

Posthuman Bodies? Not So Fast

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¿Cuerpos Posthumanos? No tan rápido

ABSTRACT: This article reflects on transhumanism and its promise to achieve bodies which will be forever young, healthy, and highly useful. From a critical approach mainly based on feminist theory, it recalls different points against this promise, as they can work as criteria for exclusion and could end up in a denial of the body and its main features.

The paper starts with some reflections on the application of biotechnologies in order to enhance human bodies. It also recalls the discussion on virtual realities and their promises to erase the limits of the body and cancel materiality. Posthuman discourses end up in a proposal to leave behind the 'burden' of the body. Some feminist scholars have claimed against these arguments, and have asked for a 'return to the body' instead, as its denial can harm the vindications of equality, freedom and abolition of sexual discrimination.

RESUMEN: El artículo reflexiona sobre el transhumanismo y su promesa de conseguir cuerpos eternamente jóvenes, sanos y altamente funcionales. Desde una aproximación crítica basada principalmente en la teoría feminista, retoma distintos argumentos en contra de esta promesa, que puede funcionar como criterio de exclusión y podría desembocar en una negación del cuerpo y sus principales características.

El texto comienza con algunas reflexiones sobre la aplicación de las biotecnologías para el mejoramiento de los cuerpos humanos. También se revisa la discusión sobre la realidad virtual y sus promesas de difuminar los límites del cuerpo y cancelar la materialidad. Los discursos posthumanistas acaban por proponer dejar atrás el 'lastre' del cuerpo. Algunas autoras feministas han criticado estos argumentos, y han solicitado en cambio una 'retorno al cuerpo', ya que su negación puede dañar las reivindicaciones de igualdad, libertad y erradicación de la discriminación sexual.

KEYWORDS: Bioethics, body, transhumanism, posthumanism, critical theory, feminism

PALABRAS-CLAVE: Bioética, cuerpo, transhumanismo, posthumanismo, teoría crítica, feminismo

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1. Critical approaches: what are technologies doing to the bodies?

Contemporary philosophers have developed a growing suspicion on new technologies and the different ways in which they are changing our life and our notions of human being, health, and body¹. Some of these effects can be seen as positive, as technologies can help to improve people's life conditions, but they have also exerted a growing power on us of which we are sometimes unaware. It is precisely that power to define quality of life, health, and death, what we recall in this article, in order to clarify some ethical issues involved in the application of new technologies and biotechnologies such as embryo selection, subrogated maternity, and etcetera.



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One of the main critiques that arise in feminist theory is related to the fragmentation of bodies that technology brings. The new corporal techniques rely upon a promise of reconstruction of the body and eternal replacement of the different parts spoiled by the wear and tear of years. The body we have as a result of genetic inheritance is redefined in terms of obsolescence and imperfection: "as the body is defined increasingly by its value-added consumable techno-parts, it makes the body and its wearer part of the obsolescence dynamic" (Wolbring, 2010, 69). Those body 'defects' are solved by means of biotechnologies, which introduce themselves as capable to erase the signs of aging –in fact, the notion of age is redefined in terms of disability or disease within biotechnological discourses-. As a result of this technological approach, bodies are divided into pieces which can be exchanged or even artificially created in laboratories. Moreover, the functions of different organs can be imitated and recreated in detail once and again².

Donna Dickenson argues that, in the last few decades, the spread of biotechnologies has provoked a commodification of bodies³ which affects men and women, but it is mainly based upon a model of objectification traditionally applied to women (Dickenson, 2007, 8). In fact, this process of becoming an object is strongly related to the creation of visual techniques "which contribute to divide the body in organs, fluids and genetic codes" (Balsamo, 1996, 5). New technologies have a struggle to make visible the materiality of bodies, and in order to achieve that aim they have turned every physical process into images that can be isolated, framed and enlarged. Vision is thus placed as the primary and privileged sense, and consequently the body becomes unveiled and exhibited till the extent that it is even reached, sometimes, the limit of 'pornography' –as some images show very explicitly private details of the bodies-.

