

'Extimate' Technologies: Empowerment, Intrusiveness, Surveillance: The fate of the human subject in the age of intimate technologies and Big Data

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Abstract

A new chapter in the history of technology seems to be unleashed. Until recently, man-made technologies basically functioned as prostheses, as external prosthetic *extensions* of human bodies, directed towards the outside world, allowing us to interact with and manipulate objects more effectively, eventually transforming humans into 'prosthesis-gods' (Freud 1930). Currently, technological devices have begun to move *inwards*: *entering* our bodies and brains, functioning as *implants* rather than as extensions. Self-monitoring is an important objective of this trend. Due to recent developments in technosciences, such as synthetic biology, tissue engineering and nanomedicine, our sway over the human 'condition' (in its literal, biomedical sense) is increasing, down to the molecular level, and up to the point of becoming uncanny. New options for drug delivery and bio-implants are entering (pervading) human bodies and brains. On the one hand, this may be seen as strengthening human autonomy and agency. On the other hand, we must consider the possibility that we are the targets rather than the agents of this process. Rather than being in control, we may become increasingly dependent on these new technologies, emerging in the boundary zone between therapy and enhancement. On the one hand, intimate technologies allegedly open up new practices of the Self, enabling individuals to become the 'managers' of their own life and health. On the other hand, human beings are controlled by the gaze of the Other, which invokes a sense of unease. An exemplification is the Snyderome project. A prominent geneticist was closely monitored over the course of 14 months, measuring everything, resulting in the integrative Personal Omics Profile, a comprehensive omics portrait ("extremely high coverage"), combining "deep sequencing" with more than 3 billion measurements of molecules. This portrait is highly personal, but at the same time highly impersonal: opening up individuals to a digital panopticon: a molecularised version of the 'voice of conscience' in the form of a computer monitor, informing us that we must change their life on a daily basis: the superego of intimate technologies in the terabyte age. What is the fate of the human subject in the era of Big Data and intimate technologies?

'Extimate' Technologies: Empowerment, Intrusiveness, Surveillance

Introduction

In the opening scene of the futuristic cult novel *Accelerando* by Charles Stross (2005), ICT wizard Manfred (the novel's key protagonist) arrives in the plaza in front of Amsterdam Central Station with eyeballs "powered up" (p. 3) and equipped with special high-tech glasses which keep him acutely up-to-date, so that he lives minutes (or even days and weeks) into other people's future, assimilating gigabytes of content every day, just to stay current (p. 5). Soon, he encounters some other early adopters of smart technologies, like-minded youngsters, spreading "clouds of electronic emissions" as they move about. *Accelerando* reads like a literary laboratory, inviting us to explore the emerging future, with Manfred as our guide, or research subject. How will human existence and the human life-world be affected (perhaps we should say: infected) by this upcoming avalanche of high-tech and miniature devices, also known as intimate technologies?

The book *Radical Evolution: the Promise and Peril of Enhancing our Minds, our Bodies – and what it means to be Human* by science author Joel Garreau (2005) has a similar objective: exploring the emerging future, albeit this time by visiting and interviewing pioneer researchers in their laboratories. The general message is that we are reshaping ourselves, equipping ourselves with embedded devices, for x-ray vision or infrared vision (via retinal implants) for instance, or with exoskeletons. We are approaching an inflection point in history, Garreau argues. For millennia, technologies tended to be aimed outward, allowing us to control and reshape our environment: the objects we encountered. Now, however, the direction seems to be suddenly reversed, as technologies are taking an inward turn. We ourselves (our human bodies and brains) are now increasingly becoming the target of choice. New technologies have begun to merge with our minds, our memories, our metabolisms, our moods, our personalities even: we are really entering the era of "engineered evolution" (Garreau 2005, p. 6). A plethora of (more or less plausible, more or less futuristic) examples is exhibited and assessed in Garreau's fascinating panorama. Besides inserting various kinds of retinal and cochlear implants, or bioinspired materials and tissues produced from stem cells into our bodies we could, for example, add a new artificial chromosome to the nucleus of our cells, thereby providing additional plug-in-points as it were, where genetic modules could be implanted with additional features. This auxiliary chromosome would be a universal delivery vehicle for bio-molecular implants, including an on-off switch activated by injections (p. 117).

