The Ethical Integration of Brain Machine Interfaces: Toward the Cyborgization of the Disabled

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Technological innovations as such are neither good nor evil; it is the user derived for them that create moral implications.
(McGee and Maguire, 2007, p.291)

A cyborg, or cybernetic organism, is an entity of both organic and mechanical parts (Clynes & Kline, 1960). The “border war” (Haraway, 1991, p. 151), relation between organism and machine is coming to a close as we near what I interpret to be a long awaited victory. Once conceived as only a figure of science fiction, now, at the beginning of the 21st century, we find ourselves startlingly close to the realization of such science fictional icons as Isaac Asimov’s android/positronic brain and the cyborg. Perhaps, even more startlingly, we need no longer speak of the “cyborg” as a “mythic”, “fabricated” creature (Haraway, 1991, p. 150). Here, at the brink of actualizing a very real, inseparable union between human and machine, we can redefine, not only what Donna Haraway has called “women’s lived experience”, but indeed, the lived experience of all human beings forever; no longer reliant on the “tradition of reproduction of the self from the reflections of the other” (Ibid).
Both the representation and tangible conception of the cyborg are very much supported by a Transhumanist/Posthumanist view of the “condition” of being human as being in some ways, repressive of our species’ potential for greatness (Hollinger, 2009). Transhumanists, thus, encourage a more powerful and long-lived configuration of the human subject as defined by a kind of “techno-evolution” that frees us of such bodily limitations and vulnerabilities (Hollinger, 2009). Of these bodily limitations and vulnerabilities, this examination takes up, arguably, the most obvious and oppressive: the condition of physical disability. The subject of using cybernetic treatments/implantation to treat physical impairments is of particular importance due to a binary stance emergent from interdisciplinary disability studies and Transhumanist writings, as the disciplines disparately approach human physicality. While Transhumanists would advocate for the overall advancement of human physiology via technology, it is uniformly accepted across disability studies that disability should not be framed from the position of medical impairment, but rather from a social model perspective that places the onus on society to improve conditions for people with disabilities (Charlton, 1998; Goering, 2008; Hayes, 2007; Hughes & Paterson, 1997; Kuczewski 2001).

Many direct and indirect criticisms of biotechnology emerge from critical disability studies discourses, which frame such modification as a societal imposition of control, and unrealistic standards of normalcy, on any social group that is “different” from the status quo (Cromby & Standen, 1999). Such criticism is common to a vein of disability studies addressing “disability culture”. Disability culture may differ across geographical settings, but is universally understood as having evolved out of a shared history of oppression and has been succinctly defined as “a set of artefacts, beliefs, expressions created by disabled people … to describe life experiences” (Brown, 2001, para. 4). Academic discourse on disability culture notably advocates for the societal acceptance, valuing, and accommodation of individuals with disabilities and, thus, predominantly resists the medicalization of “normacy” – the notion that there is a pre-subscribed standard of normalcy for the function and appearance of the human body – and the mainstreaming of individuals with disabilities (Brown, 2001; Frank, 2003; Swartz, 2008).

In light of these route-discourses that debate the merits and ethics of the cybernetic bodily modification of people with disabilities, it becomes necessary to ask whether or not the arguments presented by one side take precedence over the other. The answer to this question bears directly on the issue of how ethical guidelines can be constructed and implemented surrounding the appropriate uses of cybernetic technology towards a “cyborgization” of people with disabilities. Where technology is concerned, technological uses are typically at issue, and not so much technological development as it can be reasonably stated that in a democratic society, technological advancement cannot easily be
halted. It is thus fitting that the issue of policy be examined using consequentialist ethical frameworks, which can be used to scrutinize potential consequences to actions in gauging the actions’ ethical or moral merit, in order to weigh contemporary disability theory against Transhumanist ideologies in a discussion of cyborgization.