Just to give an example of the commodification of bodies, let us examine the discourse on IV fecundation, usually supported by arguments about the right of women to choose about maternity, but without any mention to the big amounts of money that women have to pay to go under those fertility therapies. So the right of choosing about maternity is only available for wealthy women?

If we focus on aesthetic surgery, the analysis is quite the same. Surgeons 'sell' younger, prettier bodies, and vision is again the privileged sense. Appearance is more important than anything else, and the body must be perceived as healthy, aesthetically adjusted to the actual paradigm and ready for reproduction –in whichever sense we take it-. It is made clear that technologies contribute to create an illusion of free choice which is fictitious from the very beginning, as it masks the mar-

ket interests. At the end of the day, we must assume that the notion of election supports global economy much more than personal autonomy (Fernandez et al., 2002).

The discourse on visibility is not a neutral one, as far as technological processes are tightly connected to ideology and symbolism. Technology is part of the culture and, therefore, it inscribes on the bodies the signs of power hierarchies and sexual division which shape social and political order. Of course it seeks to find new ways of explaining the body, but those arguments are trapped once and again in the stereotypes, as feminist critique has shown: "Technologies do not help to erase the limits of gender identities" (Wajcman, 2006, 141). Moreover, the reproductive capabilities of women have a main role in the expansion of biotechnologies, as in some contexts they are left in charge of the responsibility of keeping genetic information and transmitting it to the next generations. Assuming this model of maternity means that women should try to do their best in order to improve their daughter's and son's quality of life, even if this includes embryo selection to prevent illnesses, and some other eugenic practices. This is a dangerous argument, as it legitimizes genetic modification of human beings without reflecting on the eventual consequences this manipulation might have.

Contemporary societies must face a big question which is still unsolved: "How will XXI Century kids resist ideological contents related to the new reproductive and hyper-rationalized processes in which human value is determined by the economical situation of the person and the human body is raw material to generate benefits?" (Sommer, in Fernandez et al., 2002, 213). Human procreation has always taken place in the same conditions, but this might change from now on. Reproduction is in risk of becoming a hierarchical process which introduces a new gap between wealthy people -those who can afford a 'genetic enhancement'- and poor people -those who can not afford expensive medical care and will go on having kids in the traditional way-. This result shall be refused for two reasons: it implies a technological invasion of female bodies in the Western countries, and a new matter of discrimination and exclusion for women from underdeveloped countries⁴.

Moving forward in this critical approach, it has also been said that technology has produced a "technical homogenization of the bodies" (Wajcman, 2006, 80) which perpetuates sexual stereotypes. The visual techniques turn corporality into images and cause-effect models, and by so doing they enable the creation of fixed categories produced and reproduced endlessly by means of technology. This homogeneity is paradigmatic in surgical aesthetics, as it recreates on different body

surfaces the same Westernized patterns of beauty. Technification reaches its highest levels in artificial intelligence⁵, where affection and emotion are deleted from human experience, and attention is focused on copying and reproducing natural bodies. "Artificial life is an attempt to enact the analogy machine/organism which prevails in biological and techno-scientific culture" (Kember, 2003, 2). In this development the limits between body and machine are erased in such a way that "machines become humanized and humans are turned into machines" (Kember, 2003, 121). Human patterns are redefined as mechanical engines, and the most advanced technologies are asked to demonstrate their ability to imitate human skills such as maths calculation, linguistic proficiency and, in general terms, the functions of any living organism at all levels.

In conclusion, these arguments illustrate the ways in which technologies have exerted its power over the bodies, and how women have been particularly affected by this 'technocracy' that deprives them of autonomy over their bodies. Moreover, some feminists have argued that this discourse reinforces the old stereotypes of patriarchy and it spreads false promises related to the substitution of real bodies by artificial ones. Regarding this critical approach, some authors (Irigaray, 1992; Muraro, 1994; Rich, 1996) have developed different theories on the subjectivity of women which are based on the experience of pregnancy, nurturing, and the symbolic meanings attached to those experiences. In general terms, these feminist scholars claim that women should have the property of their bodies instead of letting biotechnologies go into them.

