

Morphological freedom: what are the limits to transforming the body?

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Introduction

Elizabeth Parrish

Elizabeth Parrish, CEO of BioViva, may be the first case of self-experimentation gene therapy. She claims to have inserted extra genes for producing the proteins follistatin (causes muscle growth) and telomerase (involved in regulating ageing) at a clinic outside the US (Regalado 2015). Whether this will improve her health and/or slow her ageing is unknown at present, and even a positive result might be random chance – this is not a scientific experiment. But what is it?

As she points out, she is suffering from a lethal hereditary disease called “ageing”:

“I am patient zero. I will be 45 in January. I have aging as a disease” (Parrish 2015)

Most societies acknowledge that people who have a terminal illness may try radical and unproven treatments because they have nothing to lose. Parrish may have many healthy years ahead of her, so the experiment may be unwise, but unwise is not unethical.

In many ways what she did is more similar to Victorian era medical self-experimentation where suffering for science was not only a way of gathering data but showing ones devotion to one’s research. There is a self-conscious signalling element here. Yet, how is this different from other publicity stunts or showing one’s devotion to a company, product or technical approach?

Many experts were disquieted by Parrish’s experiment, mainly because of the very real fear that an early setback may taint the field. The widely published death of Jesse Gelsinger in 1999 slowed down development of gene therapy by more than a decade. But to Parrish the issue is urgent, and cautious probing may not give the information needed: “There is no time like the present. We can’t wait another 20 years... Starting now is the time to start.” (Socrates 2015)

Paul Erdős

Paul Erdős was one of the most productive mathematicians ever, well renowned even though he was regarded as eccentric even by mathematics standards. For the last 25 years of his life he used amphetamine (beside his prodigious coffee consumption) while solving problems:

“Ron Graham, a friend and fellow mathematician, once bet Erdos five hundred dollars that he couldn’t abstain from amphetamines for thirty days. Erdos won the wager but complained that the progress of mathematicians had been set back by a month: “Before, when I looked at a piece of blank paper, my mind was filled with ideas,” he complained. “Now all I see is a blank piece of paper.” (Hoffman 1998)

Here the stimulants were tools for achieving energy and perhaps clarity or creativity. While it can be argued that he was a great mathematician without them, clearly he felt he was a better mathematician using drugs¹. It also brings to the forefront that at least for mathematics we do not care how results are discovered as long as they are true and beautiful.

Todd Huffman

Todd Huffman implanted a magnet in one of his fingertips, making him able to sense magnetic fields by the microscopic movements of the magnet as it reacted to external fields (Laratt 2004; Moore 2007). While he anticipated to sense many static magnetic fields, he discovered that he was more sensitive to devices like motors and current-carrying cables that generated oscillating fields. He can tell apart the experience of magnetic and mechanical vibrations (for example when touching a frying pan on an induction stove).

“The purpose of the implant was to expand the sensory capabilities of the natural sensory system into something not normally perceived by humans.”²

He did not expect a practical use for the implant, merely the exploratory use to discover what magnetic vision is like. The result was also outside the instrumental realm:

“This has led to a conceptual shift in how electromagnetic devices are distributed. The spatial organization of electromagnetic devices is hidden from view because to satisfy visual aesthetic preferences, often being placed below counters, behind panels, and inside boxes whenever possible. With the extension of the somatosenses into the magnetic domain device placement becomes transparent where is previously was hidden.

The benefit of insight into electromagnetic device distribution is difficult to analyze, as it leads to a fundamental shift in conception of objects in reality and not any easily judged change.”

While the implant has been discussed in the news, the primary interest was never self-promotion nor an instrumental benefit. Here the self-experimentation is pure experimentation, open to unbidden and serendipitous possibilities. Todd did not do it blindly: he explored potential risks and took steps to ameliorate them (including training himself to do an emergency surgical removal if it were needed).

Neil Harbisson

Neil Harbisson is colour-blind, but has developed a device that converts colour into tones. Installed in a camera on an antenna on top of his skull, it continually produces a sonification of the colours of the environment. The antenna is surgically attached, and he has successfully argued the device is part of him. (Else 2012; Davies 2012)

Like other sensory substitution devices continual use makes the user able to interpret the signals; the brain adapts to the stream of input and develops representations that are meaningful. This is likely how Todd's implant also functions. A small part of his somatosensory cortex has reformatted itself to represent his magnetic sense. Whether Neil Harbisson's colour sense is anything like a colour-seeing person's is anybody's guess; the question may be whether it even matters.

¹ Examining his productivity in terms of papers and noted contributions suggests that his productivity reached at its maximum level in the late 1970s, continuing at a higher level than before 1970 until his death in 1996. However, many confounding variables make causality hard to prove.

² Todd Huffman, personal communication.

Stelarc

Stelarc is an Australian performance artist. In the 70s he performed suspensions, where he hung himself from hooks through his skin above streets around the world, but by the 90s he had turned towards extending, invading and changing his body as art. Works include (among others) a third arm and walking platform controlled by signals from his body, allowing signals on the Internet control his muscles, an art exhibition performed inside his stomach, and growing an artificial ear on his arm.