It is necessary to begin this discussion with the understanding that the “social model” of disability directly contrasts with the “medical model” of disability, which emphasizes medical diagnosis and treatment. Under this model, an individual’s physical/physiological condition is something to be fixed or cured (Birenbaum, 2009; Brown, Hamner, Foley & Woodring, 2009; Hayes & Hannold, 2007). However, many disability scholars counter that there is an inherent danger in defining “impairment” as an “embodiment of some natural defect, deficit, or lack, legitimis[ing] the fact that the constitutive power relations that define and prescribe terms like impairment have already put in place broad outlines… that persist in order to legitimise the governmental practices that generated it in the first place” (Tremain, 2008, p.104). In other words, this position asserts that, in naturalizing physical impairment, governing societal bodies are able to distinguish blame from enacting necessary physical and attitudinal modifications that would help to facilitate the full integration of “people with disabilities”. I hypothesize that the oppositional stance to cyborgization, as inferred from the social model of disability, is thus rooted in divergent perspectives on the intentionality behind it, and expectations surrounding the positive or negative consequences that would follow from its implementation. Specifically, while Transhumanism advocates for the use of cyber/technological treatment and enhancement toward attaining full human potential and happiness (Bostrom, “Transhumanist Values”, Mood, Energy, and Self-control section; Hughes, 2004), many disability scholars argue that it is a means of “normalizing” society and perpetuating homogeneity as an imposition of autocratic socio-political control. In my discussion, I propose that cybernetic, bionic human modification is not only a morally acceptable choice, but is also highly desirable toward enabling and empowering human potential and improving the condition (physical, mental, material, social, cultural etc.) of every human being. However, I would like to emphasise that, while it is true that every individual stands to benefit from the advancements of cybernetic bio-implants, my reference to the term “condition” in this essay refers to those physical disabilities, as caused by genetic abnormality or injury, that actually limit and/or restrict baseline, normative biological function, i.e. mobility, visual, auditory and other perceptual or motor biologically built-in human capacities.

The basis for this proposal is an examination of autonomy, not so much as it pertains to the decision-making process in electing to make use of cybernetic treatment, but rather as it pertains to the aim of attaining the greatest possible physiological state of “normalcy” and individual human freedom
(through Transhumanist guiding principles toward cyborgization), as a springboard to the realization of individual aspirations, potential, and experiences. It is precisely because of this treatment of autonomy that I will be examining the ethics of cyborgization within a consequentialist framework. That is, in weighing the potential consequences to cyborgization, it is shown that resistance to the dissolution of “disability culture” only further engenders a self-propagating, unhealthy reliance or dependency upon outside forces, such as attendant care providers and mobility communication aids. Such dependency is only compounded by the persistent surveillance (deprivation of privacy) that accompanies the needs of the physically disabled body. The inescapably oppressive environment created through conditions of dependency and surveillance lead to a psychological state of “learned helplessness” that effectively immobilizes, or pacifies, an individual who perceives that they have little or no effect over life choices and circumstances (Díaz-Berciano, de Vicente, & Fontecha, 2008; Greenwood, 2008). It is for these reasons that disability culture can never fully attain the goal of its genesis: the increased social independence and freedom for all people with disabilities.

To the extent that society must bear the onus of making itself more accessible for people with disabilities, I will not be using the term “people with disabilities” in this analysis. This term is both erroneous and insufficient, as all individuals in society have both abilities and disabilities. Although my study focuses primarily on biomedical barriers to societal inclusion, I would like to return to using the phrase “handicapped individuals” in order to highlight impediments to full inclusion in, and interaction with society, as a result of continued physical and attitudinal barriers that do not give way to, and make room for “differences”. Among these barriers are those discourses that resist the technological treatment of handicapped individuals. However, it is equally important to note that while society maintains an environment of disablement, the cause of impairments that is the focus of this paper, whether neurological, chemical, motor-sensory; as a result of genetics or injury, falls within the realm of restricted biological function. As such, this form of disablement necessitates the complete, and even more persistent attention of medical/scientific research and technology. Since autonomy is used here as the primary criterion in discussing/analyzing ethical considerations in the cyborgization of handicapped individuals, the necessity of re-integrating the medical model of disability into existing society-centred models to form a socio-medical model can be demonstrated as providing a much-needed balance between medical and sociological theory toward improving the quality of life of individuals that have been handicapped, first by biological deficit, and a second time by societal attitudinal and physical barriers.

