Vorsprung durch Technik: On Biotechnology, Bioethics, and Its Beneficiaries

NICKY PRIAULX

Bioethics as a distinctive field is undergoing a critical turn. It may be a quiet revolution, but a growing body of scholarship illustrates a perceived need for a rethink of the scope of the field and the approaches and priorities that have carried bioethicists through many heady years of success. Few areas of bioethical practice have been left unexamined, ranging from questions as to the sustainability of the discipline in its current form[1] to the "expertise" of its practitioners;[2] the legitimacy of bioethics in the realms of policymaking; its relationship to philosophy;[3] the purchase of empirical and interdisciplinary method;[4] the relationship of bioethics to the real world;[5] bioethical understandings of the concept of "health"[6] (and methods of attainment);[7] its agenda, priorities, and inclusiveness right up to what might be the overarching question: "What is bioethics all about?"[8] Unsurprisingly, these questions elicit varied responses. Scholars from various disciplines have critiqued fundamental tenets of the "ethics" business, albeit as claims of its "conservatism," "corruption," and its questionable "usefulness" suggest,[9] not always with a charitable or constructive eye. But quite crucially and often overlooked, bioethics *itself* has not shied away from the question as to what bioethics is and what it should become;[10] increasingly apparent is that this kind of self-conscious and reflexive theorizing is regarded as a key priority for taking contemporary ethics forward.[11]

Related to these discussions is the rather thorny issue of the *bioethical problem*. What is a prototype bioethical problem? For me, this is *the* issue that bioethics needs to address to move forward. This entails analyzing which issues are selected for investigation, how those problems are assessed, but in particular, exploring what concerns *generate* bioethical problems (and, very often, their solutions) in the first place. Central to this work is the extent to which a *technocentric* perspective drives bioethics. My claim is that the scope of bioethics has been limited by an excessive focus on problems generated by technology or technological solutions. Mainstream bioethical journals (and, indeed, bioethical monographs) such as Matti Häyry's recently published work, *Rationality and the Genetic Challenge*,[12] readily illustrate the extent to which technology dominates the contemporary bioethical imagination. Concerned with this trend, this article critically explores ways in which the *technological imperative* expresses itself in bioethical literature. Aiming to highlight the difficulties that flow from this, the

thrust of this work is directed toward *enhancing* bioethics. It has the potential to be such a rich field of enquiry, not only by exploring a wide range of social problems, but by creatively addressing those by reference to a range of possible solutions. For sure, technology may be one of these. However, we should be cautious not to overstate the power of technology and, where possible, to explore the presence of other and potentially more fruitful ways of resolving problems. Bioethics needs to take this on board. Although bioethics has been accused of having become "stale and tedious," "disappointingly familiar," and a victim of passing "trends,"[13] my concern is that bioethics as a project of "betterment" risks becoming peripheral with ever-decreasing purchase to the persons and the problems that occupy the real world.

The Technological Imperative

Bioethics has a difficult relationship with technology, perhaps understandably. Because technology has offered solutions to some pressing social dilemmas and transformed many of our lives for the better, one might think it sensible to closely hang on the scientist's laboratory coat to see what she comes up with next. In the context of a deeply troubled world, the future as depicted in *New Scientist* should fill us with great optimism and with no small measure of amazement as to our human capacity to understand and innovate. Whether poised at the edge of finding a cure for Alzheimer's or exploring ways to better protect our environment, we would be doing society a great disservice by *ignoring* science and technology. However, if bioethics seeks to have purchase to the real world, clinging too tightly to the lab coat can be every bit as problematic. To illustrate, I take up two specific problematic instances of the technological imperative. The first is *technological utopia*, which involves uncritically representing technologies as fit for purpose. Even a speedy examination of existing technologies reveals this approach to be problematic. The result is overinflated claims about the capacity of technology to work and the level of control and predictability afforded to us. The second concern is with *neglect of the social*, notably, the extent to which technocentric theorizing misdiagnoses problems through ignoring their social roots; in some cases, technology is offered as *the* solution in circumstances where it would be critical to look in part or in whole to social capital and resources. These issues intersect, but express themselves in different ways in terms of how technology is represented in bioethical thought.