“The most significant planetary pressure is no longer the gravitational pull, but the information thrust. The psycho-social flowering of the human species has withered. We are in the twilight of our cerebral fantasies. The symbol has lost all power. The accumulation of information has lost all purpose. Memory results in mimicry. Reflection will not suffice. THE BODY MUST BURST FROM ITS BIOLOGICAL, CULTURAL, AND PLANETARY CONTAINMENT.”
(Stelarc 2000)

Stelarc is not alone in experimenting with his body for art. There has been a long story of electrical experiments mixed with performances (Elsenaar & Scha 2002). The French artist Orlan has used plastic surgery on herself as an art project. Genesis Breyer P-Orridge explored mixing appearance and gender with his/her wife. Aimee Mullins has explored choreography and fashion enabled by her lack of lower legs. In Marion Laval-Jeanet’s “May the Horse Live in Me” she injected herself with horse serum. The artistic aims are divergent, but often the body modification is no mere surface detail but integral to the point of the art:

“My work is a fight against nature and the idea of God... the inexorability of life, DNA-based representation. And that’s why I went in to cosmetic surgery; not looking to enhance or rejuvenate, but to create a total change of image and identity. I claim the issue of the body, its role in society and in future generations, via ourselves for this problem.” (Orlan, in documentary *Synthetic Pleasures* (1995))

Body performance art often creates scandal deliberately, seeking to test the moral ground and demonstrate the fragility of cultural consensus positions. It can explore new terrain where the rules are unknown because they are yet to be made (Goodall, 1999). Performance artists like Orlan and Stelarc are extending the body in order to extend morality (Gray 2002)

Erik “The Lizardman” Sprague

“The Lizardman” has reshaped his appearance using tattoos, tongue splitting, sharpening his teeth, and implants under the skin to appear like a human lizard. It has been a long-running personal project involving a great deal of pain and effort:

“Why have you transformed yourself via various body modification processes?”

My physical appearance is part of a transformation project I began as an undergraduate working in body based performance art.

What is the transformation project?

While in college I hit upon the idea of using body modification procedures (initially tattooing) for a body based art piece that would explore the idea of what it means to be human from a linguistic standpoint. I was working with philosophy of language and it occurred to me that some of the principles put forth by Wittgenstein in his later works offered an interesting potential for exploration in relation to the transformation ideas I had been working with in art. Broken down it goes something like this: (1) Wittgenstein

suggested that one way in which we are able to apply one term to many different objects is because they share a sort of "family resemblance" (2) Focusing on how this principle related to the use of terms like 'human being', 'person', etc in the sense that people identify others as humans more based on observation of surface physical characteristics and behaviors I decided to modify those aspects of myself in manner which would significantly differentiate me from other 'human beings' (3) In order to achieve this differentiation I chose to use permanent body modification procedures because I felt that a permanent commitment to the artistic statement was preferable if not necessary." (Sprague 2013)

The point of being the Lizardman is to be different from others, to break the human "family resemblance". When he states "I am a professional freak" he both refers to his job – he is involved in freak show and counterculture events – and that he has made an existence out of being different, seeking to be the Other.

The body modification community encompasses many people who change their bodies in ways that do not conform to mainstream aesthetics (Gump 2010). To many participants the experience is emotional and even spiritual:

"What are the benefits of tongue splitting? On a quantitative level the benefits are probably none. It's hard to come up with a solid objective reason but, really, we can say that not only about most bod mod activities, but most elective activities that humans undertake in general.

...

Many people as well report on the spiritual benefits of tongue splitting. It's very hard to explain; it's one of those "you just had to be there" stories. To put it simply, the tongue is one of the most immense nervous structures in your body. We have incredibly fine control over it and we receive massive feedback from it. When you dramatically alter its structure and free yourself of the physical boundaries your biology imposes, in some people it triggers a larger freeing on a spiritual level. (Larratt, 2003)

Note the lack of instrumental benefits and the existential effects of experiencing a changed body. This appears to be in part because of the learning effects of modifying the body:

Body Modification forces an individual to become aware of the many details of his/her body. One needs to learn about his/her body, how the body responds to stimuli, and how the body heals. Immediately after being modified, the individual must carefully care for his/her modification and vigilantly assist the body in its healing process. Through the modification and healing process, an individual becomes closely acquainted with the physical nature of his/her body and his/her mental and emotional responses to it. (Anonymous, 2006)

Deviating too far from social mainstream can be costly, especially if it is an irreversible change. The irreversible nature of body modifications makes them significant and identity-affecting: were they reversible their meaning would largely be lost. Asking people change their bodies to socially conformant states is to ask them to change their identities to be socially conforming.

An era of morphing bodies?

Modification of bodies beyond merely restoring health is going on all around us. Plastic surgery, sports medicine, and preventative medicine are large fields. Transgendered people are increasingly visible and accepted. We are used to glasses and vaccines. People take natural remedies, thinking they will not just cure but enhance. (Naam 2005; Moore 2007)

The fact that Oscar Pistorius, Aimee Mullins and Alex Minsky are not just admired but can get advertising and modelling contracts tells us something profound about our society's acceptance of *some kinds* of morphed bodies: marketers would never approach them if they did not expect to get return on investment by a positive public reaction.

