FIGURATIONS OF POSTHUMANITY IN CONTEMPORARY SCIENCE/FICTION: ALL TOO HUMAN(IST)?

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ABSTRACT

Introducing the terms "science/fiction" and "imagineering," the essay aims to move beyond the "two cultures" divide and emphasises instead the interdependency between science and literature or, more specifically, between "real science" and "science fiction." It argues that technoscientific visions are indebted to narrative imaginings and that the promises of technoscience, in turn, influence individual and collective fantasies. The analytical focus is on imagineerings of the posthuman body or subject in various types of science/fiction. In order to challenge the orthodoxy of posthumanism's progressive trajectory, these figurations will be scrutinised in view of underlying liberal-humanist and, hence, androcentric, ethnocentric and anthropocentric assumptions.

KEY WORDS: Posthumanism, science fiction, gender.

RESUMEN

Al presentar los conceptos "science/fiction" e "imagineering", este ensayo pretende superar la dicotomía de "las dos culturas" y subrayar, en cambio, la interdependencia entre ciencia y literatura o, concretamente, entre "ciencia real" y "ciencia ficción". El artículo sostiene que las visiones tecnocientíficas son deudoras de los imaginarios narrativos y que, a su vez, las promesas de la tecnociencia influencian las fantasías individuales y colectivas. El análisis se centra en "imagineerings" del sujeto o cuerpo post-humano en varias clases de "science/fiction". Con el fin de poner en tela de juicio la ortodoxia de la trayectoria progresiva del post-humanismo, estas 'figuraciones' serán examinadas detalladamente considerando las premisas subyacentes propias del humanismo-liberal y, por lo tanto, androcéntricas, etnocéntricas y antropocéntricas.

PALABRAS CLAVE: posthumanismo, ciencia ficción, género.

> Anthropologists of possible selves, we are technicians of realizable futures. Science *is* culture.
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> Donna Haraway, *Simians, Cyborgs and Women: The Reinvention of Nature* (1991)

In its Communication "Towards a European Strategy for Nanotechnology" of May 2004, the Commission of the European Communities emphasises that the main function of public debates on the ethical and societal dimensions of nanoscale science and technology is to focus attention on matters of "real concern rather than 'science fiction' scenarios."[1] A similar phrasing can be found in the October 2003 Position Statement of the National Centre for Competence in Research in Nanoscale Science, located at the University of Basel, Switzerland: "we clearly have to distinguish between unrealistic horror visions and real safety issues."[2] When invoking science fiction (SF) dealing with unknown but potentially disastrous consequences of nanotechnology, the writers of the Communication and the Position Statement probably thought of Michael Crichton's new bestseller *Prey*, first published in 2002. In his own "Introduction" to the novel, the author forecasts a not so distant future in which the convergence of nano-, bio-, and computer technologies will enable the production of artificial organisms with the capacity for self-replication, complex evolvement, and autonomous agency beyond human control.[3] As imagined in the book, billions of these tiny nanocreatures escape from a laboratory into the environment where they grow into gigantic swarms that hunt down whatever they can feed upon —including human beings— in order to create yet more of their kind. Their exponential and hence extremely fast proliferation threatens to turn the whole biosphere into sludge within only a few hours. While Crichton has human intelligence ultimately win over machine intelligence, he wants readers to understand that there might be no happy ending when organic nanorobots get loose in the real world.

Many scientists are quick to distance themselves from cautionary tales like *Prey* and other techno thrillers. What is more, they often blame SF for the current backlash against emergent technologies and for a growing "nano-angst" that might lead to a moratorium of nanoscale science.[4] One rhetorical strategy aimed at assuaging public fear and, subsequently, at convincing people of the benefits of advanced nanotech devices in fields such as regenerative medicine, is to label the science of SF as "bad" or "false." To give a few examples: Chris Phoenix, a computer scientist and co-founder of the Center for Responsible Nanotechnology, tells readers of *Prey* that "the science isn't real"[5] and that, therefore, the plot need not scare them. Rodney A. Brooks, robotics expert at the prestigious MIT Artificial Intelligence Lab, thanks SF writers and filmmakers for inspiring him "even when they are

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[1] The Communication is available online <http://www.cordis.lu/nanotechnology/src/communication.htm>.

[2] <http://www.nccr-nano.org/nccr/media/positioning_statements>.

[3] Michael Crichton, *Prey* (New York: HarperCollins, 2002) vii-xiv.

[4] Peter Rodgers, "Nano Threats and Challenges," *Physics World* (July 2003). Quoted from the online publication <http://physicsweb.org/article/world/16/7/1/1>.