Technological Utopias

Many bioethical works express what seems to be a rather worthy objective, notably, of investigating ways of making *people better* or making *better people*. Conceivably this invites a pretty broad approach to the question of how we achieve greater health, happiness, and the living of the good life. Yet, what this really boils down to in practice can be far more questionable. The fruits of bioethical analysis on some accounts might be marketed a little more humbly as ethical theorizing around "*some* ways of making *some* people better to *some* degree now, but mainly in the future (or if technology fails to develop, not at all)," given the presence of works exploring ethical dimensions of enumerate ways of improving humanity but only by reference to "genetics and medicine at

a more individual level,"[14] or those that preach our ethical obligations to embrace a radical human enhancement manifesto with promises of immortality or superability.[15] Such accounts will surely leave us excited (for good or ill) about the future (and not necessarily ours), but with lingering doubts about what, beyond being boringly mortal across the board, is really *the* problem that serves to occupy so many great minds.

This may seem to present a nasty parody of bioethical concerns; after all, radical sci-fi ethics, it could be claimed, merely constitutes one way of doing bioethics. That is true. And in isolation, there may be no problem at all. The role of science fiction can, as Sarah Chan comments, play a powerful and positive role. Such accounts can facilitate the consideration of "ethical problems that fall outside of our experience"[16] and provide a more comfortable space for exploring difficult ethical issues that do fall within our mediate experience. These benefits cannot be discounted. Issues around immortality, for example, raise ethical issues germane to our current experience in thinking about how we value life and techniques applied to extend it as well as broader issues, including the definition of death. Moreover, aspects of tomorrow's world do slip into the present; in vitro fertilization (IVF) would have seemed like a fantastic possibility before its actual development. But the problem for me is the sheer popularity of this kind of thinking; the "subject-matter of bioethical discussions often borders on the territory of speculative or science-fiction,"[17] often resting on "overstated claims about the marvels that bioscience and biomedicine is [sic] about to achieve."[18]

The faith in future technologies to deliver these marvels or engineer us better assumes a number of things that cannot be assumed, above all that these technologies will actually resolve problems to any sufficient degree. There is no problem with hoping, but that needs tempering with some realism. As de Melo-Martin comments, "Often, proponents of enhancement technologies argue that to talk about very serious risks to individuals, or society, is an exercise in speculation. ... Interestingly, it is not clear why assuming that these enhancements will result in great benefits is not equally speculative, and so why such arguments should not be similarly dismissed."[19]

The presentation of future technologies as fit for purpose has evident shortcomings. Even by reference to how current technologies operate we can question effectiveness in the face of the rather more modest levels of success and control that technology has afforded us. Take for example IVF. If we assume that this provides a cure for infertility, we will be left sorely disappointed. By no means does it offer that, nor an appropriate response to troublingly low birth rates; moreover, it is a costly technology in the financial, physical, and emotional investment it exacts from the state and would-be parents and, more likely than not, for no return. Though considered a mature technology, 75%–80% of treatments fail in each cycle in the United Kingdom. Moreover, if we are looking for a cure for disability, there, too, expect defeat. Technologies, such as prenatal screening, cannot predict or give definitive answers to the question of whether the resulting child will suffer from Down's syndrome, Edward's Syndrome, or neural tube defects. Rather information is presented probabilistically, and, as such, the techniques merely provide "an opportunity to move from complete uncertainty to quantified uncertainty."[20] Preimplantation genetic diagnosis also carries well-documented limitations, including misdiagnoses and nondiagnoses, and, in relation to preimplantation genetic screening, the limitations are even

more extraordinary. Despite its being put into widespread use, there is no evidence to support that the technique increases the chance of a healthy live birth.[21] But, in a more global way, the notion of eliminating disability via technology is an impossible ambition, given that "a considerable proportion of the global burden of impairment is generated by poverty, malnutrition, war and other collectively or individually imposed social processes."[22] Technology has its limits.