On the other hand, there should be mentioned that there are some feminists who have analyzed biotechnologies as a means for freedom. For instance, Shulamith Firestone has said that liberation of women relies upon the possibilities of science to free women from their biological role as bearers of children (Firestone, 2003). From this point of view, the development of birth control techniques and the creation of 'artificial wombs' would be seen as a chance for women to go beyond the 'burden' of motherhood. But this optimistic approach must face some critiques: birth control techniques are only available for some women who can afford them, so this 'freedom' that biotechnology provides is a gift for the privileged ones. On top of that, there are many feminists who have argued in favour of motherhood and its symbolic meanings, the benefits of the link between the mother and the baby...

If pregnancy and care are seen as an obstacle for women's liberation, this implies a denial of the value of those experiences which should not be so easily erased –as a matter of fact, many women do want to be-

come mothers and look after their babies, and when they go through it they keep saying that it is a fulfilling experience. Are those women 'less' free than the ones who choose not to have babies? We would not say so-.

2. Virtual worlds, real worlds

One of the main features of actual technologies is its capability to create virtual worlds which by means of images, sounds and tactile illusions, produce fictitious places and situations only existing in the immateriality of cyberspace: "Virtual reality makes it possible to simulate the real. In order to do so, one has to construct a copy of reality" (Flichy, 2007, 133). Virtual reality can perform the objects so accurately that the copy seems a purer and more 'perfect' version than the original. Video games, computer design, and special effects, are some of the fields where these 'recreation' techniques are usually applied.

Along with the creation of virtual worlds, it emerges a discourse which claims that this space constitutes "an escape from corporeal incardination in gender and race" (Balsamo, 1996, 123). Feminist theory has criticised this argument, as it is perceived in virtual reality a tendency to repeat the same stereotypes and gender, race and social class hierarchies which we find in ordinary life (Wajcman, 2006, 80-81). With the help of different technological practices, corporality and its processes are translated into images and cause-effect paradigms, and those changes enable the creation of fixed categories about the bodies and their sexual, racial and social stereotypes. Virtual reality "naturalizes by means of technology the repression of the body" (Balsamo, 1996, 125). Virtual reality creates the fantasy of living through the computer screen without assuming any risks, but this 'cyber life' is in fact quite poor, as it is just a soft and predictable version of real and complex situations.

Indeed, virtual reality does not arise spontaneously but it is a rather cultural production, and it inherits the same categories and concepts that have prevailed in other fields of audiovisual creation. Taking this into account, we should not be surprised by the fact that the most visited web pages are the ones with pornographic contents, and the most popular videogames are those which include sex and violence. Virtual world must be understood as a result of cultural determinations, and it reflects masculine perspectives and market interests, as feminist theory has pointed out. This situation will remain unchanged until women reach stronger positions and become subjects whose opinions are considered when designing virtual realities.

Several writers have noticed that Internet has been used to repeat the same exclusions and repressions that we find in real life (Reverter, 2001, 43). The net has renewed the communication methods, but not the contents and ideologies that rule those exchanges. There are also reminiscences of the old division mind/body, as virtual reality joins the immaterial part of the couple and "it denies the body, which is considered a mere material obstacle" (Sibilia, 2009, 78). There is an attempt to escape through technology the limitations and restrictions the body entails, but this desire is always frustrated as the promise of free choice is not always that free. We could conclude, then, that white, middle class bodies are the favourite ones, both in real and virtual life.

Cyberspace hides discordant differences; it enables people to adopt any identity they wish, and it results in a quite homogenous range of elections which shall be put under suspicion. Minority options remain in silence and wide differences are cancelled, as virtual worlds insist on matching the features and preferences of majorities. For instance, if we browse the Internet, we will find out that most of the web pages 'for women' have information on fashion, cosmetics, and men. "They pretend that they know what women are and what they are interested on" (Paasonen, in Fernandez et al., 2002, 92). Anne Balsamo has claimed that "the repression of the body is technologically naturalized" (1996, 125) in virtual reality. Bodies do not disappear at all, but they become homogenised under prescriptive categories which decide, among other issues, what bodies shall be visible or invisible on the net.