[5] Chris Phoenix, "Don't Let Crichton's *Prey* Scare You: The Science Isn't Real," *Nanotechnology Now* (January 2003). <http://www.nanotech-now.com/Chris-Phoenix/prey-critique.htm>.

dead wrong."[6] And the editors of *Understanding Nanotechnology*, after admitting that nanotechnology "is still at present largely a *vision* for the future," quickly add that there is a difference between vision and imagination: like Brooks, they do not deny that "there is ample room for scientific visionaries to coexist symbiotically with the futurists who fascinate, and sometimes prod, us with exotic dreams of worlds to come" but in the end, "all of our fanciful notions must be subjected to the refinement and distillation of true laboratory science."[7] Here the "futurist dreamers" might refer less to Crichton than to scientist Eric Drexler who, in his influential book *Engines of Creation*, called his visions "science fiction dreams" and whose description of runaway replication as "gray goo"[8] has not only found its way straight into *Prey*, but has also become a metaphor for the dangerous outcomes of nanotechnology. In short, the struggle might be less over the epistemological authority of science versus fiction, than over who can claim priority within the nanoscience community itself. The rhetorical weapon of those who see themselves as "true" scientists is then, again, to brand some of their colleagues as being more "sciencefictional," while they have their feet firmly on the empirical ground of the laboratory.

Such a stance is taken by molecular biologist Lee M. Silver of Princeton University, to add another striking example, who still insists —after narrating three scenarios revolving around the future possibilities of genetic engineering in 2010, 2050 and 2350— that what he has just described is not "the stuff of science fiction," but scenarios that either "emerge directly from scientific understanding and technologies that are already available today" or are embedded within a "scientific framework [...] based on straightforward extrapolations from our current knowledge base."[9] Paradoxically, Silver refers to the practice of "extrapolation," a practice clearly associated with imaginary moves in speculative fiction. Which scenarios are thus more "scientific" and which merely "fictive"? In how far does the extrapolative method of cloning, for example, differ from the extrapolative method of writing a SF novel? By beginning his book with stories set in the future, Silver involuntarily points to the origin of "reality" in the imaginary, which —arguably— undermines the legitimacy of regarding SF as the defining other of "real science" and reveals instead, as Colin Milburn has shown in the case of "nanowriting," the "science-fictionizing of the world."[10]

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[6] Rodney A. Brooks, *Robot: The Future of Flesh and Machines* (London: Penguin, 2002) viii. The book was first published under the title *Flesh and Machines: How Robots Will Change Us* in the USA and Canada by Random House in 2002.

[7] Sandy Fritz & Michael L. Roukes, eds., *Understanding Nanotechnology* (New York: Warner, 2002) viii.

[8] Eric Drexler, *Engines of Creation: The Coming Era of Nanotechnology*. First published in 1986. Quoted from the full online text <http://www.foresight.org/EOC/Engines.pdf>.

[9] Lee Silver, *Remaking Eden: How Genetic Engineering and Cloning Will Transform the American Family* (1997; New York: Perennial, 2002) 8.

[10] Colin Milburn, "Nanotechnology in the Age of Posthuman Engineering: Science Fiction as Science," *Configurations* 10.2 (2002): 261-296.

1. SCIENCE/FICTIONS

I am less interested in debating whether the long-range promises of technoscience (to provide cures for every possible disease and, consequently, to guarantee longevity, perhaps even immortality —to mention the more radical prophesies) are realistic or not. My larger concern is, rather, with both the ways in which images and the imagination drive technoscientific progress, as well as with how imaginary constructs materialise in objects and technologies that then have an equally material effect on the lives and livelihood of human beings. Furthermore, Silver's book shows that the popularisation of science depends on narrativisation, in so far as technoscientific content needs to be embedded in narratives in order to become more transparent and reach a wider audience. Only when put into a cultural form or framework, can abstract knowledge circulate outside laboratories and academic institutions. Some scientists even resort to telling science by telling stories; as Carl Djerassi, the "mother" of the pill, explains the pedagogic and ethical agenda of his own project *science-in theatre:* "I want to use fiction to smuggle scientific facts into the consciousness of a scientifically illiterate public."[11] Naming the clinician and infertility specialist of one of his plays —*Dr. Felix Frankenthaler*— and the child born through intracytoplasmic sperm injection "Adam,"[12] Djerassi also testifies to the fact that most people do not think through reprogenetics and other new technologies scientifically but fictionally, bringing to bear on the subject the stories or mythologies they are familiar with —be it Mary Shelley's *Frankenstein* (or, more likely, James Whales screening of the novel) or the Biblical Genesis.