Of course, one response to this would be to say that although these technologies may not be perfect (and may never be) or to everyone's benefit, over time, refining our techniques could confer greater advantages and to more individuals. Although an entirely reasonable response, the problem is this: in the face of these known limitations, there is quite a difference between, on one hand, heralding such technologies as *solutions* for problems such as infertility and, on the other, articulating the benefits and limitations of those technologies, defining precisely what it achieves and for whom. The former fictionalizes the present, champions an unattained technological mastery, and airbrushes out the complex risks and limitations. In so doing, it removes a layer of issues relating to risk, uncertainty, and human doubt, all of which are in themselves of great ethical significance. These concerns are amplified when considering *future* technologies. As Rose comments, although many of life's phenomena can be understood as mechanisms, "in most cases we are a long way from being able to re-engineer them at will."[23]

Whether dealing with emerging or yet-to-emerge technologies, our hopes and wishes should be tempered with epistemic caveats, grounded by what is possible, known, and what is not. If we are concerned about the real world, about problems which ail us now, and about finding solutions to "make us better," there needs to be a greater engagement with the fact that technology offers, at best, a very partial solution for *a very narrow range of problems*. If technology offers the prospect of solutions, we would do well to think critically about its limits: notably what technology offers solutions for and to whom. If the aim is really betterment, these vehicles, sometimes fanciful, sometimes utterly science fiction, offer very particularistic ways of making "us" better that seem incredibly divorced from the mundane here and now. In a world beset with problems, where "millions of lives will continue to be curtailed by factors that have little need of fancy genomic medicine or neurogenetics—by poverty, by the lack of good food, pure water, or decent sanitation, by the price of drugs, by AIDS, malaria and much more,"[24] the fascination with "frontier" technological interventions raises serious questions about the extent to which technology can provide solutions, the kinds of problems that bioethics sees, and the extent to which bioethics as a discipline centralizes technology in furtherance of a project of human betterment.

Ways of Making People Better

For those inclined to overspend, as I am, it is tempting to think that more money might resolve a perpetual state of indebtedness. However, the fortune that has come with successive promotions has taught me that tastes and debts merely grow, thus crushing my hopes of ever being in credit. But if one strips away the behavioral aspect of the problem, then more money looks like the right vehicle to

resolve the problem. But, of course, it is not quite that simple. Though lack of money is *a* problem, it is not *the* problem. When we look at it in this way, we see that so many of the problems that ail us are often deeply socially rooted in our behavior, habits, attitudes, and social practices, and this mess can inhibit the identification of easy solutions. However, all too often, technology is presented, whether unwittingly or not, as if it offers *the* solution, and it is this kind of thinking that I take exception to; it risks skewing or masking elements of the problems that we should be most concerned about. But, as I seek to illustrate using two examples, using the problems of disability and inequality, if we ignore the social context, we can seriously mishit on the problem, and the solution*s*.

The Disability Problem: Eliminating and Minimizing Disability

As I suggested above, the notion of eliminating disability through genetic technology or some other discrete medical intervention is hopelessly unachievable. It is rather like the aim to eliminate poverty. Where poverty is defined by income that is less than X% of the national average, there is good reason for thinking that elimination is unlikely. But perhaps we can minimize the incidence of disability and its effects. This is where the problem starts. What do we actually want to minimize and how? Just like the problem of my impecuniosity, the problem can be defined in different ways. Many reading this will be well acquainted with the troubled debates over the medical and social models of disability. What these models actually do is merely to state different versions of the problem. In broad terms, the medical model defines the physical state *of* being disabled as the problem. What causes the inability to do things is the limited body; the disability resides in the person. By contrast, the social model looks at the experience of impairment in fairly neutral terms, as a social fact suffered by a great many of us. It considers why having impairment would necessarily limit our ability to do things. In this respect, our inability to do things (the disability) emerges not from having an impairment but from the social environment that we inhabit, whether by virtue of its construction (e.g., stairs and stories) through our social arrangements and attitudes. Though many of us do or will suffer from impairments, the very architecture of society has been designed for the able-bodied.

Despite the fact that insights from both models could be used to develop a shared agenda around disability, these two models have emerged in diametric opposition. Although "disability is a complex interaction of biological, psychological, cultural and socio-political factors,"[25] bioethicists and disability advocates have vigorously defended their own respective models. Rather than accepting that aspects of the social model reveal important ways by which the impact of disability could be minimized, bioethicists seem more intent upon pointing out its flaws. Disability, they argue, is not purely a social matter, can entail pain and suffering, and it involves inherent limitations. No matter how extensively we reconstruct society, the problem of disability remains. If the issue of disability were a competition, bioethicists would surely win that point. The social model has, as Anita Silvers comments, left disability advocates trying to "persuade the nondisabled world of the comparative harmlessness of many impairments,"[26] and other disability theorists have similarly been critical of the model for "failing to encompass the personal experience of pain and limitation

which is often a part of impairment."[27] Yet, as French explains, the neglect of this dimension may have been politically necessary:

> It is no doubt the case that activists who have worked tirelessly within the disability movement for many years have found it necessary to present disability in a straightforward, uncomplicated manner in order to convince a very sceptical world that disability can be reduced or eliminated by changing society, rather than attempting to change disabled people themselves.[28]

And there lies the rub; the definition of disability and policies developed in response may be fascinating academic stuff for bioethicists, but for the collective welfare of disabled people it is a political and personal matter. If disability theorists have been uncompromising in relation to the medical dimensions of impairment, then it is unsurprising; we possess an ugly history replete with cautionary tales as to the level of social exclusion that can occur when that is *the* dominant way of understanding impairment. The social model of disability arose as a reaction to a biomedical regime under which medical professions "held the power to detain, control and treat disabled people," serving to remove "the experiences of disabled people from the medical map" in pernicious and wide-ranging ways.[29] In circumstances where the social model is threatened by a "resurrection of the medical model in its bio-medical, psychological, and sociological guises,"[30] we should expect and *hope* that disability advocates will step in to defend it.

What is more difficult to understand is why *bioethicists* have been so thoroughly uncompromising; given that it also based on an untenable distinction between the body and the social, why defend the medical model? Why persist in seeing disability as a principally medical–technological problem? For as long as bioethicists persist in *only* looking to technology, their claims of seeking to bring about a better world will always sound unconvincing. Take John Harris's argument that "no one, I believe, would say that the lives of most people with disability are not worth living. All that is claimed is that it would be better not to have a disability."[31] For many, this "rational preference" argument in itself will seem logical and unproblematic. However, given *how* Harris would advocate that this preference is effected renders the "All that is claimed" argument somewhat thin. Insofar as the technological interventions envisaged typically extend to denying life to disabled entities in favor of healthy ones, it is not just a stand-alone claim or personal rational preference. Rather, it is being deployed to justify the implementation of that preference in a very particular way, notably through technology. And that particular way is something that some may rationally prefer to avoid, as Adrienne Asch's comment illustrates:

> For people with disabilities to work each day against societally imposed hardships can be exhausting; learning that the world one lives in con-siders it better to "solve" problems of disability by prenatal detection and abortion, rather than by expending those resources in improving society so that everyone—including those people who have disabilities—could participate more easily, is demoralizing. It invalidates the effort to lead a life in an inhospitable world.[32]

To be clear, I am not arguing against technologies like preimplantation genetic diagnosis and screening or abortion on the grounds of fetal abnormality. The point I am making is that if one really cares about ways of eliminating or minimizing

disability and, above all, about making people's lives better, it need not depend on a technological agenda alone. Indeed, one can go further, it must not.

The Inequality Problem: Ectogenesis

The advent of the contraceptive pill over half a century ago was clearly a momentous technological achievement. The resulting social changes have been so dramatic that its development has been ranked alongside "the discovery of fire, the developments of tool-making, hunting, agriculture, urbanism, scientific medicine, and nuclear energy"[33] whereas others have argued that we now tend to think of two eras, "before and after the pill."[34] At the beginning of the 20th century, the choice for fertile women was stark. Either choose celibacy and exercise sexual restraint or expect pregnancies resulting in possible ill health, loss of life, or more children than one could cope with.[35] As Onora O'Neill comments:

> The physical demands of pregnancy, the long-term demands of mother-hood and the economic obligations of parents all constrained and shaped lives and life possibilities for most people in profound ways: these realities were serious barriers to individual autonomy *however conceived* in many aspects of life.[36]

Described as a "lightning rod," from public health benefits including dramatic reductions in maternal and infant mortality, improvements in maternal health, the pill also delivered a socially "crucial pivot in the liberalisation of sexual attitudes and practices, the medicalisation of birth control and the rise of new feminism."[37] At the same time, the advent of the pill also made credible social and legal conceptions of a right to choose, planned parenthood, and individual autonomy. Women were clear beneficiaries here, in being invested with a means of achieving greater freedom to decide whether or not to bear and nurture children. However, as the women's liberation movement emphasized, the significance of that decisional freedom was not merely about escaping the inevitability of reproduction, but rather in constituting an essential prerequisite to women freeing themselves from male dominance.[38] Central to the aspiration of gaining equality for women, then, has been the acquisition of an identity untied to reproduction. Insofar as technology has contributed to the acquisition of a female biological state that is simply less tied to reproduction,[39] the significance of that development means that a narrative concerning women's position and growing participation in contemporary society would be incomplete without reference *to* technology.