Moreover, cyberspace is evolving as a mechanism for the expansion of transnational capitalism (Reverter, 2001, 42), and this condition jeopardizes its possibilities to work as a changing agent. Virtual world operates as a global market which erases national borders and it enables big economic operations. The alternative social and political uses of Internet are placed in a secondary position, although different feminist authors have insisted on the need for this turn (Braidotti, 2002; Fernandez et al., 2002; Wajcman, 2006). We must be aware of the difficulties, and assume that "what real world can not solve, it will not be solved in the virtual world either" (Reverter, 2001, 43). Virtual world is a copy of real life, and it does not cancel by itself sexism, racism and all the other ways of discrimination. This critical approach places itself in a wider context that, in order to create new discourses on the body, keeps an eye in the global economy and the different hierarchies which operate at every stage of culture.

3. Liberation from the body?

In order to legitimize the use of new technologies, it is been claimed that they can by-pass physical existence and achieve the transcendence that, apparently, every human being is longing for. XXI century science promises "emancipation from the weaknesses and faults of the body" (Wajcman, 2006, 91), but there is recently been a big debate on the benefits that such an emancipation would bring us.

Consumers are offered the chance of "satisfying any desire, particularly the one of escaping the flesh" (Plant, 1998, 178) but, what is the price for that? And what does it mean that escape? The whole project seems tricky, as it entails new criteria for sexual discrimination and hides the economical interests of chemical and biotechnological factories with increasing power and control over live, health, and biodiversity. New technologies "spread new hopes and dreams of corporeal reconstruction and physical immortality, but also [...] menace the material body" (Balsamo, 1996, 2). The body is turned into raw material that can be modified and altered in order to resemble the canonical models of corporality. Furthermore, feminist critique has reached the conclusion that "new surgery, as a postmodern technology of sexuality, is a process of tectonic construction by which organs, tissue, fluids and molecules are turned into raw materials used to change the look of nature" (Preciado, 2005, 79) -although we should keep in mind that there are other feminists who understand technology as a means of liberation of women (Haraway, 1995; Firestone, 2003)-.

Transhumanism has articulated one of the most radical discourses on the possibilities of applying biotechnology and genetic engineering to the improvement of the humans. Transhumanists consider that natural evolution is over, and the future of human specie relies upon the advance of life technologies. As Max More claims, "transhumanists take humanism further by challenging human limits by means of science and technology combined with critical and creative thinking" (More, 1998). Humanity is seen as "a transitory stage in the evolutionary development of intelligence" (More, 1998). More's argument insists on the possibilities of biotechnologies to let us go one step further, human bodies and minds are understood as faulty, incomplete, and there is a strong confidence on science and technique to achieve the highest levels of evolution and development of rationality and knowledge.

There are a few web sites which collect the main arguments of transhumanism. One of them, by Natasha Vita-More, it includes vindications on the right of technological self-determination and the use of technology to live a longer and healthier life⁶. There is also an intro-

ductory text about the expectations and promises which surround post-human bodies. The author, self-defined as 'posthuman artist', appeals to her readers this way:

"Imagine what it might be like to have a body that doesn't break down or one that lasts longer, much longer.

If you could design your own body -give it any shape, size, color, contour, texture and elegant design- what would you choose?

What if your body could regenerate healthier, fresher skin and worn out tendons, ligaments and joints with replaceable ones? What if your body was as sleek, as sexy, and feel as comfortable as your new automobile?"