Similar prospects are invoked by the recent report published by the Dutch Rathenau Institute entitled *Intimate Technologies* (van Est et al, 2014). Electronic gadgets are shrinking in size, coming closer, becoming wearable, the authors argue, they are now just on the outside, on our skin, while cochlear implants, deep brain stimulation electrodes etc. have already entered our bodies. And indeed, the advent of intimate technologies is being heralded by a chorus of authors. The relations between technologies and human bodies are becoming increasingly intimate, Lucie Dalibert (2014) claims. Contemporary objects such as wearable computers are presented as intimate machines; we become increasingly dependent on them and they demand that we focus daily attention on our increasingly intimate relationships with them (Turkle 2004). New technologies are pervading our lifeworld, they are becoming *us*. Micro-implants, health monitoring technologies and Google Glass exemplify new types of gadgets that are increasingly getting closer to, or even penetrating under our skin, giving rise to an intimate interplay between bodies and technologies (Lettow 2011).

In *Polar Inertia*, Paul Virilio (2000) has argued that three technological revolutions can be distinguished. The first revolution began in the 19th century and notably involved transport (trains, cars, airplanes, etc.). The second revolution emerged in the 20th century and focussed on technologies of

transmission (radio, TV, etc. up to the computer and the Internet). The third (currently ongoing) revolution entails processes of 'miniaturization' and is about to culminate in the colonisation of the intimacy of the human body with the help of nanotech implants. This is the challenge currently facing us, as Virilio sees it: how to cope with technologies that are actually inhabiting us?

Ernst Kapp (1877), founding father of philosophy of technology as a research field, argued that traditional instruments were actually projections or exteriorisations of bodily organs, allowing us to control and manipulate objects in the outside world (Lemmens 2008). A hammer, for instance, can basically be regarded as an extension of (and as a robust version of) a human fist. The direction of movement was from the inside (the sphere of desire) towards the outside (the recalcitrant environment). Technology is basically the mechanisation of the organic, eventually transforming human beings into "prosthesis-gods" (Freud 1930/1948). But we are currently experiencing a dramatic reversal. As indicated, miniature gadgets are now moving from the outside towards the inside, they are now turned towards ourselves and entering our bodies and brains. The micro-mechanic is implanted in the organic and may gradually come to replace our most intimate organs and tissues. We ourselves have now become the target of change, allegedly resulting in an increased modifiability (and reduced recalcitrance) of the human body. In the next session, I will assess these claims, concerns and developments from a (psychoanalytically inspired) philosophical perspective.

Extimate technologies: a psychoanalytic assessment

As indicated, I will use a psychoanalytic framework of interpretation to assess the emerging technologies of today, as part of a diagnostics of the present. What is it that makes these smart, embedded gadgets so alluring and disconcerting? What is at stake? To articulate the ambivalence these technologies evoke, a concept coined by Sigmund Freud (1919/1947) may be helpful, namely the concept of the "uncanny", referring to that which is both familiar and unfamiliar, that which positions itself in the boundary zone between natural and artificial, the living and non-living. But the uncanny also refers to that which should have remained hidden, but is now being opened-up and exposed. The uncanny positions itself in the intermediate spaces between bodies, automatons and corpses and seems especially apt to capture anxieties raised by biotechnical artefacts (Assoun 1997). The optimal exemplification of the uncanny is a body part, a 'partial object', an organic component which has become detached from the body as a whole: a hand, an eye, a breast or a foot, something that has become disconnected, or has been replaced.

Uncanny entities such as glass eyes and plastic hands have been around for while however, so the question is: what is so new about intimate technologies: where can the discontinuity be located? The most pertinent difference between traditional prostheses and intimate gadgets seems to reside in the size of the latter, in combination with their embeddedness. They really seem to become part of the daily life of the body as a whole. They fill up invisible gaps, but instead of really solving our deficiencies, they may easily become objects of daily concern in their own right. Indeed, they are likely to become quite demanding. They monitor us and continuously *look* at us.

Building on Freud, the French psychoanalyst Jacques Lacan has coined a term that seems to capture the newness of these new technologies quite convincingly, namely the concept of the extimate: that which is both intimate and external (Lacan 2006; Zwart 2014). Instead of 'intimate technologies', therefore, I would rather speak of 'extimate technologies' because, on closer inspection, these gadgets are not really intimate at all, and their status is much more ambiguous. Lacan's concept of the extimate refers to that which is both intimate and foreign, both embedded and intrusive, both alien and familiar, both life-saving and disrupting. The extimate is that which offers us a life-line, while at the same time opening up daily existence to the gaze of the Big Other, the electronic super-ego,

persistently trailing us and spurring us to change our lifestyle, our way of living, giving rise to permanent (self)-monitoring and intense surveillance. Let me elucidate this concept with the help of an example.