As the scope of this analysis is too narrow to allow me to address the full spectrum of possible cybernetic implants, I will focus this discussion on a consideration of the ethical issues emerging from the biomedical
implementation of the Brain Machine Interface (BMI) or Brain Computer Interface (BCI). BMI establishes a direct communication pathway between the brain and an external device (Lebedev & Nicolelis, 2006). A great deal of potential has been shown in the evolution of this technology since it was first demonstrated in 1999 (Ibid). The development of BMI technology was initially aimed at assisting, augmenting or repairing human cognitive or sensory motor functions. BMI technology can either be non-invasive or invasive. Non-invasive BMIs use something like an EEG to record brainwave signals and transmit them by way of a complex reading/translation of a subject’s voluntary intentions and decisions through brain wave activity measurements; however, this method has rather limited usage (Ibid). Its first successful use enabled a man with advanced Amyotrophic Lateral Sclerosis (ALS) to learn to control computer spelling in order to communicate (Ibid). Another study enabled a tetraplegic patient to learn to grasp objects with his paralyzed hand (Ibid). Invasive BMI technologies developed from a series of pioneering studies in the 60’s and 70’s whereby rhesus monkeys learned to control their cortical neurons voluntarily, with the feedback device that indicated rate of neural firing (Ibid). A few years later, Edward Schmidt determined that it might be possible for these voluntary commands to be used to control a prosthetic limb in severely paralyzed patients (Ibid). The same kind of technology was later discovered to be effective in transmitting tactile stimuli to the brain as well (Ibid). Although there are many different kinds of cybernetic alterations, BMIs have been selected as the focus of this paper because they represent a fundamental shift in communication and mobility for all people, but especially for people with disabilities who may have restricted mobility and speech/communication capability. As much of this analysis deals with the formation of culture—specifically disability culture—and criteria for individual autonomy, BMIs represent a new avenue for free speech and full democratic participation in collective governance and the “participation in the production and distribution of culture” (Balkin, 2005, p. 298-299) that is more universally accessible.

Toward the aim of assessing the acceptable conditions for the implementation of BMI technologies, Act Consequentialism may provide a useful framework within which to determine what is to be gained from the BMI-mediated integration of machines and biology against what is to be lost from disregarding this technology or delaying its use. The basic tenant of the Act Consequentialism framework “holds that the permissibility of an action is based on how good its consequences are compared with those of its feasible alternatives” (Vallentyne, 2007, p. 23). Thus, in order to make this determination, it is imperative to first outline what the necessary requirements are of effective BMI integration. First of all, for this technology to be fully effective, the brain must undergo “experience-dependent plasticity” – it must assimilate the cortical chip implant and/or prosthetic limb as if it were a part of the
individual’s own body, which is done using multiple artificial feedback signals, that are derived from pressure and position sensors on the prosthetic limb (Laughlin, 2000; Lebedev & Nicolelis, 2006). This is similar to the way in which cochlear implants and artificial eye lenses come to be represented in the sensory and motor areas of the brain, bypassing the defective nerve channels (Laughlin, 2000). The benefit is obvious: full integration of BMI technology can restore motor and perceptual function, through the implementation of a hybrid device that links “the central or peripheral nervous system to nonbiological artificial components” (Lucivero & Tamburrini, 2008, p.450), that are usually referred to as “neural interfaces”, whether they be actual computers that display thought through text or image, or a prosthetic limb that is manipulated through a decoding of thought-based intentionality (Ibid). This level of integration constitutes what Laughlin has referred to as a “Stage IV Cyborg”, that is, where technology is used to replace and augment the composition of the central nervous system through modification of “structures mediating the cognitive aspects of emotion, as well as imagination, intuition, perception, rational thought, intentionality, language etc. - all of which require higher cortical processing” (2000, p. 295).

There are clearly many implications to this kind of neural restructuring, not the least of which deals with the extent to which we will be able to maintain our “humanness” – all that which we believe makes us uniquely human and autonomous (discussed in more depth later). Moreover, neurological changes may be irreversible as such neural restructuring might not be easily removable. Further, it has been shown that children assimilate this form of technology most easily as, at a young age the brain is most “plastic” since it is still in the developmental stage (Laughlin, 2000). Discussion of who should regulate such a decision, or how such a decision can be made, is beyond the scope of this analysis because of the socio-political complexity involved in the design and implementation of child-welfare policies that are exclusively decided upon via proxy authority. However, it is worth noting that delving into this matter leads to issues surrounding the ability of parents to give informed consent for medical procedures, and the authority of the law to bypass parental consent.