In her webpage, Vita-More -just the name is full of meaning- depicts a posthuman body that takes advantage out of the scientific evolution and turns into a cyborg whose natural part disappears under the power of technology, which controls and rules every single aspect of human materiality. This upcoming body is flexible, powerful, unable to grow old, and it will be equipped with advanced metabrain and enhanced senses. It even has replacement organs and it is "guaranteed for any genetic defects"⁸. In order to make clearer the advantages of this new model of corporality, the webpage includes a comparison between ordinary XX Century bodies and posthuman bodies. Among the improvements, there is a mention of replaceable genes, increasing intelligence, turbocharged optimism and the capability of having multiple viewpoints running in parallel⁹. The new bodies are impervious to environmental damage, able to purify and recycle their own waste, and can transcend their gender identity. In general terms, posthuman bodies will cancel any relationship with nature and any environmental organic exchange, as happiness and health depend entirely on chemical substances to optimize the functions of the engine. The body becomes a sort of computer which perceives the world as virtuality, technically more accurately, but without having any feeling or emotion out of that relationship.

Another transhumanist theorist, Julian Savulescu, shows a more critical approach on the enhancement provided by biotechnologies. As a starting point, he claims that "all technology can be viewed as an enhancement of our native human capacities" (Savulescu, 2009, 2). He is in favour of analyzing each kind of enhancement in order to take a contextualized decision on the benefits and risks of its use. He points out that

"an uncritical acceptance of 'enhancement' as an analytical cate-

gory and as an organizing idea for our enquiries risks obscuring the heterogeneity of potential enhancement applications and the need to situate them within the micro-context of particular policy decisions, as well as within the macro-context constituted by other big-picture challenges for humanity in the twenty-first century” (2009, 20).

There have been many critiques on this kind of promises surrounding the posthuman bodies, as they hide the pretension of “using science to spread private propriety to every sphere of life” (Wajcman, 2006, 138). It is even claimed that new biotechnologies are “a menace for material bodies” (Balsamo, 1996, 2). Some feminist theorists consider that the right of ‘technological self-determination’ is no more than the defence of the privileges of those who can afford those ‘customized bodies’ that transhumanism supports. In fact, they have complained that this discourse implies new models of discrimination, and new hierarchies depending on the different access to eugenic practices¹⁰. With growing suspicion, Richard Lynn has also argued that “most eugenicists [...] have had nationalist objectives consisting of the improvement of the genetic qualities of their own national populations” (2001, 58).

Regarding gender identities, transhumanism has shown big confidence on the possibilities to go beyond traditional male/female dichotomies. Natasha Vita-More has included in her webpage some reflections on the notion of ‘automorph Gender and Sexuality’:

“The new sexual landscapes will bring about different types of sexuality, different types of genders. [...] We could have several genitals, or none. [...] Put a scientist in a laboratory and she may come up with new sexual beings as well as new genders. Gender traditionally refers to social and cultural categories such as masculine, feminine and neuter. [...] Yet, in the future there will be a blurring of these traditional categories. [...] The continuous blurring of these distinctions will enable the reconstitution of genders. [...] Sex and somatic gender identity are not so immutable. Sex, (how organisms are classified as female or male on the basis of their reproductive organs and functions) is being modified by surgery and hormone treatment. [...] The possibility is that we might have as many genders as colours in the rainbow or as many types of genitalia as patterns of flowers¹¹.”

These arguments challenge traditional notions as ‘nature’, ‘body’, ‘flesh’ and ‘gender’, but do not solve by themselves the conflicts that arise out of those notions. For instance, women discrimination does not finish in transhumanism, but it can be increased in certain ways: the apparently

positive freedom to choose which body or 'gender' we want to have leaves unquestioned the criteria for that election, which will be most likely related to the ideals of beauty, youth, and etcetera. The body is thus homogenised and it becomes a mere surface on which the power of science acts. Nature is cancelled; it is deleted by technological discourses that, under the pretext of 'improving' the natural, are submitting it to its standards. The price for this is quite expensive, as in order to achieve the right of self-modification the individual must sacrifice its "integrity and authenticity" (Kember, 2003, 155). The individual rejects autonomy to fit into the technological paradigm, which becomes a trend and it sets corporal tendencies. So it does not help to liberate men nor women, but it traps them in its prescription about how bodies should be, interact, and look like.