Enhancement, extensions, expression

Human enhancement is usually interpreted as an increase in function or efficiency of some capacity, e.g. Parrish's health enhancement, or Erdős's improved cognition. While different definitions of enhancement abound, the enhancements all serve to improve a desired aspect of life. However, there are technological modifications of the human that do not merely amplify capacities but enable new abilities. Such modifications are *extensions* in new directions rather than *enhancements* of existing capacities. The new senses of Huffman and Harbisson are of this quality.

Current enhancements and most direct enhancements in the foreseeable future do not extend human capacities beyond the limits of our species: beating the evolved design is a significant challenge, and many enhancements involve complex trade-offs (Bostrom and Sandberg, 2008). Extension can relatively easily go beyond the species-typical human range by adding new dimensions: *any* form of magnetic vision is far beyond the previous human range simply because there was no range of human magnetic vision.

Extensions can certainly have instrumental uses, be it to replace lost senses or to perform a job better. But the true uses of an extension may become visible only when actually used. The cellphone, an external extension of the human, did not just provide more communication, but a new form of presence that enables new forms of social interaction and organization. Neural implants have led to philosophical and existential reflections (e.g. (Warwick 2003; Chorost, 2005)). If there is beauty in certain magnetic field configurations it can only be appreciated by experiencing it, not inferring its possible existence. Extensions are to their nature experiential, in that they require us to develop a new subjective awareness in order to use them.

Beyond extensions are pure expression and self-creation, such as the art of Stelarc or the Lizardman. Their meaning can be public or private, but it is not objective or instrumental.

Drawing lines?

Humanity has reached its current position thanks to its ability to manipulate nature technologically. But humans are a part of nature and can hence be manipulated. As our ability to perform such modifications grow, the number of possibilities increase and the threshold for experimentation becomes smaller.

That does not mean everything that can be done will be done widely. While it is impossible to prevent something possible from being done sooner or later – there is always somebody who will try – the real issue is whether it will become widespread and a part of culture. Reproductive cloning may well happen but it looks unlikely to become popular in our current culture regardless of what the laws say. Many possible enhancements will remain mere possibilities.

The challenge is to delineate what we want to stay mere possibility and what we tolerate, accept or even promote as part of our cultures.

The concept morphological freedom

Morphological freedom has been defined as the fundamental right to freely modify (or not modify) one's body according to one's desires (Sandberg 2001).

This perspective draws on libertarian views of rights (Machan 1987) and transhumanist views of self-transformation (More 1993) and self-ownership (More 1998). More originally defined it as the *ability* to “to alter bodily form at will through technologies such as surgery, genetic engineering, nanotechnology, uploading”, but in the following we will instead focus on the moral *right* to do so or not³.

Morphological freedom as a right can be seen as a consequence of the right to one’s body combined with the right to liberty (where the right to one’s body follows from the right to one’s life). In order to flourish as humans we need others to respect our bodies, but also respect our freedom of action. Some of these actions in a biotechnologically advanced society will involve modifying our bodies, and hence the more fundamental rights imply morphological freedom. Parrish is explicitly invoking self-defence when she motivates her experiment.

There are many meanings of “rights”: legal rights of various kinds (from international law to formal or informal national codes, with varying levels of enforcement), established social norms, or normative moral principles such as fundamental rights (applicable to a person since they are a person), natural rights (applicable because of facts of the world) or divine rights (imposed by God). The normative rights are universal and egalitarian: applicable everywhere, everywhen, and the same for everybody. Bentham famously dismissed the idea of natural rights as “nonsense on stilts” and there is a general scepticism today about rights being fundamental norms. Still, systems of norms to protect the flourishing of people appear to be an attractor state of human self-regulation.

While there may be doubts about the ontological nature of rights, it is fairly uncontroversial that if such things exist – even as just cultural constructions aimed at protecting humans – there would be a right to life and liberty. Morphological freedom hence would tend to be entailed to some degree.

Morphological freedom also appears to be so intrinsically tied together with personhood that it becomes inalienable: it cannot be removed from a person without removing an important aspect of what it means to be a person. We are biologically changed by our deliberate personal actions (e.g. learning a new skill produces definite changes in the brain; preventing change prevents learning) and many body actions have deep links to identity and self-definition (e.g. changing appearance, gender reassignment) (Weber 2000). If being a deliberately self-changing being is part of being a person, then inalienable morphological freedom entails.

Morphological freedom, expressed in the Hohfeldian system, is both a liberty right (the person has a freedom to do certain things with their body) and a claim right (others have a duty to not interfere)⁴. The liberty is limited by other moral duties or obligations. Note that expressed this way morphological freedom is a negative right: others have no moral duty to assist me if I wish to modify my body. Were it a positive right I would have a moral claim on others to support this action. As discussed below, this approach has been challenged from a disability rights perspective since without a positive component the actual right to determine one’s body has little meaning.

³ Obviously any moral right to do X requires the ability to perform X (“ought implies can”). This makes morphological freedom expand over time as body-affecting technologies emerge. This diachronic nature is not more problematic than, for example, that what is contained in the right to freedom of speech is changed by the appearance of new media.

⁴ There are two further “Hohfeldian incidents” making up a right beside these two: the power to alter the one’s liberty and claim (a person can waive the non-interference of others, for example by going to a doctor, or appoint somebody to represent their interests), and the immunity of others altering one’s right (when the person does no longer consent to the medical treatment they can withdraw permission).