The influence between technoscientific and cultural (re)production, however, is difficult to trace and cannot be mapped onto a cause-and-effect model. Neither do I want to contend that fictive accounts only follow or comment upon technoscientific facts, nor do I claim the opposite and argue that the shaping power of the imagination is one-directional; there is a double movement rather: the technological potential or scientific scenario will influence individual and collective fantasies, especially as far as figurations of the human body or subject are concerned, and these imaginings will affect our handling of technologies, if not our actual use and even development of them. I use the term "imagineering" —originally coined to describe the activities of the engineers, architects, designers and multi-media specialists who produced Disneyland and Disneyworld— to describe this interdependency between technoscience and fiction. By the same token, I refer to the literary, visual, theoretical and (popular) scientific texts I discuss in this essay as "science/fiction" or "scientifictive" writing. The slash is thus not meant as a dividing

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[11] Carl Djerassi: "Contemporary "Science-in-Theatre": A Rare Genre," *Interdisciplinary Science Reviews* 27.3 (2002): 193.

[12] Carl Djerassi, *An Immaculate Misconception: Sex in an Age of Mechanical Reproduction* (London: Imperial College P, 2000).

line, but signals the in-between position of such narratives, their liminal existence as both science and fiction. The distinction between scientific vision, on the one hand, and narrative imagination, on the other hand, is (as Donna Haraway claims with regard to the boundary between science fiction and social reality) an "optical illusion."[13] These different types of science/fiction form a "cultural matrix"[14] in which a causal perspective gives way to an understanding that lines of influence between texts or disciplines are never direct but interwoven in very complex ways. As part of a larger network of forces, the cultural matrix participates in the equally complex, material-semiotic construction —the imagineering— of the future, including the future of the human species and, last but not least, the humanities.

For several decades already, discussions about the future of humanity and the future of the humanities have been marked by an apocalyptic vocabulary. After the Second World War, an increasing number of scholars from various disciplines have talked about both *homo sapiens* and the *humanitas* in terms of "the end," "death," "the killing of culture," "the university in ruins" or, in its milder form, about "crisis." Michel Foucault, for example, speculated in 1966 already that soon "man would be erased, like a face drawn in sand at the edge of the sea."[15] The referent here is, of course, the Western, anthropocentric and androcentric concept of "Renaissance Man," constructed by the very educational process that we now call "the humanities." The fortress built around this humanist subject (around the rational, independent "I" in defense of his supposedly irrational, dependent others —women, animals, human beings of non-European cultures, etc.) has, of course, always been unstable and precarious —as vulnerable to collapse as a sand castle on the beach indeed.

While the tides of theoretical postmodernism have worked hard at washing away "Renaissance Man" from the 60s onwards, this project has now reached a radically new and different quality due to the much stormier advances in computer technology, biomedical engineering and, most recently, in nanoscale science. The imminent possibility of intelligent and sentient robots challenge the humanist assumption that we are special; that is, that agency, consciousness, reason and emotions belong to human beings only. Tissue and organ transfer between human beings —and between humans and animals— not only destabilise apparently secure boundaries between self and other but also make it more and more difficult to identify a core essence that constitutes "true humanness." Implanting a metal hip and other artificial joints has become a routine, full heart replacements and other implantable or wearable electronic devices will soon be common as well. Moreover,

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[13] Donna Haraway, *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1999) 149.

[14] N. Katherine Hayles, *The Cosmic Web: Scientific Field Models and Literary Strategies in the Twentieth Century* (Ithaca: Cornell UP, 1984) 23-24.

[15] Michel Foucault, *The Order of Things: An Archaeology of the Human Sciences* (London: Routledge, 1989) 387.

if nanoprophets are right, the symbiosis of the organic and non-organic will also occur at the smallest, molecular level of the body. Twenty-first century technologies, used on a global scale almost, remove the boundaries between "flesh" and machine and, thereby, turn more and more people into cyborgs (*cyb*ernetic *org*anisms). As a result, the difference between the brave new world of human-machine hybrids as imagined in science fiction and our present habitat is collapsing. In contemporary thought, these developments and the concomitant transformation of what it means to be human are referred to as "the posthuman condition."[16]

The prospect that *homo sapiens* is not the final evolutionary stage of humankind promises Utopia for some, Dystopia for others. Hans Moravac, founder of the world's largest robotic research programme, speculates that rather sooner than later biological life will be superseded by intelligent machines, which he considers "our progeny, 'mind children' built in our image and likeness, ourselves in more potent form."[17] They are our children because human intelligence can be downloaded into machines and, subsequently, a mortal human simply turns into an immortal posthuman. As I will demonstrate in more detail later on, the underlying logic here is that this transformation is but the "natural" outcome of the co-evolvement of humans and tools —hence something that should not alarm us. Something also that seems inevitable precisely because it is cast as the exponential continuation of biological evolutionary dynamics. The future is "naturally" technological. Yet, Moravac's posthumanist vision encounters strong resistance also among his peers. Bill Joy, co-founder and chief scientist of Sun Microsystems, is anxiously aware that human beings are "an endangered species" and wants humanity to fight against the idea that "the future doesn't need us."[18] I am not so much worried about the feasibility that the human race may soon be extinct. What interests me much more is: who is "us" and whose future or life is at stake?