Another useful element in considering the consequences of BMI use lies with the enhancement/treatment distinction regarding cybernetic human modification. The pressing questions are: does such a distinction actually exist and if so, how much of a distinction? Traditionally, an enhancement/treatment distinction is often used in determining useful and ethical interventions with the intent of treating disability and disease in contrast to those interventions meant to provide individuals with entirely new, non-health-related, enhancements (McGee & Macguire Jr., 2007). However, more recently, it has been pointed out that such a distinction can be problematic as, “in reality, there is no bright line separating therapy and enhancement” (McGee & Macguire Jr.,
It appears obvious that, any treatment used to restore a function that never existed to begin with (as is the case with many physical disabilities that are present at birth), and technological treatments that are enhancing the body’s performance, render it impossible to establish a normative function baseline (Cerqui & Warwick, 2006). How can we gauge the average strength of a limb or memory capacity, in order to bring it up to a “normal” state of functioning (Cerqui & Warwick, 2006; McGee & Macguire Jr., 2007)? Moreover, if BMIs are being used to literally plug someone in to a computer for communication purposes, this would still constitute an enhancement or extension of normal capabilities, as surely such an individual would possess or develop advantages in cyberspace/on the Internet not possessed by other human beings. As Warwick has stated, “the biggest advantage of all for machine intelligence is communication,” because of the superior manner in which “machines can communicate around the world, with very little/no error, using standard languages, with millions of messages being successfully transmitted and received in parallel” (2003, p. 132).

This capacity for communication, built into our human physiology would have immense impact, not only on dialogue and interaction, but it may actually also eventually render bodies largely superfluous. Perhaps the most indicative representation of this phenomenon was seen in the assimilation of BMI technology in both rats and primates, who learned to communicate with, and control, an actuator without needing to use their own limbs. Astonishingly, once the animals had learned to communicate with the actuator using only brain activity, they ceased using their own limbs to attain what they desire (i.e. food or an object) (Lebedev & Nicolelis, 2006, p. 56-58). The potential consequences of using similar technology on humans are not far from the imagination. Images from Disney’s recent animated film, WALL-E, come to mind: depictions of largely disembodied human beings that have become reliant upon the technological instruments that have replaced bodily functioning, resulting in obesity, muscle atrophy, and an absence of physical human contact. A society so reliant upon technology would be unable to function in the case of technological breakdown. Yet, one could say that the body itself is a kind of “machine”, in constant need of maintenance and repair. In repairing one kind of impairment (disability), are we effectually creating another? Would we be better or worse off for relying on machines and computers, instead of on our own physiology? What would a disembodied society look and feel like? These are all questions worth exploring; however, it would appear that no definite answer can be given until we are on the brink of experiencing this new mechanized and computer-enhanced corporeal state.

Even if a treatment/enhancements distinction were possible, it is not easy, nor is it typically desirable, to limit the uses of technology. There was a time when only a few people were privileged enough to own computers, or even cars, as such commodities
were viewed as a luxury until they became socially, politically and economically standardized. Moreover, BMI technologies will likely be prohibitively expensive for most people until they can be mass-produced and implemented, like any other form of technology. This is particularly problematic since those who would benefit most from this technology (handicapped individuals) lie within the lowest socioeconomic bracket in society (Atkins, 2006; Cara, 2006; Chouinard, 2001). However, once standardized, it is more likely that the government will begin to subsidize/fund such procedures for handicapped individuals in the same way that the government funds computers as “essential communication devices,” in provinces such as Ontario through the Assistive Devices Program (ADP). If BMIs have the potential, however, of giving some people an advantage over others, how could this potentially skew our societal class system (Warwick, 2003)?