But such a narrative would be just as incomplete by sole reference to technology. Although technology, like the contraceptive pill, can serve to contribute to large and desirable shifts in social practices, we should be careful to explore the role that technology actually plays and what its achievement(s) might be said to consist of. The failure to do so, to repeat the now frequent mantra of the piece, means that we simply misdiagnose the problem (and offer ineffective, pricey solutions). Take for instance, claims that have been made in relation to the possible development of *ectogenesis*, the creation of an artificial womb that would supplant the need for women to carry and give birth to a child:

> Contrary to what many feminists have argued my claim is that women, collectively and individually, should welcome the possibility of nurtur-

ing the embryo and foetus outside the womb for the length of the entire gestation period.[40]

> Since the oppression of women has been made possible by female roles as mothers, because these roles prevented women from having an equal part in communal life, the possibility of ectogenesis would not only free women from pregnancy, but that as it would take away the biggest difference between the sexes, it would also take away the grounds for oppression and eventually, lead to equality. As there would no longer be reason for differential treatment of men and women because of their sex-specific roles, the structures of oppression would, with time, come crumbling down.[41]

Rather than address here what concerns feminists have with ectogenesis,[42] the key issue is the claim that a technological innovation such as ectogenesis could lead to equality between the sexes. Though no doubt well intended, the argument is incredibly naive. It ignores the social, political, economic, and historical factors that drive and perpetuate inequality. It overstates the ability of technology to drive social change. It ignores the already problematic relationship between inequality and biology and assumes that inequality emerges *from* biological difference. Again, this makes the same mistake that bioethicists so typically make in relation to disability; the naturalist fantasy that *biology* limits the individual, when in fact in the case of both disability and gender, society is playing a significant role in constructing those limitations. What is considered to be a ''limitation'' in the first place is an attitudinal matter. For example, living as we do without ectogenesis, the fact of reproduction fails to justify the extent to which men and women have lived such different and unequal biographies. Although reproduction is dependent upon women's bodies to nurture and gestate our future children, the necessary involvement of women is relatively short. Moreover, whether by virtue of contraceptives, through sexual abstinence, or infertility, not all women have children, further begging the question as to why all women are disadvantaged. Given these factors, the social drivers of the problem, a technological solution is most unlikely to lead to the kind of social and economic restructuring that would bring about equality.

The only sense in which ectogenesis could achieve equality for those wealthy enough to access it is through avoiding gestational labor; but that is an expensive means of achieving a no-frills brand of biological equality that women can currently achieve through avoiding sex. Perhaps ectogenesis would offer more choice; but choice should not be confused with equality. Equality should not have to amount to closely emulating the biological function or state of men. Rather, one's gender, with its attendant biological messiness and delights, should make no difference to one's value in society. All of us, irrespective of gender, have varying abilities, different talents, and preferences, but judging a person's worth on their biology alone is capricious. Although ectogenesis might be worth examining for other possible benefits it can offer society, the case needs to be robustly made. But as a solution to inequality, ectogenesis offers no solution. The practices that sustain it are socially constructed and maintained. If equality is about acceptance of difference as a natural and inevitable part of the human condition and working together to shape the kind of world that we want to collectively inhabit, then all of the resources for addressing inequality have long been within our gift. Investing all of our hopes in technology to resolve some of today's pressing problems means that we miss utterly critical aspects of the

problem. Through so doing, we will never find a solution, for we will never have identified the problem in the first place.

Conclusion: What Do Bioethicists Care About?