Scholarly investigations have uncovered that in various locations and historical moments "to be human" (a "thinking animal") was not only defined negatively as "not to be a beast" (a "non-thinking animal" without a soul), but also meant to conform to a specific *norm* of humanity; a norm that has subsequently been used to essentialise differences of ethnicity, class, sex, gender and sexuality.[19] Feminist and queer studies have unmasked the androcentric and heteronormative bias of what count as intrinsic human qualities. Furthermore, ethnicity studies has demonstrated that the Eurocentric standards of "universal human nature," articu-

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[16] Robert Pepperell, *The Post-Human Condition* (Oxford: Intellect, 1995). See also the website that accompanies the revised edition of the book <http://www.post-human.net>.

[17] Quoted from the summary of his book *Robot. Mere Machine to Transcendent Mind* (Oxford: Oxford UP, 1998) on his homepage: <http://www.frc.ri.cmu.edu/~hpm/book97/index.html>.

[18] Bill Joy, "Why the Future Doesn't Need Us," *Wired* 8.4 (April 2002). Quoted from the online publication <http://www.wired.com/wired/archive/8.04/>.

[19] Cf. Diana Fuss, ed., *Human All Too Human* (London: Routledge, 1996). The Nietzschean title of this collection of essays has inspired my own.

lated in the life sciences from the eighteenth-century onwards, have in fact licensed genocides on the grounds of organically marking indigenous people as not conforming to European standards and, consequently, as not "fully" human, even non-human. These supposedly "natural" differences —because innate to specific bodies— helped to build hierarchical systems of domination, as well as taxonomies of the human/inhuman/non-human, which legitimated and continue to legitimate oppression and the denial of universal human rights. Interpretations of canonical works produced by scholars from the humanities are often complicit with discriminatory definitions of what constitutes the human condition, and reproduce the oppressive encodings of the "human" of earlier periods. If the future of these Enlightenment notions of human and humanism —and of the traditional humanities and humanist reading practices along with them— looks less bright, I am not disturbed at all. On the contrary, I welcome the posthuman condition if it entails the dislocation of "Man" (for which read male, white, middle-class, heterosexual human) as/at the centre of the universe. For the same reason, I want to contribute to the theorising of posthumanism as a way of dismantling conservative assumptions of a unitary, autonomous and self-bounded human subject in order to allow instead for multiple, fragmented yet connected ways of being —or, as I will explain later, for *becoming*— posthuman. Such a theoretical standpoint is not afraid of encountering posthuman bodies, but embraces them as paradigms of a future posthumanity in a world where difference can be celebrated rather than used for the objectification and suppression of "the Other."

Humanity is thus confronted with two conflicting imagineerings of a posthuman future; one presents the dream, the other the nightmare of literary critic N. Katherine Hayles in a pioneering study of posthumanism:

> If my nightmare is a culture inhabited by posthumans who regard their bodies as fashion accessories [...], my dream is a version of the posthuman that embraces the possibilities of information technologies without being seduced by fantasies of unlimited power and disembodied immortality, that recognizes and celebrates finitude as a condition of human being, and that understands human life is embedded in a material world of great complexity, one on which we depend for our continued survival.[20]

These diametrically opposed scenarios correspond to two different versions of theoretical posthumanism as well as to two different styles of posthumanist production in literature, film and other signifying practices: one, a *popular* posthumanism, which simply redresses the liberal-humanist mind/body split in postmodern chic and welcomes the turning of human beings into information patterns without bodies —no-body is perfect. The other, a *critical* posthumanism, which tries to

[20] N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: The U of Chicago P, 1999) 5.

avoid a dualistic approach to human ontology and emphasises the material instantiations and incorporations of information. I fully subscribe to the critical model also because it does not defend discrete individualism but stresses living bodies' corporeal interconnectedness to the world and other actors —whether these other actors are humans, animals or machines. In the following, I will look at a few examples for both ways of imagineering posthumanity and interrogate these figurations above all with regard to their reinforcement or subversion of liberal humanism's androcentric, ethnocentric and anthropocentric values and concepts.