While personhood and existing within a social/ethical framework are required for holding and exerting morphological liberty, there are moral patients who may lack capacity, moral agency or other properties necessary for the full right but nevertheless enjoy protection of their bodily rights. The archetypal examples are children or mentally disabled people: while they cannot wield their liberty fully, others have a moral duty to both protect them and insofar it is possible help their interests. How strong this duty is, what people patients have a valid claim on, as well as what categories of beings are moral patients, depends on other ethical considerations. Such considerations form a (strongly contested) ethical boundary for morphological freedom.

Accepting morphological freedom as a right does at first not appear to help us judge limits of bodily modifications. However, this is because the bare rights framework does not imply much without a grounding.

Grounding morphological freedom

Patrick D. Hopkins performed a valuable analysis of how to ground a right to enhancement (Hopkins 2008). He argues that there are three strategies in the discourse on rights that can be used to get a right recognized as fundamental or natural:

- That the right conforms to human nature. This requires showing that it fits a natural end.
- That the right is grounded in interests. Rights help us get the kinds of experiences or states of the world that we (rightly) care about.
- That the right is grounded in our autonomy.

Examining these groundings for a right to enhancement, he notes that the current discourse on autonomy is often an unspecific demand to be allowed to do whatever we please as long as others are not harmed. It does not give much guidance about what is a good enhancement or not. It is however possible to draw on the more rigorous considerations of autonomy in deontological or consequentialist ethics to get a rational or practical autonomy concept. Such a concept also has stronger implications for morphological freedom: changes that undermine autonomy contradict the foundations of the right, and are hence impermissible⁵.

Interest-based grounds for rights base them on their ability to help humans flourish; typical lists of interests humans are assumed to have include “the preservation of life, health, bodily integrity, play, friendship, classic autonomy, religion, aesthetics, and the pursuit of knowledge”. Hopkins notes:

“For defending enhancement, then, the goal would be to explain how enhancement would in fact be a reasonable and meaningful way to pursue the satisfaction of recognized interests. Although bioconservative critics often see enhancement as a kind of repudiation of traditional human values, we can see that the kinds of things enhancement might provide are very much in keeping with traditional understandings of worthwhile, reasonable human values and interests. The most fundamental of interests – the preservation of life – is certainly pursued by life extension. The pursuit of knowledge is obviously relevant to cognitive enhancement. Better health through organ replacement or cybernetic implants is too obvious to mention. And we can fairly easily make the case that specific forms of enhancement can address interests of friendship, bodily integrity, play, aesthetics, autonomy, and even I think religion ... – in general, all the things that have been recognized

⁵ Note that one can voluntarily reduce one’s freedom of action while retaining rational autonomy. Ulysses binding himself to the mast, or Todd losing the ability to go close to MRI machines because of his implant, both give up certain possibilities in order to gain others they expect to be more meaningful.

as providing worthwhile and fulfilled lives. Enhancement, then, is not freakish; it is not a repudiation of value; it is the pursuit of value.”

Here the limit of morphological freedom is what defeats the interests of the person trying to enhance. While somebody may wish to permanently decrease their cognitive capacity it is actually against their interests in nearly all cases⁶. Enhancements that make bodily integrity impossible would be outside morphological freedom. Extensions may be problematic in this account, unless we motivate them through the curiosity or the need for exploration.

Human nature arguments may feel most archaic, but as Hopkins notes, transhumanists and bioconservatives are actually allied against social constructivism in this area. Both agree there is some form of essential human nature that is not culturally created or changeable through institutions, language or politics; if it were not, then biomedical enhancements would be an unnecessary tool for achieving what could be achieved more easily culturally.

Indeed, transhumanists often claim self-change is a core part of human nature.

“Far from being unnatural, the drive to alter and improve on ourselves is a fundamental part of who we humans are. As a species we’ve always looked for ways to be faster, stronger, and smarter and to live longer.” (Naam 2005)

This echoes Mirandola’s *Oration on the Dignity of Man* (1486), where the God-given plasticity of humans is at the root of our dignity.

The fundamental disagreement between transhumanists and bioconservatives is what components of humans belong to a sacrosanct human nature and what is potentially changeable. Often the case of changing human nature is overstated, since most debated enhancements are firmly outside anything ever considered essential human nature: few argue that forgetfulness, sleep or having a particular physical strength is what makes us human – at most they are small parts in the typicality of humans, but the essence likely belongs to more lofty aspects such as being rational yet fallible beings, moral agents with particular emotional drives, free will etc. When Fukuyama invokes the “Factor X” that provides the essence of humans and must be protected (Fukuyama 2003), he invokes a watered-down version of the soul, and worries that it might flee if treated wrong just like the imaginary savage fearing cameras would steal his spirit. Protecting unknown entities that have no observable effects seems to be a weak defence against actual reasons to enhance: if something changes human nature it ought to be very visible.

However, one key aspect of human nature that clearly must be retained in the transhumanist account is self-modification. The openness of the human paradoxically defines a firm limit on what may not be changed.

Other approaches to morphological freedom

Standard medical ethics

From a standard medical ethics perspective, morphological freedom is all about autonomy and capacity. The other Beauchamp principles - non-maleficence, beneficence and justice - seem to imply mostly issues of how this deals with the medical profession and healthcare system.