This work sought to explore what kinds of concerns generate bioethical problems. Another way of expressing the query is to ask, ''What do bioethicists care about?'' If one starts generally with betterment as the aim and identifies inequality or disability as particular problems, it seems unlikely that one will logically arrive at the conclusion that the answer to all of our problems lies with technology. Yet, so often in bioethics, technology is *the* means of advancement. This keenly raises the question as to whether the resolution of existing social problems is really the stuff of mainstream bioethics or whether bioethics is just becoming extremely adept at creating or redefining problems for its own analytical ends. Whatever the answer, in its science fiction quarters, bioethics is suffering from intellectual sclerosis.

If the project of making people better or making better people is ever to be more than an aspiration, then technology has simply been afforded too central a position within the bioethical agenda. Technology itself is not a problem, rather it is the technological imperative that I take issue with. My suspicion is that the focus on the technological made sense when scientific developments that had seemed unimaginable 50 years earlier started to emerge in practice, and with dramatic effect; rather than looking at social dimensions of problems, the promise of technology clearly was so great as to be *the means* of improving our social lot. However, this view now needs tempering. The danger, which I think is being realized in bioethics, is that its social concern for betterment is being defined and limited by the question of what solutions technology can provide, even though we have frequent cause to question whether technology can deliver at all.

The danger of unremitting faith in technology is this: if we uncritically believe it to be the solution, this can shape our way of seeing so that it becomes the lens through which we see the world and its problems. As Nikolas Rose's query so poignantly highlights, our idea of the social world can become incredibly narrow and the beneficiaries we reach a select and privileged audience indeed:

> Why should informed consent in reproductive technology be ''bio-ethical'' and the rising rate of infertility not? Why should the dignity of the person at the end of life be a bioethical issue, but not the massive ''letting die'' of millions of children under five years of age each year from preventable causes?[43]

There is, of course, a broader issue here. In our respective disciplines, we are all, to a large degree, cloistered. For reasons of expertise and specialism alone we focus upon a range of discrete problems. However, as I see it and as others have convincingly argued, bioethics has the opportunity to reinvent itself, to broaden its approaches and scope in ways that more convincingly discern a real desire to make people better and better people, and a great deal more of them. Angus Dawson's argument in favor of drawing upon public health ethics for ''a more coherent and balanced approach to bioethical enquiry''[44] is one such instance and Adam Hedgecoe's call for a critical bioethics that engages the social sciences in order to address what might be best called a socio-theory gap another.[45] Despite dealing with different issues, both articulate the same concerns, notably, that the

current way of doing bioethics "isolates bioethics from practice, undermines the validity of its claims, and reduces its contribution to policy debates surrounding bioethical topics."[46]

None of this is to argue that bioethics should abandon technology, merely that it needs to develop a healthier relationship with it, to temper and socialize it. Insofar as there is a need to explore the ethical issues arising from developing technologies, bioethicists will need to engage far more critically with issues that are too frequently swept aside. If the risks of a technology can be argued as being speculative, then very probably the benefits can be too. If technology only addresses symptoms of larger social problems for which a broader or alternative response needs to be devised, this will sound far more plausible in any event. Sadly, most problems are not amenable to single solutions. To address them requires great political will, vast investment, and a huge reconfiguration in the way that we organize society. As such, rarely will problems be addressed speedily. In this respect, an honest appraisal of what technology can do and, critically, an exploration of its limits will make such a difference to contemporary bioethics. And it is a complementary task: to make a difference to the real world, what bioethics needs to do now is to explore its own limits.