2. POPULAR IMAGINEERINGS OF THE POSTHUMAN

Literary versions of popular posthumanism are mainly to be found in so-called "cyberpunk" writing, a SF genre inaugurated and made famous by William Gibson's novel *Neuromancer* of 1984. While Gibson's "neuromancing" of the future —the word is a compound of *neuro* (nerves and antificial intelligence) + *(ro)mancer* (magician and romance, perhaps also an allusion to "necromancer," an evil spirit or conjuror of death) was clearly dystopian, it gained more cult-status among readers celebrating and welcoming the possibilities of technological progress depicted in it. Furthermore, prominent exponents of popular posthumanism are mostly people working in or inspired by developments in cybernetics, artificial intelligence (AI) and artificial life (AL). Next to the already mentioned persons, the most spectacular, provocative and (to my knowledge) the internationally most well-known and most extensive posthumanist projects and experiments have been performed by Australian-based artist Stelarc and by Kevin Warwick, Professor of Cybernetics at the University of Reading. On his homepage, Stelarc dreams about producing the *body immortal* by turning the "flesh" into a modular system:

> [...] if the body can be redesigned in a modular fashion to facilitate the replacement of malfunctioning parts, then TECHNICALLY THERE WOULD BE NO REASON FOR DEATH —given the accessibility of replacements. [...] Death does not authenticate existence. It is an out-moded evolutionary strategy. The body need no longer be repaired, but could simply have parts replaced. Extending life no longer means 'existing' but rather 'being operational.'[21]

The image of the fragmented, dismembered body corresponds to the postmodernist premise that the individual is not a coherent and fixed entity; a premise I fully subscribe to, but I also detect in this statement the same devaluation of the body or "meat" (as the body is disparagingly referred to in *Neuromancer*) that characterises metaphysical thinking. A similar desire to "upgrade" the human underlines Warwick's growing cyborgification. Warwick has carried out a number of ex-

[21] <http://www.stelarc.va.com.au>. See the section called "The Hum of the Hybrid."

periments on his own body, which transformed him from "merely being human" into "the world's first Cyborg": project *Cyborg 1.0* was the surgical insertion of a capsule containing several silicon chips under the skin of his forearm. Sending out an identifying signal, the transponder opened doors, switched on lights and heaters for Warwick without him having to use his own fingers. Going a step further or deeper, rather, project *Cyborg 2.0* was the implantation of an array of microelectrodes into the median nerves below his elbow joints in order to link his nervous system directly to a computer via radio waves. This device allowed Warwick, to control an electric wheelchair as well as an intelligent artificial hand. Moreover, it is reported that the implant also produced artificial sensations stemming from computer-simulated sensations.[22] The primary motivating force behind these operations is to test the latest technology for use with the disabled or impaired but the much larger mission of Cyborg Kevin is to participate in "completely altering what it means to be human" and to convince the rest of humanity that this is the only alternative to the very likely take-over of the world by "machines that can out-think us and which have the potential to control our human destiny."[23] Here, and much more explicitly in an interview with BBC2, Warwick posits a difference between the "good" and "innocent" humans and the "bad" robots who/that destroy cities, injure people and decide "whether they switch humans off," keep them in farms or zoos, or —if we are lucky— as pets only.[24] By no means do I want to take issue with Warwick's intention to alleviate or even do away with pain and suffering, but the demonising of the machine creates a self/other divide that also provides a grammar for relating to *human* others. This effect is evident when we replace the word "humans" in the above sentence with "white people," and "robots" with "non-white people or animals." The ethno- and anthropocentric subtext of the interview is also shown in Warwick's use of "primitive" and "savage" to describe future humans who have not evolved into cyborgs in the aforementioned interview. I read such a statement as complicit with an evolutionary discourse that maintains an ideological connection between less technological, less developed, less intelligent or rational in the *present* world order. What is conspicuously absent in this account of a posthumanist future is an awareness of and critical reflection on the power structures that govern technoscientific research agendas.

Whereas Warwick speculates that humans will evolve into cyborgs in the near *future*, Stelarc insists that we are *already* and always have been cyborgs: "Ever

[22] For a full description of the experiments and their implications, see Kevin Warwick's homepage <http://www.kevinwarwick.com>. See also his autobiographical text *I, Cyborg* (London: Century, 2002).

[23] Kevin Warwick, "I Want to Be a Cyborg," *Guardian Unlimited* (26 January 2000). Quoted from the online publication <http://www.guardian.co.uk/Archive/Article/0,4273, 3954989,00.html>.

[24] <http://news.bbc.co.uk/hi/english/static/special_report/1999/12/99/back_to_the_future/kevin_ warwick. stm>.

since we evolved as hominids and developed bipedal locomotion, two limbs became manipulators and we constructed artefacts, instruments and machines. In other words we have always been coupled with technology."[25] As I already argued in relation to Moravac's charting of a "natural" genealogy between human beings and their "mind children" or robots, Stelarc naturalises technologisation with the help of an evolutionary narrative of progress as improvement, which should not be stopped. Cyborgification, so the story goes in a nutshell, is a mutation process we need not fear because we are "natural-born cyborgs." *Natural-Born Cyborgs* is the title of the most recent book by philosopher and cognitive scientist Andy Clark. The author claims that people are not cyborgs in a merely superficial sense, when they wear glasses or interact with computers, for example, but —as far as their mental activities are concerned— people are "human-technology symbionts" in a more basic sense, namely: "thinking and reasoning systems whose minds and selves are spread across biological brain and non-biological circuitry."[26] Unlike any other species, humans have always created and made use of tools (including language) and other material sources outside their heads in order to think. Clark is convinced that the smarter these technical aids and devices get, the smarter we get as well because "Mother Nature" has endowed us with great neural plasticity and flexibility which drives us to forever loop out and merge with external props; that is, to incorporate non-organic objects into our very existence. But to me, Clark seems to subscribe to "technogical determinism"; i.e., to a position that regards technological development as the motor of history.