4. Conclusion: back to the body

To summarize, we could claim that Posthuman bodies are depicted as a failure, as an incomplete system in need of the enhancement provided by biotechnologies. They interact with the bodies in such a way that even their internal organization becomes determined *a priori*. Some authors have also referred to the connections between Transhumanist proposals and certain religious beliefs. For instance, there are in them certain "contents of Christian mythology which mark and frame the construction of posthumans pre-designated to salvation or condemnation" (Kember, 2003, 174). Cloning and genetic engineering yield a 'demiurgic' notion of science, which arises as capable of creating tissue, organs and even whole human beings out of very basic particles. As a result, bodies are reinterpreted as the result of improvement processes related to the promise of maximizing human evolution and abolishing any sign of illness, age and obsolescence inscribed within our somatic structure. Technology introduces itself as a sort of 'deity' which donates the privilege of enjoying an ideal body whose material dimension has almost disappeared, a body that is 'denaturalized'.

Therefore, we can mention two different models of corporality: on one hand, the 'design' bodies, artificially constructed and equipped with all the technological requirements, intentionally made to last; on the other hand, we still find regular bodies, emerged spontaneously out of sexual reproduction, with lower quality and less capable to survive. Consequently, we might have first and second class bodies, with all the difficulties and ethical arguments that the defence of this position would entangle.

Taking all those arguments into account, we should be more critical with the escape technology provides, and never lose touch with the body - which shall be understood as a mixture of flesh and its social interpretations, a combination of biology and culture-. This is the best way to develop contextualized reflections on health, quality of life, and welfare. All these notions have a physical limit, they must be related to the bodies and their needs, structures, interactions and abilities, and that reference should never be forgotten. This proposal can be defined as an attempt to reincarnate subjectivities, as there is no need "to renovate the ancient myth of transcendence as an escape from the body" (Braidotti, 2002, 115). Instead of getting away from the body, we should rather go back to it, recall it and explore its diversity, meanings, possibilities, as the most inspiring options of achieving emancipation and 'technological justice' depend on it.

References

- Balsamo, Anne (1996): *Technologies of the gendered body. Reading cyborg women*, Durham (USA), Duke University Press.
- Braidotti, Rosi (2002): "Un ciberfeminismo diferente" (article), in *Debats*, number 76: *Del post al ciberfeminismo*.
- Cartwright, Lisa: "A cultural anatomy of The Visible Human Project", in Treicher, Paula; Cartwright, Lisa; and Penley, Constance (1998): *The Visible Woman: imaging technologies, gender, and science*, New York, New York University Press.
- Dickenson, Donna (2007): *Property in the Body. Feminist perspectives*, Cambridge, Cambridge University Press.
- Fernandez, Wilding and Wright (2002): *Domain errors! Cyberfeminist practices*, New York, Autonomedia.
- Firestone, Shulamith (2003): *The Dialectic of Sex: the case for feminist revolution*, New York, Farrar, Straus and Giroux.
- Flichy, Patrice (2007): *The Internet Imaginaire*, Cambridge (Massachusetts), MIT Press.
- Foucault, Michel (1987): *Historia de la sexualidad*, Madrid, Siglo Veintiuno.
- Haraway, Donna (1995): *Ciencia, cyborgs y mujeres. La reinención de la naturaleza*, Madrid, Cátedra.
- Hardt, Michael and Negri, Antonio (2002): *Imperio*, Barcelona, Paidós.
- Heller, Agnes and Féher, Ferenc (1995): *Biopolítica. La Modernidad y la liberación del cuerpo*, Barcelona, Península.
- Irigaray, Luce (1992): *Yo, tú, nosotras*, Madrid, Cátedra.
- Kember, Sarah (2003): *Cyberfeminism and artificial life*, London, Routledge.