The cyborg, as an icon of Postmodernity, effectively decentres the subject (human) through demonstratively and causally linking human action to the technology we use. The fundamental premise is that if something or someone (i.e. human) is unable to do something autonomously, it/they cannot be fully responsible for the abetted action (Hanson, 2008). This phenomenon begs the question: is more at stake than economic destabilization as ideas of morality shift, along with the decentring of the human subject through a facilitation of extended agency (Best & Kellner, 1991; Hanson, 2008; Selinger & Engstrom, 2007)? That is, as Selinger and Engstrom (2007) point out, human beings are changed when they use a particular technology, like a car or a gun. It is difficult for us to pre-suppose what could happen once the inorganic is inextricably fused with the organic. Indeed, it is suggested that "we have arrived at the stage of regarding ourselves as both technological subject and object, transformable and literally creatable through biological engineering" (Morgan as cited in Sharp, 2000, p. 297). If this is true, it would be extremely difficult in the future to develop regulations and guidelines surrounding proportion of organic to inorganic material. In other words, how much organic material must be present in the body for a human to still be considered “human”? What is important, for the time being, is the recognition that the “moral responsibility” adopted by the device or technology granting extended agency is necessarily implicated in the consequences, whether detrimental or beneficial, of any actions with moral import. Hence, as BMI technologies could conceivably change perceptions of morality and, indeed humanity, they have been questioned on the basis of their potential to strip people of their autonomy (Lucivero & Tamburrini, 2008). There is something paradoxical in the notion that such systems, designed and implemented with the intent of enabling and restoring the personal autonomy of handicapped individuals, may, in fact, present a new potential threat to autonomy, in general (Talwar, Shaohua, Hawley & Weiss, 2002).
The critical importance of ensuring individual autonomy carries with it the position that one’s physical and mental integrity must be maintained in order to preserve individual dignity (Lucivero & Tamburrini, 2008). Issues of mind control and liability policies come to mind. With questions already surfacing surrounding issues of an individual’s ability to give informed consent, technology like BMI interfaces can be seen as further complicating this debate. If people become hardwired into computers, how would we ever be able to distinguish influences and their origins? Would it become possible for a single individual to control the minds of many through direct interface, or do we risk the opposite: becoming faceless and voiceless automatons, lost to a sea of a single consciousness, like the Borg depicted in Star Trek? The potential for mind-control assisted terrorism can already be perceived in such early experiments as the development of remote-controlled laboratory rats and the advancement of military BMI-flown airplanes (Lebedev & Nicolelis, 2006; McGee & Mauguier Jr., 2007).

The militarization of cyborg technology signifies the possibility of maximizing intelligence while escaping the human body’s imperfections by means of positing the body as possessing defects that must be eliminated (Singer, 1996). Interestingly, this is the same position taken by bioethicists who delineate the disabled body as a locus of disease and malfunction, in need of scientific reparation. Does cyborgization afford humanity greater autonomy or less? Moreover, difficulty exists in identifying whether or not “the human user/component of a hybrid bionic system [is] the same person before and after being so interfaced with artificial devices” (Lucivero & Tamburrini, 2008, p. 451). Whether identity remains the same, or is fundamentally changed, the question persists as to whether the life experience of someone with a handicap has been improved through the use of BMIs, and to what extent? While it may be impossible and even counterproductive to make every choice based on deliberations of possible outcomes (Vallentyne, 2007), we can look to a “maximizing act consequentialist” approach in order to help recognize that, while it may not be possible to fully gauge the consequences of BMI integration, we have a responsibility to do our utmost in order to improve the well-being and happiness of all individuals (Vallentyne, 2007).

Unfortunately, gauging well-being and happiness persists as yet another challenge in discussing the life experiences of handicapped individuals, as, for one, these are largely subjective “quality-of-life” assessments. Bioethicists have often been accused of dismissing the life experience of someone with an impairment as being inevitably “bad”, or much worse than living a “normal” life (Crow, 1996; Goering, 2008; Kuczewski, 2001; Ho as cited in Tremain, 2008). I feel that disability studies scholars have unsuccessfully attempted to critique bioethicists for their claim that individuals with physical impairments may deny or lower their expectations of what is possible for them and for accomplishment in life, resulting in false perceptions of happiness (Goering, 2006).
Within philosophy, the claims about disability, which mainstream bioethicists advance have hitherto been regarded as authoritative, objective, rational, and disinterested. Such claims rely upon a biomedical conception of disability, which construes it as a natural disadvantage, a property or characteristic of certain individuals, which can be eliminated through repair, correction, or prevention of such individuals (Goering, 2006, p. 104).