Perish the thought that I am technophobic. In fact, I find the cyborg —as defined by Donna Haraway *nota bene*— a useful figure to think about human ontology in more than binary terms and to remind us of the intersubjective constitution of human identity. In Haraway's conceptualisation, the cyborgs defies exclusive possession. He/she/it is not the obedient child of militarism and patriarchy but can also be enlisted for feminist and other emancipatory projects.[27] This understanding gets lost in Clark's book. Whether intended by the author or not, *Natural-Born Cyborgs* echoes Oliver Stone's controversial movie *Natural-Born Killers*. This meaning of the cyborg as killing-machine is reinforced at the very beginning of the book when the author speculates that soon we can be "kin" to Terminator or Eve 8 —which are both highly destructive cyborgs. Extending one's family ties beyond the nuclear heterosexual "family of man" is a move I welcome very much, but my chosen sisters and brothers would definitely be of a different kind.

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[25] See opening statements of his website.

[26] Andy CLARK, *Natural-Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence* (Oxford: Oxford UP, 2003) 3. The almost identical rhetoric of Stelarc and Clark confirms the earlier argument that culture (arts, in this case) and science are part of the same cultural matrix. The two imagineers also currently collaborate on a project called "Sci-Art: Bio-Robotic Choreography," see homepage Stelarc.

[27] Cf. Donna HARAWAY's "Cyborg Manifesto," *Simians, Cyborgs, and Women* 149-181.

Clark also seems to forget that the cyborg is also a "creature of fiction."[28] In the second paragraph of his introductory chapter already, Clark labels his conviction that we are all "natural-born cyborgs" as "the plain and literal truth" which is synonymous with "SCIENTIFIC truth" (with capital letters) and which he opposes to "futuristic mumbo-jumbo."[29] The voodoo word links non-scientific truth claims negatively to black magic, to non-Western, African forms of knowledge, to the irrational. According to Jean-François Lyotard, to question the validity of narrative statements, to call them "mumbo-jumbo," is a typical legitimation strategy of the modern scientist. Lyotard writes that narratives are regarded by scientists as "savage, primitive, underdeveloped, backward, alienated, composed of opinions, customs, authority, prejudice, ignorance, ideology. Narratives are fables, myths, legends, fit only for women and children."[30] Furthermore, "mumbo-jumbo" refers to a language that is difficult to understand and confusing. Being predominantly figurative, this is certainly not the language of rational subjects. Plain style, by contrast, characterises the rhetoric of the liberal-humanist subject emerging in the course of the early modern period; a style which was said to be closer to the language of God and hence to the Truth (with a capital "t"). Although science established its authority over religious truth-claims, it can be said that scientific visions have religious overtones that connect scientific truth again to pre-modern cultures of belief and opinion. To speak with Bruno Latour: "We have never been modern."[31]

A further point I would like to take issue with is Clark's repeated insistence that only human beings are natural-born cyborgs. His cat Lolo, he says, does clearly not qualify despite of having a silicon chip implanted under his skin with a unique code bar. Significantly enough, Clark writes that this tool does not give his pet an identity but "identifies [him, Andy] as Lolo's *owner*."[32] Human intelligence, in other words, is placed above animal instinct or intuition, legitimising a proprietary, subject-object relation between the human self and his defining animal other. More generally speaking, the mind is again privileged over the body in the old Cartesian way. Unlike Andy, Lolo cannot make smart use of a mobile phone —but neither can many human animals. Are they therefore less human? Less equal? Despite of including a chapter on ethical matters in his book, Clark is suspiciously silent about human beings whose minds do not or cannot function in the way all human minds are supposed to function, who cannot make efficient use of tech-

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[28] Haraway 149.

[29] Clark 3. Like Silver's writing above, Clark's reference to SF characters contradicts his attempt at separating scientific visions from narrative imaginings.

[30] Jean-François LYOTARD, *The Postmodern Condition: A Report on Knowledge*, trans. Geoff Bennington & Brian Massumi (Manchester: Manchester UP, 1986). Original French edition, 1979; first English translation published in 1984.

[31] Bruno LATOUR, *We Have Never Been Modern*, trans. Catherine Porter (Cambridge, MA: Harvard UP, 1991).