- Lynn, Richard (2001): *Eugenics: a reassessment*, Westport (USA), Praeger.
- Mies, Maria and Shiva, Vandana (1998): *La praxis del ecofeminismo. Biotecnología, consumo, reproducción*, Barcelona, Icaria.
- More, Max (1998): *The Extropian principles: a transhumanist declaration*, in <www.maxmore.com/extprn3.htm>
- Muraro, Luisa (1994): *El orden simbólico de la madre*, Madrid, Horas y horas.
- Plant, Sadie (1998): *Ceros y unos. Mujeres digitales + la nueva tecnocultura*, Barcelona, Destino.
- Preciado, Beatriz (2005): "Biopolitique du genre" (article) in Rouch, Dorlin and Fougeyrollas-Schwebel: *Le corps, entre sexe et genre*, París, L'Harmattan.
- Reverter, Sonia (2001): "Reflexiones en torno al ciberfeminismo" (article), in *Asparkia*, number 12.
- Rich, Adrienne (1996): *Nacemos de mujer. La maternidad como experiencia e institución*, Madrid, Cátedra.
- Savulescu, Julian and Bostrom, Nick (2009): *Human Enhancement*. Oxford, Oxford University Press.
- Scheper-Hugues, Nancy and Wacquant, Loïc, eds. (2002): *Commodifying bodies*, London, Sage.
- Shiva, Vandana (2008): *Los monocultivos de la mente. Perspectivas sobre la biodiversidad y la biotecnología*, México, Fineo.
- Sibilia, Paula (2009): *El hombre postorgánico. Cuerpo, subjetividad y tecnologías digitales*, Buenos Aires, Fondo de Cultura Económica.
- Wajcman, Judy (2006): *El tecnofeminismo*, Madrid, Cátedra.
- Wilkinson, Stephen (2003): *Bodies for sale: ethics and exploitation in the human body trade*, London, Routledge.
- Wolbring, Gregor (2010): "Obsolescence and body Technologies" (article), in *Dilemata. International Journal of Applied Ethics*, number 4, 2010. <<http://www.dilemata.net/revista/index.php/dilemata/article/view/55>>
- www.bioethicsanddisability.org
- www.humanityplus.org
- www.maxmore.com
- www.natasha.cc/primointro.htm
- www.natasha.cc/primo3m+diagram.htm
- www.natasha.cc/primo3m+comparision.htm
- www.natasha.cc/sex.htm

Notas

1. For instance, vid. Foucault: *Historia de la sexualidad*; Hardt and Negri: *Imperio*; Heller and Féher: *Biopolítica. La Modernidad y la liberación del cuerpo* (Whole references have been included in bibliography).
2. As an example of fragmentation of organs provided by new technologies, see Cartwright, Lisa: "A cultural anatomy of The Visible Human Project", in Treicher, Cartwright and Penley (1998): *The Visible Woman: imagining technologies, gender, and science*, New York, New York University Press.
3. Many books and articles have focused on the 'body commodification debate'. Works by Scheper-Hughes and Wilkinson can provide wider knowledge of this debate. Cf. Scheper-Hughes, Nancy and Wacquant, Loïc, eds. (2002): *Commodifying bodies*, London, Sage; and also Wilkinson, Stephen (2003): *Bodies for sale: ethics and exploitation in the human body trade*, London, Routledge.
4. Ecofeminist scholars have made some interesting points on these issues. Vid. Mies, Maria and Shiva, Vandana (1998): *La praxis del ecofeminismo. Biotecnología, consumo, reproducción*, Barcelona, Icaria; and also Shiva, Vandana (2008): *Los monocultivos de la mente. Perspectivas sobre la biodiversidad y la biotecnología*, México, Fineo.
5. On artificial intelligence and its developments, see Flichy, Patrice (2007): *The Internet Imaginaire*, Cambridge (Massachusetts), MIT Press, chapter 6: The Body and Virtual Reality.
6. The proposals can be checked in www.humanityplus.org
7. For the whole reference, see www.natasha.cc/primointro.htm
8. See www.natasha.cc/primo3m+diagram.htm
9. These features are listed in www.natasha.cc/primo3m+comparision.htm
10. Disability Studies have also developed a critical view of eugenics. For more references, see www.bioethicsanddisability.org
11. References from www.natasha.cc/sex.htm