Ho (as cited in Tremain, 2008) argues that in order for bioethicists to recognise the value of disabled people’s lives, the ideal of autonomy must be reconceived in relational terms, but in relation to what? Do we not all live in a shared societal environment, cognizant of “haves” and “have-nots”, in relation to our fellow citizens? This notion is supported by Foucault’s, and other eliminatavists analysis of the construction of human experience as unsupportive of any naturalistic perspective of “person” that is separate from constructed social experience (Foucault, 1980; Lucivero & Tamburrini, 2008). By this, it is meant that human beings cannot so easily rationalize their particular, insular, situation as either objectively “good” or “bad” – their point of “rational” reference is their comparison and analysis of their conditions with those individuals in their immediate surroundings. If we accept that our body parts are tools that shape our human intention through effectively limiting or expanding our range of experiences as a result of biological and/or perceptual constitution, and if we further acknowledge that care for the self is a precondition for being responsible to care for the other (Foucault, 1980), it becomes clear that biologically limited function results in bodily experience that impacts our life experiences and potentials for experience.

This view coincides with the consequentialist determination that an act (i.e. implementation of BMI technology) is only right if it maximizes some function of both capabilities and happiness (Nussbaum, 2000). That is to say: if a handicapped individual has been enabled physically via the extended capabilities afforded by cybernetic treatments, their perceptions of their own capabilities will expand to include a greater range of activities that can be undertaken independently, i.e. athletic, vocational, academic, sexual, etc. This perception of one’s own independence and/or autonomy means that the individual will be far less likely to develop a psychological state of learned helplessness, and will possess a greater potential for happiness. Within the biomedical perspective, disabilities are seen as inherently bad, regardless of whether they are accompanied by pain or loss of pleasure; indeed, because the potential for happiness can never be fully met under conditions of often extremely limited physical capabilities. What of other consequentialist models?

Consequentialist moral theories that focus on actual or objectively probable consequences are often described as objective Consequentialism. In contrast, consequentialist moral theory that focuses on intended or foreseeable consequences is usually described as subjective Consequentialism. Consequentialist moral theory that focuses on reasonably foreseeable consequences are then not
subjective insofar as they do not depend on anything inside the actual subject’s mind, but they are subjective insofar as they do depend on which consequences this particular subject would foresee if he or she were better informed or more rational.

If we reasonably assume that an individual is only rational insofar as they retain a level of autonomy, then it is important to look at BMI integration from a postmodern framework that decentres the individual subject (Hanson, 2008). This concept of “decentring” explains that the whole notion of the individual or subject, as conceptually independent from the author of action is, in fact, the construction of a particular era rather than a constant throughout history (Foucault, 1980). We no longer think of the individual as an objectively stable and sovereign ego (see Kant and Descartes), but instead, as a construction laboriously put together over time and circumstance (Ibid). This admission forces the recognition that particular institutional arrangements (like “disability culture”) as good or bad depend upon humanism – “that which centres human beings as the measure of all things” (Parker, 1998, p. 504). A prime representative of humanism in social theory is methodological individualism: the stance that all social action should be explained in terms of the motives, dispositions and so on of individuals (Jones, 2000). No one has stated it more succinctly than Anthony Flew:

All social collectivities are composed of individuals, and can act only through the actions of their components. Whatever is said about any mass movement, organized collectivity, or other supposed social whole, must at some stage be related and in some way reduced to discourse about the doings, beliefs, attitudes and dispositions of its components. Who actually did and thought what; and what led them to act and to think, as in fact they did, and not otherwise? (1995, p. 61-62)

