications to the environment, Brock claimed, disabled people live with '*real* disadvantages.' Thus, so-called 'severe disabilities' [among which Brock counts blindness and 'mental retardation'] should be prevented with the use of amniocentesis and abortion. The prevention of 'severe disabilities,' Brock pointed out, is not for the sake of a given child, but rather for the sake of less suffering and loss of opportunity in the world. In addition, he claimed that "it's a mistake to think that the social and economic costs are not a legitimate concern in this context." ([21]; emphases added).

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