“Western views of autonomy tend to allow people to do what they wish with their own bodies, up to some unstated point.” (London and London, 1997)

⁶ The exception may be terminal sedation.

But one might argue there is a metaprinciple of cost-risk/benefit acting here: certain enhancements are too risky to be undertaken rationally, and one should hence not do them. But benefits can be very subjective when dealing with extensions, so it is hard to tell how to judge this. This problem shows up in scientific self-experimentation (see section below).

Socially constructed within different domains.

Another approach is to say that morphological freedom has rules that are socially constructed within different domains. In sports the only acceptable form is traditional training and diet, while in performance art it is whatever achieves the artistic aims, and in science it is subjected to research ethics. The problems are (1) why these rules and not others? It all becomes pretty arbitrary, and it is hard to see how to condemn a group that decides to follow other rules. (2) Ethics tries to find overarching rules for good behaviour: are there really none applying here? (3) How do we handle *deliberate* conflicting overlaps of domains, such as cyborg art? (Goodall 1997)

If we accept this as a motivation for morphological freedom, it becomes a very circumscribed freedom, dependent on various cultural domains. It also leads to a further question of whether we have a freedom to create new cultural domains. What does it take to create something like medicine, sport or psychoanalysis? Can anybody do it? What about making a variation of another cultural domain? While an eminently promising sociological set of questions, they do not give much ethical, legal or practical guidance.

Need for exploration

Morphological change is by its nature uncertain. It involves modifying a complex adaptive system, and the expressed goals and values of the modification may not be the same that in the end are discovered to have been achieved. In order to learn enough to do it safely or in order to achieve certain ends information is needed, but this information can only be acquired by experimentation. Further, since there are potentially endless possible modifications that can be done, there will always be an information deficit.

However, bodily trial and error is very compatible with fundamental freedoms of self-expression, self-definition and exploration. It is a literal example of J.S. Mill's "experiments in living":

"As it is useful that while mankind are imperfect there should be different opinions, so is it that there should be different experiments of living; that free scope should be given to varieties of character, short of injury to others; and that the worth of different modes of life should be proved practically, when any one thinks fit to try them." (Mill 1869)

By allowing a wide range of experiments valuable information can be learned that will benefit future experimenters and less daring users. This is a robust practical reason to allow and support morphological freedom, but also suggest that its users might have a social obligation to document their experiences.

Right to explore

A related approach is to view it as a right to explore the larger realm of (post)human modes of being. This was used by Nick Bostrom to derive his set of transhumanist values (Bostrom 2005):

"The range of thoughts, feelings, experiences, and activities accessible to human organisms presumably constitute only a tiny part of what is possible. There is no reason to think that

⁷ For example, if the goals of medicine are not compatible with having enhancement, is it possible to start another human activity "schmedicine" that has different goals, compatible with enhancement? (Parens 2014)

the human mode of being is any more free of limitations imposed by our biological nature than are those of other animals. In much the same way as Chimpanzees lack the cognitive wherewithal to understand what it is like to be human – the ambitions we humans have, our philosophies, the complexities of human society, or the subtleties of our relationships with one another, so we humans may lack the capacity to form a realistic intuitive understanding of what it would be like to be a radically enhanced human (a “posthuman”) and of the thoughts, concerns, aspirations, and social relations that such humans may have.

Our own current mode of being, therefore, spans but a minute subspace of what is possible or permitted by the physical constraints of the universe It is not farfetched to suppose that there are parts of this larger space that represent extremely valuable ways of living, relating, feeling, and thinking.”

Exploring this space of modes of being requires morphological freedom. From this and a set of necessary conditions (global security, technological progress, wide access) he then derives transhumanist values.

Bostrom notes that this exploration is not just exploring for states of high value given *current* dispositions, but also states whose value at present are hidden from us but we would want to want if we were properly acquainted with them. We may simply at present be unable to clearly recognize them without enhancement extending our deliberative capacities.

Duty to approach posthumanity

An even more radical view is that we have some form of duty to approach posthumanity, either because the gradient of value points this way or because there is some form of collective telos. Ideas like this can be found in the work of Nikolai Fyodorov, Teilhard de Chardin, Frank Tipler, and Ray Kurzweil (Young 2012; Tipler & Barrow 1986; Sandberg 2014). One can even see it reflected in Nietzsche’s idea that overcoming the human to become the overhuman gives meaning to human beings (Sorgner 2009).

Here the main problem becomes to detect the direction that is *right*: going in the wrong direction is bad, even if it might be individually rational. It also seems to require some form of non-person affecting value linked to how humanity or a group develops.

This view does *not* support the liberal morphological freedom presented above, since free exploration is at best instrumentally useful for finding good changes. Some morphological changes may go against the duty and hence be impermissible. It also makes not wanting to change problematic: the hesitant person is not contributing to the future of the species. Hence a duty to approach posthumanity does not imply an open-ended or negative right morphological freedom.

Virtue

Virtue ethics represents a final approach to morphological freedom. Reshape yourself to become a more excellent version of yourself. As noted in (More 1993) self-transformation can also be seen as a virtue:

“The virtue of *self-transformation* is a characteristic that reflects and empowers a person’s drive for physical, intellectual, moral, and psychological excellence. A commitment to self-transformation means a refusal to acquiesce in mediocrity, a questioning of limits to one’s potential, and a drive to perpetually overcome psychological, social, physiological, genetic, and neurological constraints.”