The social model of disability then has clearly evolved out of a mass movement to change societal oppression of handicapped individuals in the absence of comprehensive, prudently effective, alternatives. Emphasis falls on the interfacing disabling characteristics of physical environments that remain largely unchanged (even in the face of discriminatory claims), rather than those of the body, backed by the well-intended, though misinformed, rationalization that “states of the body that are not statistically normal and do not threaten life or well-being [ought to be] treated as evidence of human diversity rather than as pathology” (Goering, 2008, p. 127). Goering adds that, “people with impairments are like everyone else” (2008, p. 128), in their struggles to “make the best of their lives, given their individual aspirations, eccentricities, and limitations, and in the context of social and institutional structures that can be oppressive and are often very slow to change” (Ibid). I am compelled to vehemently reply, echoing Rose Galvin (2003), that there is something inherently dangerous and troubling in separating impairment/disability from the pain and suffering that often accompanies it, “as untouchable areas of experience, which disallows theoretical analysis from getting
underneath our skins to the source of some of the most distressing facets of our oppression” (Galvin, 2003, p. 679). Indeed, if we extend our theoretical analysis to include utilitarian ethics, as they have predated and influenced consequentialist frameworks, it is important to ponder Mill’s (1863) assertion that intelligent human beings are acutely sensitive to the dialectics of pain and happiness (pleasure) as:

A being of higher faculties requires more to make him happy, is capable probably of more acute suffering, and certainly accessible to it at more points, than one of an inferior type; but in spite of these liabilities, he can never really wish to sink into what he feels to be a lower grade of existence (p.49).

The question, thus, remains: does living with a physical impairment constitute a “lower grade of existence?” (Ibid). While Goering (2008) and others may claim that there is no clear evidence indicating a correlation between a higher quality of life/expanded options and the absence of physical impairment, I would counter that there is plenty of evidence for this correlation. Illustratively, numerous psychological studies uniformly indicate that early-onset/congenital mobility disabilities readily manifest in isolating conditions that result in: social stunting; lower self-esteem; and greater difficulty forming and maintaining Platonic and, especially, romantic relationships – particularly for women (Antle, 2004; Chen, Brodwin, Cardoso, & Chan, 2002; Palikarova, 2007). With this in mind, there is no question as to the validity of Singer’s (2001) claims that an individual with a disability would sooner choose a simple and inexpensive treatment for his/her impairment, rather than deciding to live with that impairment, regardless of how accessible and amenable society has become in adapting itself to any given disability. Do advancements in cyborgization and BMI technologies finally provide the prospect of this magical cure?

Analysis of the act consequentialist framework tells us that overall utility is the criterion or standard of what is morally right, or morally ought to be done, regardless of whether the agent can tell in advance whether those conditions are met. In this case then, how can we tell if, or to what degree, the lives of handicapped citizens would be improved through the use of BMI technologies, regardless of self-reported current satisfaction with life?

The answer to this question cycles back to the issue of autonomy as it pertains to the individual and to the construction of culture, in this case, “disability culture”. The articulation or imagining of a disability culture, seen as “a kinship based on identification of shared understandings of common life experiences” (Neath & Schriner, 1998, p. 218) has mammoth implications. In the interests of relationality, how much autonomy is possible within the context of a disability culture that may have lost sight of why it was created in the first place – to resist social oppression and improve the living conditions of handicapped individuals who have historically been marginalized first because of biological limitations. It is arguable that, ontologically, as a marginalized minority, people with physical handicaps are unique, as physical impairment can affect anyone at any time in their life – it does not discriminate/is uniform in
its imposition of limitations. This imposition of limitations is compounded by those lingering social oppressions accompanying characteristics of gender, race, personal religion, etc. Moreover, the group affiliation of disability culture is based on the collective notion that there is such a thing as “disabled identity” which is seen as both positive and empowering (Galvin, 2003). The formation of such identity politics has been seen as an inescapable necessity for oppressed peoples, who share similar conditions of existence, as they are offered a safe-haven—a place from which to bemoan the affliction of injustices and within which to find the strength to implement social change (Humphrey, 1999). However, problems arise when activists begin to rely on this wounded identity, which is based on “an oppressive category imposed by hegemonic discourse that does not challenge the notions upon which it is based” (Galvin, 2003, p. 677).