[32] Clark 6.

nologies, whose bodies do not act according to universal laws of nature or standards of behaviour defining our distinctive "humanness." What is ignored is the fact that institutionalising such standards, which technoscientific disciplines inevitably do, means to practice biopolitics in the Foucauldian sense: the ideal of perfectly-functioning bodies are employed to reproduce perfect human beings for a nation structured by late-capitalist interests.

In all of the above popular-humanist imagineerings of the future, human beings have perfected themselves to the extent that they are finally in perfect rational control over their deficient and decaying bodies. Feminist scholarship has pointed out that throughout history, such "body horror" has corresponded to abjection of the feminine.[33] The horror and concomitant desire to reach control and mastery over bodily processes is not exclusively expressed by male voices though —as my examples so far might suggest. American "transhumanist" Natasha Vita-More, for example, is the designer of "Primo Posthuman." This prototype future body, the artist explains in an essay, is "founded on scientific probability and inspired by technological prowess"; it is "ageless, has replaceable genes, and gender variegation."[34] Is this Haraway's dream of a "post-gender world" come true?[35] Dream on. Instead of imagineering a novel human form that transcends traditional inscriptions or prescriptions of classical Greek and Roman renderings of physical perfection, Vita-More draws on "the ideal of 'man' and incorporates it in its transhumanist values of improving the human condition." Combining design and biotechnology, "Primo is engineered like a finely tuned machine and displayed visually like a biological body to mirror the human shape for cognitive association, visual recognition, and aesthetic appeal." Beneath the figure of Primo on the artist's website, we learn that the first posthuman is imagineered as "a cross between Frank Lloyd Wright, Le Corbusier and Valentine." Gender variegation? Hardly. The posthuman is all too huMAN. In other words, what I miss here —and with regard to Vita-More's fashioning and stylising of her own body (through diet, exercise and cosmetic surgery)— is the kind of critical reflection and political art of someone like French multimedia performer Orlan, whose ongoing art project *The Reincarnation of Saint Orlan* —her metamorphosis into a composite of Venus, Diana, Europa, Psyche and Mona Lisa by means of plastic surgery on her face— is a feminist critique of Western, sexist and racist standards of aesthetics and the beauty industry.[36] The work of both artists shows that "body-building" is the location were

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[33] Cf. Julia KRISTEVA, *Powers of Horror: An Essay on Abjection*, trans. L.S. Roudiez (New York: Columbia UP, 1982).

[34] The essay can be found on Natasha Vita-More's homepage, along with further details on her work and visions <http://www.natasha.cc>.

[35] Haraway 150.

[36] Cf. Orlan's homepage <http://www.orlan.net>. I recommend the following essay on her "carnal art": Jennifer Beryl Smith, "What Lurks Beneath the Skin: Orlan and the Horror of Surgery," C*ult.shock* (Fall 1999), published online only <http://fargo.itp.tsoa.nyu.edu/~uk212/orlan.html>.

technology and the imagination meet. This synthesis, however, can either reproduce old figurations in postmodern disguise or to generate new models of the (post)human beyond the disembodied abstractions of popular posthumanism and hegemonial representations.

3. CRITICAL IMAGINEERINGS OF THE POSTHUMAN

I want to define critical posthumanism as a re-vision of liberal-humanism aimed at imagineering a radically democratic future in which human identity is not reduced to a single standard or norm.[37] This will also be a future in which the experience of embodiment in all its richness and variety marks post/humanity and in which the lived body remains the ground not only of individual subjectivity but also of interaction and connection with the world and with others. In this respect, critical posthumanism is the political version of popular posthumanism: the technosciences are not discussed outside their specific social, economic and cultural contexts and the body remains a site for the analysis of power relations. These goals certainly characterise philosopher Rosi Braidotti's "enfleshed materialism."[38] Resisting to be seduced by popular scenarios of a post-biological future, Braidotti proposes a feminist theory and practice of posthumanism which —as in an earlier book— takes the figure of the so-called "nomadic subject" as a guiding concept.[39] Like the cyborg, the nomad crosses boundaries of all sorts and refuses to live within imprisoning structures of familiarity, normalcy and commonsense. Nowhere at home, she cannot be "fixed" and thereby becomes a threatening other to the social and symbolic order.

The *Alien* movies are one of the best illustrations for the way the current cultural imaginary deals with such others: they either have to be recuperated within the dominant order or to be terminated in order for the "normal" status quo to reign supreme. A characteristic element of many horror films, the final killing of the monster (human or non-human) is commonly read in psychoanalytic terms as the repression of unconscious desires and, hence, the alien *within* the self. Kelly Hurley objects to such a reading of horror texts above all because it takes it for granted that the spectator is "fully invested in a discrete and stable human iden-

[37] For books and collections of essays along the critical-posthumanist line, see Judith Halberstam & Ira Livingston, *Posthuman Bodies* (Bloomington: Indiana UP, 1995); Neil Badmington's anthology of theoretical texts, *Posthumanism* (Basingstoke: Palgrave, 2000), and Badmington's monograph, *Alien Chic: Posthumanism and the Other Within* (London: Routledge, 2004); and Elaine L. Graham, *Representations of the Post/Human: Monsters, Aliens and Others in Popular Culture* (Manchester: Manchester UP, 2002).