By this perspective we are not only allowed to change ourselves, we *ought* to since it is part of human excellence.

It can also be framed in a more existentialist form as “construct yourself in an authentic way”. Enhancements that make you more of yourself are right, enhancements that make you fit in (in an unconsidered way) with other people's demands are bad. Nick Bostrom analyses this in terms of human dignity as a quality that can be cultured in different ways, including through the careful use of enhancement (Bostrom 2008).

While this approach seems to mainly favour enhancement rather than extension, clearly extensions can represent virtuous exploration or artistic growth. Both dignity as quality and self-transformation stress the importance of authenticity: the choice of what changes to undergo must come from inside the person and be unconstrained by outside influence.

The limits of morphological freedom

In the end, where does this leave trepanationists, self-experimenters in neuroscience or gene therapy, whole-body tattooists, Stelarc or students taking Adderall? In the following I will examine some of the limits of morphological freedom. This is by no means an exhaustive exploration of the multidimensional boundaries of morphological freedom.

Safety

If an enhancement is too dangerous, then the risk outweighs the benefit and it should not be done. It can be argued that taking too much risk is incompatible with autonomy (in the classical, rational sense) or interests⁸. The right to free action does not always win over one's interest in having a life.

How to evaluate benefits is another matter. Even objective effects such as better memory have different value to different people, depending on their situation or life projects. However, many enhancements and especially extensions have subjective benefits that are even more idiosyncratic. The spiritual aspect of body modification, the artistic work of performance art, the exploration of human possibilities through sensory expansion: these are valuable benefits, but not easy or even possible to compare inter-individually. This means that judging the appropriateness of them based on the level of risk - an external, somewhat objective condition - is in doubt.

However, practitioners of enhancement and extension often do take risk into account. Whatever the benefit anticipated, it is rational (up to a point) to reduce risk for any individual. Some students taking enhancer drugs check the chemical composition of the pills they have bought. Todd Huffman carefully analysed how to minimize the risk of his implant. The body modification community has a vigorous internal debate and a code of conduct.

The real risk boundary might not be a risk/benefit trade-off, but whether risk is handled in a responsible manner. If someone is not taking precautions there is a strong reason to suspect they are acting irrationally, and might not fulfil criteria for capacity. This may be the distinguishing feature between people doing self-harm and people doing risky enhancement. In the first case the harm and pain is the goal (or at least a means for achieving certain social and emotional goals), while in the second case it is secondary.

A possible test of the validity of the self-experimentation would be if it would still take place if there was an option where it could be supervised (or done by) a medical professional, with complete pain

⁸ On the other hand, some views of human nature may argue that sacrificing oneself - perhaps even pointlessly - may be in keeping with human nature.

relief. If it was merely attention-seeking or a pathological desire for pain, then there would be little incentive for getting proper medical support (except for the use of the professional as an audience rather than for their skills). If the goal was to achieve enhancement or self-expression through self-experimentation, then I think the professional support would be welcome. It would of course also reduce the risks to the self-experimenter, give an outside second opinion, and add the possibility of properly documenting the procedure.

By this standard at least some of the voluntary trepanationists (Gump 2010) do have capacity, even though it can be argued that their epistemic standards are problematic.

Technological and biological limits

Obviously not everything is possible given the laws of physics, let alone available technology or biology. I will not discuss the technological limits so much. The present range of biomedical modifications are fascinating enough in their impact on life and experience, and we can be fairly certain that future technologies are going to be more powerful, cheaper, and enable currently undreamed things.

There are however domains where enhancement is hard, simply because it has to outdo what evolution has struggled to achieve. Some “natural is better” anti-enhancement intuitions likely have their basis in recognizing the difficulty of changing complex interconnected systems⁹. However, there are ways of meeting the evolutionary optimality challenge (“if the proposed intervention would improve us, why have we not already evolved to be that way?”): (1) changed trade-offs: evolution optimized our bodies for one type of environment, but we now exist in different environments or have different resources, (2) value discordance: evolution optimizes for inclusive fitness, not human value, and (3) evolutionary restrictions: there are many things biology cannot do or evolve that are open to human design and technology. Together these considerations form an evolutionary heuristic for judging proposed enhancements (Bostrom & Sandberg 2009).

Someone proposing to abolish sleep has good reasons to suspect trouble ahead (it is highly conserved across evolution), while enhancements increasing brain metabolism are less likely to be problematic since nutritional constraints were a strong past trade-off. Extensions are less simple to evaluate this way – their subjective nature make it possible to always argue a difference in values between the subject and evolution and they often represent step changes that are impossible to achieve through evolution. Evolution also may be far less optimal than assumed by the heuristic (Powell & Buchanan 2011).

Limits set by our own willingness to change/identity

Even in a world where anything could be changed with no risk, cost or outside influence it is likely that many traits would remain stable. We express ourselves through what we transform ourselves into (Weber 2000). The human drive for self-creation and self-definition expresses itself through any available means, including the *selection* of what selves we cultivate. This means that given a current self not all possible new selves are desirable: the exercise of morphological freedom implies imposing limits on it.