The Snyderome case

In 2012, Michael Snyder and his research team (at the Department of Genetics, Stanford University) published the 'integrative Personal Omics Profile' (iPOP) of a single individual, a 54-year old male volunteer, whom they had closely monitored over the course of 14 months (Chen et al 2014).¹ This longitudinal case study resulted in a comprehensive 'omics' portrait ("extremely high coverage"), combining "deep sequencing" (of the genotype) with more than 3 billion measurements of molecules (i.e. the person's phenotype). Although the research subject was a "healthy individual", the project at the same time amounted to a case study in the sense of a *Krankengeschichte* as two minor viral infections, together with (unexpected) evidence of the subject's propensity for diabetes, constituted the dramatic highlights of the story.

Soon, it turned out that the "male volunteer" of this N=1 experiment (surrounded by qualified personnel and costly equipment) was none other than Michael Snyder himself, the department chair now acting as his own research subject of choice, turning his body into an omics laboratory. The experiment resulted in what has been referred to as the Snyderome² or even the Narciss-ome.³ Snyder himself made it known that he plans to remain a study subject for life,⁴ adding new sources of information as the process unfolds, including data procured from body samples such as breath, urine, faeces ('stool microbiome'), saliva, etc., in other words bodily materials released via various bodily apertures that are usually referred to in psychoanalysis as 'erogenous zones'.

Snyder's idea is that, via high resolution self-monitoring, human individuals will become the proactive managers of their own health. It will allow 'us' to take medicine into our own hands, with doctors merely acting as advisors. Individuals are expected to heavily wire themselves, so as to register pulse, heartbeat, stress (transpiration) and numerous other indicators continuously. The idea is that measurements of thousands of factors can be integrated through devices such as iPhones and compared with big data references, available 24/7 at open-source repositories (vast science clouds), after which the outcomes can be translated into every-day options (diet, exercise, etc.). It is expected that especially the aetiology of mystery symptoms (such as unexplained fatigue or depression) can thus be elucidated.

But rather than putting individuals in charge of their own health, the repositories which are set up to provide reference data (i.e. standards for normality) can easily become an electronic, molecularised version of the super-ego, the 'voice of conscience' of the terabyte age, the Big (digital) (Br)Other. On a daily basis, computer 'monitors' will be telling future individuals that they must change their lives in order to optimise somatic functioning, so that they can live up to normalcy standards, and postpone / mitigate the impacts of unhealthy life-styles and ageing. In other words, it would be a simplification to interpret the advent of extimate self-monitoring technologies merely in terms of 'empowerment'. I will conclude my analysis with a second case study, an anecdote taken from everyday experience.

Extimate technologies: a case study

¹ The article listed forty-one authors with Michael Snyder acting as final and corresponding author.

² <http://snyderome.stanford.edu/>

³ <http://www.nature.com/news/the-rise-of-the-narciss-ome-1.10240>

⁴ <https://www.genomeweb.com/sequencing/snyderome-study-suggests-much-gain-individuals-genome-molecular-profiles>

Some weeks after attending the Strasbourg conference, I joined the daily cue on Saint Peter's square in Rome (where I participated in another scholarly conference, this time on neuro-enhancement) to visit the imposing Basilica. Many languages are spoken by visitors in this cue, coming from around the globe, while emails are checked and calls are made: a multilingual crowd. Finally, after half an hour of patience, it was my turn to pass the electronic surveillance gate: 21st century technology, positioned between two imposing marble pillars. I deposited all the electronic gadgets I was carrying with me (memory stick, iPhone, credit cards) on a small table before sliding through the clearance gate. Nothing happened, and a Swiss guard kindly waved, inviting me to enter. Right behind me, however, the electronic alarm system suddenly sounded, as an elderly Flemish couple wanted to pass the gate as well, but the woman quickly explained the situation by saying, in English, "My husband has two hips".