[38] Rosi Braidotti, *Metamorphoses: Towards a Materialist Theory of Becoming* (Cambridge: Polity, 2002) 15.

[39] Rosi Braidotti, *Nomadic Subjects: Embodiment and Sexual Difference in Contemporary Feminist Theory* (New York: Columbia UP, 1994).

tity."[40] Her own interest in the genre is not in its putatively therapeutic function, but in how a posthumanist figuration like the Alien enables us "to imagine otherwise," especially to image human identity beyond the constituting logic of genital difference (penis/no penis, male/female): "to imagine other (alien) systems of reproduction, other (alien) logics of identity," to even guide us towards "another (alien) logic of 'the human,' one predicated only occasionally and incidentally on categories of sexual difference."[41] Neither clearly male, nor clearly female, but not androgynous either —which would simply reinstate a binary logic— but sublimely ambivalent, open for all kinds of critical-posthumanist investments.

Like in Hurley's essay, monstrosity has been reconfigured and depathologised in recent years: hybrids, mutants and other creatures of the "zoo of posthumanities"[42] have been embraced as positive figures of thought in much contemporary feminist and critical-posthumanist theory, criticism and cultural production. Monstrous creations, I want to argue, signal a way to deal positively with the radical changes brought about by the rapidly increasing technologisation of our habitat by recognizing the potential for different figurations of humanity without having to give in to a vision of a disembodied posthumanity. Following Braidotti, I do no regard a figuration as simply a metaphor but as "a living map, a transformative account of self."[43] To conclude this essay with an illustration of precisely such a positive figuration of the posthuman body, I want to briefly discuss Shelley Jackson's hypertext *Patchwork Girl —A Modern Monster*, written by "Mary/Shelley and herself."[44]

The hypertext is probably the medium which best represents "a living map," a thinking-in-images and an account of identity as intercorporeal or intersubjective. With their located actions and personified agents in contexts more or less familiar to readers, literature in general —much more so than other scientifictive writing— resist abstraction and disembodiment, emphasising precisely post/humans' material embeddedness in larger structures, their connectedness and the mutual dependency between self and other. It is, of course, a fortunate coincidence that Jackson's first name is Shelley, the last name of the author of *Frankenstein* (1818), one of the novels Jackson rewrites in her text; the other being L.F. Baum's *The Patchwork Girl of Oz* (1913). Along with excerpts from the fictitious diary of Mary Shelley and a number of other literary texts, images and voices, Jackson sews a quilt that becomes the textual body of the monster. But the monster's body is also produced in the reading act and this is why Patchwork Girl can say: "My birth takes place more than once." On the material level, the plural intercorporeality of the monster is reflected in being composed of body parts pertaining once to other

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[40] Kelly HURLEY, "Reading Like an Alien," *Posthuman Bodies*, ed. Judith Halberstam & Ira Livingston (Bloomington: Indiana UP, 1995) 206.

[41] Hurley 205 and 211.

[42] Halberstam & Livingston 3.

[43] Braidotti, *Metamorphoses* 3.

[44] Shelley JACKSON, *Patchwork Girl: A Modern Monster* (Watertown: Eastgate Systems, 1995).

women, yet also to two men as well as to animals. I read her hybrid existence as an alternative to the humanist idea of the unitary and autonomous subject. Patchwork Girl herself postulates that identity is to be found between socially fixed, diametrically opposed poles like man/woman, human/animal, black/white, normal/abnormal, and so forth: "I am myself in the gaps between my parts." In the space between, we encounter the scars of the stitches, the dotted line (————), which connects yet also severs bodies from each other. It is the "best line" for Jackson:

> It indicates a difference without cleaving apart for good what it distinguishes.
> It is a permeable membrane: some substance necessary to both can pass from one side to the other.
> It is a potential line, an indication of the way out of two dimensions (fold along dotted line): In three dimensions what is separate can be brought together without ripping apart what is already joined, the two sides of a page flow moebiusly into one another. [...]
> Because it is a potential line, it folds/unfolds the imagination in one move. It suggests action (fold here), a chance at change, yet it acknowledges the viewer's freedom to do nothing but imagine.

The reference to the Moebius strip is significant here: like the ants on M.C. Escher's picture *Möbius-Band II*, human beings walk through life by crossing boundaries between inside and outside, self and other. In the process, the identity of neither remains the same. Most important of all, the dotted line incites the imagination. The reader or literary critic is reminded that we have the freedom to imagineer posthumanity in our own terms —nothing less is at stake.