In this manner, identification with “disability culture,” like identification with types of Feminism can take on a more exclusory form through naming practices and categorization, rather than being unifying and mobilizing (Butler, 1990; Haraway, 1999). This coming into being from a place of wounded identity takes on the characteristic of a self-affirming position that only re-inscribes incapacity, powerlessness and rejection (Nietzsche as cited in Galvin, 2003). It is important to keep in perspective that this cultural network was, in fact, designed with the intention to no longer be necessary one day in the future, when handicapped citizens finally achieve their goals of full inclusion and enablement (Galvin, 2003). As Paterson and Hughes (1997) have argued: the social model of disability, in ignoring the social construction of the body, comes dangerously close to echoing the biomedical model that it seeks to critique as unnecessarily, and damagingly individualistic:

The social model—in spite of its critique of the medical model—actually concedes the body to medicine and understands impairment in terms of medical discourse. To recapture this lost corporeal space without returning to the reactionary view that physicality determines social status, the social model is required to mount a critique of its own dualistic heritage and establish, as an epistemological necessity, that the impaired body is part of the domain of history, culture and meaning, and not—as medicine would have it—an ahistorical or, pre-social, purely natural object” (p. 326).

What is needed, then, is a means of acknowledging and utilising the shared experiences of handicapped citizens by “deconstructing rather than celebrating them, challenging rather than clinging onto them, coalescing around them to gain insights into how to release ourselves from their grip, rather than tightening it ever further by not believing that release is possible” (Galvin, 2003, p. 681). Returning to Consequentialist frameworks for insight into the possible abolition of a “disability culture” that may or may not exist to begin with, we may look at the consequences from an expected consequentialist perspective, in which our assumptions of the benefits we believe will transpire in integrating this technology must outweigh the harm in remaining inactive/static, in our progress. However, if we admit that scientific progress is inevitable we are left only
with the precarious possibility of controlling the facilitation of cyborgization.

To this possibility, I venture to put forth this precarious notion: no one has asked handicapped individuals if they wish to be born with, or acquire, the ailments/disabilities that leave their productivity and degree of happiness largely at the mercy of a crippling society. The future is, indeed, upon us, and only what we decide to do with it is within our grasp. But I for one would sooner find it acceptable to be forced to be “superhuman,” than to have forced upon me the limitations of my biologically deficient physiology. As Laughlin has astutely pointed out: “the development of the cyborg seems as likely as the invention of the toaster” (2000, p. 296). Standing still does not appear to be an option, and if we accept this to be true, then it would follow that a part-machine, part-organic brain, held as the “epicentre of moral and ethical decision making” (Warwick, 2003, p. 136), may foreseeably and fundamentally change our concept of “morality”, ethical discourse, and decision-making practices into something entirely foreign to what we have, hitherto, been accustomed (Warwick, 1998; Ibid). If Haraway’s (1985) contention is correct that the post-human cyborg is instrumental to the long-range survival of the human species, we have little left to ponder. If cyborgization constitutes an inevitable step in our evolutionary progress as humankind, it carries with it the hope that this next evolutionary phase can achieve an equilibrium and balance of tensions between organisms and the environment, necessary to utilize our technological resources on one hand, without compromising too drastically the integrity of our “humanness” (Laughlin, 2000). In Jean Piaget’s concept of the structure of a cognitive system in terms of the transformations it undergoes in defining and redefining information organization, it is this process of thought-organization that enables the maintenance of a consistent identity while allowing for changes that help to adapt the system to the environment (as cited in Laughlin, 2000).

Thus, in accepting a position of inevitability and, indeed, progress as it pertains to the evolution of humankind in a species trajectory to adapt to an ever-changing environment, it becomes necessary to resolve tensions emergent from the binary approach to cybernetic implementation in terms of developing ethical guidelines in order to help facilitate what I would argue are imminent and immediate concerns regarding the development and uses of biotechnological modification. In doing so, it is equally essential to fuse the medical model of disability with existing society centred models toward the formation of a socio-medical model, which can synergize the function and aim of society and medicine to improve the quality of life of individuals that have been handicapped, first by biological deficit, and a second time by societal attitudinal and physical barriers. Moreover, I would argue that resistance to the possibilities of scientific achievement and progress are simply further examples of how society can disable and handicap its citizens. I can only attest to the weight of evidence supporting the need for an inclusive, and
postmodern, model of “disability” coincident with the recognition that having a physical impairment does limit opportunity to be mobile/communicative and fully productive in society. This fact illuminates a negative correlation between quality-of-life or “happiness” and impairment, not only because of the restrictions faced by the individual with the impairment, but even more so, because of the stagnation in attitudinal perception formulated within society as resulting from the lack of visibility of handicapped citizens.
References