I was struck by her impromptu remark. It caught my ear for various reasons. First of all, it is an example of what Freud would call 'condensation'. Something is bypassed, replaced, concealed or camouflaged. What the woman actually intended to say was something like "my husband has two artificial metallic hip implants, and this is what the surveillance system is detecting", but uttering such a long and complicated sentence would have focussed attention on her husband's condition (already emphasised by the sounding system, so that he already had become the focus of attention of various impatient bystanders) even more. Something intimate, something which should have remained hidden, was unwittingly brought to the surface, accentuated even. As if the surveillance system was shouting into our ears: "Look people, this person has both his hips replaced!" Electronic surveillance gates are multiplying. We find them at the entrances, not only of museums and cathedrals, but also of airport gates, shopping malls, governmental buildings and in countless other places. Perhaps the woman and her ageing husband were tired of being reminded all the time of the presence of the latter's implants by electronic detectors. Perhaps it was a painful reminder of physical deficits which (Freudians would no doubt add) can easily be associated, consciously or unconsciously, with other physical problems centring on the pelvic zone, related to ageing.

Be this as it may, it must be an uncomfortable experience indeed to become the target of high-tech surveillance on a daily basis, as a side-effect of a medical treatment: i.e. the replacement of damaged bone tissue and cartilage by embedded prostheses. Therefore, the woman used a diplomatic, euphemistic term, in the hope that the surveillance officers would immediately understand what was meant, because artificial hips, once highly exceptional, have become quite common, although strictly speaking the sentence is a funny one, given the fact that everybody 'has two hips', - it is a basic ingredient of human anatomy. For Freud, condensation is a mechanism of defence, employed to conceal something that is considered embarrassing, threatening, painful or uncanny. Indeed, something which should have remained hidden is suddenly detected, emphasised even, namely the presence of an artificial and metallic 'something' hidden in what seems to be (based on outward appearance) a normal organic living body. These intimate, or rather 'extimate', metallic items, moreover, are detected and highlighted with the help of another instance of extimate technology: an electronic surveillance system which is able to screen us, to search and examine us, and which even seems able to enter our bodies, with the help of hyper-tech sense organs.

According to Jacques Lacan (1966), condensation basically works as a metaphor: a particular term is replaced by another, for instance when someone says "I see three sails on the ocean", where the word "sails" is actually used as a stand-in for "boats". Something similar occurs in the example given above, where the word "hips" is used as a stand-in for "metallic implants". A problematic signifier ("implants") is substituted by a less distressing, funny term ("hips"), poetic even, in an every-day sense, meant to take away the tension, because it would be uncomfortable, or even rude, to draw too much attention to the fact that this elderly person, surrounded by an impatient, cuing crowd, is actually a kind of cyborg.

But the surveillance system is inexorable and automatically reveals what surgery, clothing and physiotherapy, in combination with the woman's condensed and jocular sentence, tried to cover up, namely the uncanny idea that this person has entered the world of cyborg-embodiment, via the presence of two implants in his pelvis.

The anecdote highlights the ambiguous, ubiquitous presence and function of extimate technologies in the human life-world in various ways. On the one hand, we could focus on the metallic hip implants themselves: embedded and hidden, as a piece of technology that has really entered the body. They have improved the husband's quality of life no doubt, but are bound to remain items of concern nonetheless. Will they continue to function properly, will they be electronically detected? On the other hand, we could focus on the electronic surveillance device as such, as a piece of technology that has entered the everyday world and is becoming ubiquitous, notably in public spaces. Indeed, these devices are multiplying, their presence is becoming pervasive. The implants will continue to evolve no doubt, so that one day, metallic versions will be replaced by biocompatible, quasi-organic biomaterials, intimately embedded within the body, but electronic surveillance devices will evolve as well, their precision and resolution will increase as well, so that the interaction between these two types of devices (electronic surveillance versus implants) will intensify. These electronic devices increasingly function as a kind of super-ego, reminding us of our deficiencies (and their built-in technological compensations), notably those we perhaps would like to forget or conceal (Zwart 2015; Hilvoorde & Landeweerd 2010).

Something similar would have happened if I would have forgotten to take out my iPhone, for instance, having grown so accustomed to its presence that I sometimes am no longer aware of its being-there, until the electronic beep of the surveillance system reminds me of the fact that I am becoming increasingly dependent upon this gadget, from which I am only temporarily disconnected, for a few seconds only. It is an enabling device, providing me with maps and apps and e-mails, but at the same time it is an intrusive gadget, allow the electronic panoptic Big Brother (or 'Big Other', as Lacan would phrase it) to trace me, to keep track of my whereabouts and doings, with the help of the "clouds of electronic emissions" produced by such an innocent-looking, extimate device. In other words, extimate devices enable various practices of the Self, no doubt, but compensation is due: I must allow the electronic Big Other to enter my private sphere and I must feed this Other continuously with personalised data in return.

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