Notes

1. Dawson A. The future of bioethics: Three dogmas and a cup of hemlock. *Bioethics* 2010;24(5): 218–25.
2. Gesang B. Are moral philosophers moral experts? *Bioethics* 2010;24(4):153–9.
3. O'Neill O. *Autonomy and Trust in Bioethics*. Cambridge, UK: Cambridge University Press; 2002.
4. Hedgecoe AM. Critical bioethics: Beyond the social science critique of applied ethics. *Bioethics* 2004;18(2):120–42.
5. Achard D. Applying philosophy: A response to O'Neill. *Journal of Applied Philosophy* 2009;26(3): 238–44.
6. Berlinguer G. Bioethics, health and inequality. *The Lancet* 2004;364:1086–91.
7. Rose N. Will biomedicine transform society? *Kritikos* 2006;3.
8. Häyry M, Takala T, eds. *Scratching the Surface of Bioethics*. Amsterdam: Rodopi; 2003.
9. As Ashcroft notes, many of the critics of bioethics are at least in part "competing for similar territory." Ashcroft RE. Bioethics and conflicts of interest. *Studies in History and Philosophy of Biological and Biomedical Sciences* 2004;35:155–65 at p. 156.
10. See, for example, note 8, Häyry, Takala 2002.
11. See, for example, Ashcroft R. Futures for bioethics? *Bioethics* 2010;24(5):ii.
12. Häyry M. *Rationality and the Genetic Challenge: Making People Better?* Cambridge, UK: Cambridge University Press; 2010.
13. See note 1, Dawson 2010:218.
14. See note 12, Häyry 2010:3.
15. See, for example, Harris J. *Enhancing Evolution: The Ethical Case for Making Better People*. Princeton, NJ: Princeton University Press; 2007.
16. Chan S. More than cautionary tales: The role of fiction in bioethics. *Journal of Medical Ethics* 2009;35(7):398–9 at p. 398.
17. See note 16, Chan 2009:398.
18. Rose N. *The Politics of Life Itself*. Princeton, NJ: Princeton University Press; 2007:79.
19. de Melo-Martin I. Defending human enhancement technologies: Unveiling normality. *Journal of Medical Ethics* 2010;35:483–87 at p. 484.
20. West H, Bramwell R. Do maternal screening tests provide psychologically meaningful results? *Journal of Reproductive and Infant Psychology* 2006;24(1):61–9 at p. 66.
21. Harper J, Coonen E, De Rycke M, Fiorentino F, Geraedts J, Goossens V, et al. What next for preimplantation genetic screening? A position statement from the ESHRE PGD Consortium Steering Committee. *Human Reproduction* 2010;25(4):821–3.

22. Shakespeare T. *Disability Rights and Wrongs*. London: Routledge; 2006:34.
23. See note 18, Rose 2007:79.
24. See note 18, Rose 2007:255.
25. See note 22, Shakespeare 2006:37.
26. Silvers A. On the possibility and desirability of constructing a neutral conception of disability. *Theoretical Medicine* 2003;24:471–87 at p. 475.
27. See note 22, Shakespeare 2006:36.
28. French S. Setting a record straight. In: Swain J, Finkelstein V, French S, Oliver M, eds. *Disabling Barriers, Enabling Environments*. London: Sage; 1993:24.
29. Humphrey J. Researching disability politics, or, some problems with the social model in practice. *Disability & Society* 2000;15(1):63–85 at p. 63.
30. See note 29, Humphrey 2000:63.
31. See note 15, Harris 2006:98.
32. Asch A. Why I haven't changed my mind about prenatal diagnosis: Reflections and refinements. In: Parens E, Ashe A, eds. *Prenatal Testing and Disability Rights*. Washington, DC: Georgetown University Press; 2000:234–57.
33. Montagu A. The pill, the sexual revolution and schools. *Phi Delta Kappan* 1968;49:480 as cited in note 34, Maogoto, Anolak 2009:3.
34. Maogoto JN, Anolak H. The pill: A rose ringed by a thorn bush? Past and present ramifications. *Australian Journal of Gender & Law* 2009;2; available at http://ssrn.com/abstract=1559898),2.
35. See note 3, O'Neill 2002:51.
36. See note 3, O'Neill 2002:51.
37. See note 34, Maogoto, Anolak 2009:4.
38. Bender L. Teaching feminist perspectives on health care, ethics and law. *University of Cincinnati Law Review* 1993;61:1251 at p. 1263.
39. Though allowing many women to exert greater control over their reproductive lives, the reliability of the pill is often overstated, leading to the flawed belief that pregnancy is now effectively optional.
40. Takala T. Human before sex? Ectogenesis as a way to equality. In: Simonstein F, ed. *Reprogen-Ethics and the Future of Gender*. London: Springer; 2009:187–95 at p. 187.
41. See note 40, Takala 2009:191.
42. See, for example, Murphy J. Is pregnancy necessary? Feminist concerns about ectogenesis. *Hypatia* 1989;4(3):66–84.
43. See note 18, Rose 2007:31.
44. See note 1, Dawson 2010.
45. See further note 4, Hedgecoe 2004. Hedgecoe notes how bioethical representations of ethics can contrast so profoundly with ethical reasoning on the ground.
46. See note 4, Hedgecoe 2004:121.