In a study by (Riis, Simmons and Goodwin 2008) it was found that surveyed students were much less willing to enhance traits that were regarded more relevant to personal identity than peripheral traits. This was a much stronger effect than concerns of unfairness and whether they thought the

⁹ They are structurally similar to conservative intuitions that societies are complex adaptive systems where we change institutions at our peril. See also (Buchanan 2011)

enhancement would be effective. It was uncorrelated with views on whether such enhancements should be allowed across society. While a sizeable fraction (35-54%) were willing to enhance low-identity traits such as reflexes, rote memory, wakefulness, foreign language ability or math ability, only 21% were willing to enhance mood, 19% self-confidence, 13% empathy and 9% kindness. Rather than “becoming more than you are” the surveyed students were interested in being who they are – but better at it.

While exposure to people who had successfully modified themselves radically might gradually change people’s views on just what constitutes central identity traits, it seems likely that most would rather use their powers of self-modification to *build a self* of some kind. Given that personal identity is such a strong motivator it is unlikely that people would willingly give up its motivating power even if they could. The current contingent human nature might then produce a dynamically stable posthuman nature even without material constraints.

Misuse

One approach for examining possible enhancement is to consider how they could be misused. To act as a valid ethical limit to morphological freedom the misuse needs to be linked to the bodily change in such a way that the change itself becomes impermissible: the mere possibility of misuse is not enough. Dangerous tools are not immoral, merely bad use of them.

One way of finding such limits is to consider J.S. Mill’s harm principle (Mill 1869): morphological freedom is limited (and others justly obliged to intervene) in order not to harm others or infringe their rights. A clear case where this principle would come into play are people voluntarily infecting themselves with infectious disease (without taking precautions against spreading it further). Here the harm may be treated as a risk, where probability and impact must be judged together: beyond some boundary (set by the risk acceptance of society) it becomes impermissible. This is also true for potential rights-interfering changes, such as copying somebody’s appearance: if the potential for identity theft or just intruding into the other’s private sphere¹⁰ is too great, this is also unethical.

One problem with using the harm principle to delineate morphological freedom is how broadly defined the harm can be. This is especially true for changes affecting all of society. Positional enhancements (such as height), whose value to their owners is positive if higher than the population mean but negative if below, have been criticized as dragging society into a needless race where nobody benefits. Does this mean the harm principle can be used to limit the freedom to pursue positional enhancement? An answer would be to consider the costs (in term of freedom and other societal goods) imposed by such limitations.

Ethics of self-Experimentation

Many of the mentioned enhancements and extensions are so far self-experimentation. There exists a rich debate about the limits of acceptable self-experimentation.

Scientific self-experimentation has a long history and has made many valuable contributions to medicine, yet it has often been criticized for being more adventuring than science. Motivations to self-experiment have ranged over everything from genuine altruism to nationalism or a desire for recognition (Altman, 1998; Fiks and Buelow, 2003; Martinelli, Czelusta et al., 2008). During its Victorian heyday the practice of self-experimentation had not only instrumental value, but took

¹⁰ Do we have a right to a unique appearance? Given that our appearance is often integral to our self-presentation and self-image, being denied this uniqueness might be an infringement of our sense of self. One might argue that if an impostor imitates us we can always change looks, but this contradicts morphological freedom.

place within a framework of non-instrumental sacrifice. As the cultural and social conditions this was based on changed, excessive self-experimentation fell out of favour (Herzig, 2005). It is however still practiced, even if many review boards frown on it.

Self-experimentation has advantages in terms of reliability (the researcher is motivated to follow the protocol), access to observations, first-hand experience, reduced red-tape and especially informed consent, since the researcher is presumably the most well-informed person about the purpose, implementation and risks of the experiment. The participation is firmly grounded in the researcher's autonomy by furthering their interests and promoting their values. However, health problems from repeated experiments, possible pathological motivations, lack of objectivity (including overconfidence in the validity of their own observations) and most seriously the limitations of research designs focusing on a single subject speak against the practice (Kerridge, 2003; Altman, 1998). There is also concern that self-experimentation could pressure colleagues into dangerous activities, since research is often done in teams (Davis, 2003).

The Nuremberg code states: "No experiment should be conducted, where there is an *a priori* reason to believe that death or disabling injury will occur; except, perhaps, in those experiments where the experimental physicians also serve as subjects." But self-experimentation is unlikely to make high risk studies that would otherwise be unethical ethical. Some experiments may produce so lasting harm that they cannot be justified for *any* social value of the research (Miller and Rosenstein, 2008).

(London and London, 1997) suggest that IRBs should evaluate self-experimentation in the same way as any other experimentation, viewing the researcher as a subclass of normal volunteers: injury to self-experimenters is just as bad as injury to normal volunteers. This would imply checking for eligibility criteria for participation, risks for long-term effects (possibly by demanding follow-up examinations).

A clear example of human extension self-experimentation was Kevin Warwick's experiments with an implanted transponder chip in 1998 and a direct nerve-computer link in 2002. He stated "I did not have a medical need, I just wanted to find out what it would be like." (Warwick, 2003) The transponder allowed receivers to detect his presence, opening doors and starting computers for him. Despite the simplicity of the implant it had subjective effects:

"The biggest surprise for me during the experiment was that I very quickly regarded the implant as being "part of my body." Indeed this feeling appears to be shared by most people who have a cochlea implant, or heart pacemaker. In my case though there was also a computer linked to my implant and because the computer was making things happen I quickly became attached, emotionally to the computer as well. Subsequently, when the implant was removed, on the one hand I felt relieved because of the medical problems that could have occurred, but on the other hand something was missing, it was as though a friend had died."

The nerve-computer link was more ambitious, and was used to investigate recording movements, controlling robot hands both locally and remotely and receiving ultrasound information. Most controversially, his wife also had an implant and the couple successfully sent neural signals to each other.

Warwick uses the experiments as a starting point for posing questions about who should be in control of the technology, issues of monitoring, tracking and control, the ethics of electronic intimacy and whether cyborgs need a new kind of ethics (Warwick, 2003). To a large degree they seem to have been done to refute the notion that superhuman cyborgs are unwarranted

speculation: the experiments do not prove much ethically, medically or cybernetically but do demonstrate an extended state that makes Warwick's speculations more relevant. In doing so, he is close to the prefigurative art of Orlan and Stelarc: by experimentally living various cyborg scenarios they are testing and shaping the future (Gray 2002). Conversely, their art raises issues of medical ethics – and whether it can or should be applied to this sphere (Goodall 1997).

Disability rights

Disability rights advocates have sometimes accused transhumanists of down-valuing disabled bodies in favour of some state of supernormality. This is a misunderstanding of the pluralism inherent in the concept of morphological freedom: a freedom to choose one's body must mean it can be different in qualitatively different ways, not just in some single quantity or functioning. At the very least, what functioning is being optimized is a personal choice. Since it is not possible to make a body that is best in every single respect – there are different modes of intelligence, strength, beauty, not to mention radically different new traits like new senses, cognitive modules or biochemistries – there is no implied convergence towards a single supernormality¹¹.

A key property of the presentation of morphological freedom in (Sandberg 2001) is that it is a negative right, a right to be left alone to change or not change. Critics have attacked this point as being too weak. Wolbring for example argues that morphological freedom as a negative right is ableist, since it is the top-functioning members of society that tends to define ability limits and this can leave less-functioning members behind, and that there is no obligation beyond altruism to protect morphological difference (Wolbring & Hutcheon; Wolbring 2008).

Dale Carrico (2006) argues that the original negative freedom account both would (1) invite "naturalization" accounts that depoliticise what actually are historically contingent conventions and hence give some constituency control over the term, (2) that there is an interventionist bias in the account that would circumscribe the possible lifeways, and (3) that substantive consent requires a number of positive conditions such as access to trustworthy information, guaranteed income, universal healthcare or other entitlements needed to ensure nondressed choice. As an alternative he argues for an alternate definition that stresses diversity and substantive consent:

"Morphological freedom designates a right of human beings either to maintain or to modify their own bodies, on their own terms, through informed, nondressed, consensual recourse to, or refusal of, available remedial or modification medicine.

The politics of morphological freedom is a commitment to the value, standing, and social legibility of the widest possible (and an ever-expanding) variety of desired morphologies and lifeways. More specifically, morphological freedom is an expression of liberal pluralism, secular progressive cosmopolitanism, or (post)humanist multiculturalisms applied to an era disruptive planetary technoscientific change, and especially to the ongoing and palpably upcoming transformation of the understanding of medical practice from one of conventional remedy to one of consensual self-creation, via genetic, prosthetic, and cognitive modification." (Carrico 2006)

To a large degree this more represents the debate between liberal and social democrat views on justice and the proper allocation of resources in society than a substantive disagreement about what morphological freedom *is*. It is interesting to note that these disability positions argue morphological

¹¹ However, see (Bradshaw & Ter Meulen 2010) for a discussion of differences in transhumanist views on disability, obligation to cure, and freedom. Also, even technology remedying disabilities pose complex choices on the experiential and social level that are not merely a return to normality, see (Chorost 2005).

freedom is a far stronger right than the (Sandberg 2001) account: it merely argued it was morphological change was permissible and should be protected, while these positive accounts demand that it be actively supported¹². As body modification moves from theoretical possibility to widespread practice we should expect morphological freedom to transmute from philosophical notions to a political battleground. It will also be captured in different ways by different ideologies, emphasizing different aspects of the core ideas¹³.

Conclusion

There is a de facto morphological freedom in many domains. People both inside the cultural mainstream and outside it are modifying their bodies for a variety of reasons. As technology enables it, exploration follows. But the actual limits to morphological freedom are largely set by how we constitute ourselves and our societies: self-creation and self-modification are not done in a vacuum but are shaped by our concepts of who and what we are, what our relationships require and allow, how our societies function.

However, these constraints are not immutable. As the example of scientific self-experimentation shows, views on proper research ethics evolves with society in ways that have little to do with fundamental shifts inside ethics itself. The concept of the self has evolved significantly over history. Improvements in safety can make previously unthinkable changes practical. Wealthier societies can afford more positive rights, turning what was previously luxuries into rights. Globalization means the same technological possibility will be explored by different cultures and ethical systems.

There is no single body, no single perfection, and no single society to determine the one true account of morphological freedom. Instead we need exploration. Not just to find the value, but to learn the boundaries of the acceptable and moral.

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¹² The devil is of course in the political details.

¹³ An interesting case is made in (Buchanan 2011) that even political conservatives have reason to embrace certain forms of human enhancement.

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