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The *Robotic Moment* Explored

Intimations of an Anthropo-Technological Predicament

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Abstract: This paper examines the 'robotic moment', as defined by Sherry Turkle (2011), in the light of general theories of human-technology relations, notably the theoretical framework founded by Jacques Ellul (1954). Potential psychological, cultural, and technical consequences of human-technology interaction, especially human interaction with so-called 'social-robots', are explored. It is demonstrated that the 'robotic moment' may reasonably be understood as a result of the formation of pseudo-social anthropo-technological circuits, and as a result of cultural disintegration and an increasingly prevalent societal impulse to incorporate *everything* that is commonly not understood to be technological (i.e. even the biological, the social, and the spiritual) into the technological order. It is demonstrated that the category 'social robot' may reasonably be understood, depending on how the robot is used, as a *technique humaine*, as a magical practice, or as a complex hybrid practice. Assumptions concerning the nature of technologies, the extent to which technologies are useful, and the impact of technologies on society are questioned. The extent to which a society's worldview may determine or influence how its inhabitants relate to technologies is explored. It is suggested that, as societies demystify the universe and develop mature techno-secular worldviews, means-to-ends (i.e. technologies) are being mystified; the ensuing quasi-religious techno-secular worldviews, which fail to recognise the limitations of technologies, may in turn be responsible for much of the irrational use of technologies in technological societies. The essay suggests that the 'robotic moment' can be explained not only in terms of vulnerabilities inherent in human nature and in terms of properties inherent in technological society, but also in terms of the *notions* of the sacred that prevail in technically advanced societies and a society's practice of science, engineering, magic, and faith.

Contents

I. Introduction

Species, Habitat, and the *Robotic Moment*

Theories of human self-understanding have existed in as many forms as the stars in the sky. In ancient times it was indeed not unusual that stars were appealed to as informants concerning where we came from, what we were, and where we were destined to go. In time, humans developed more and more theoretically refined ideas not only of their own nature, but also of the natures of other species. For Aristotle, animals were to be studied in environments that were congenial to their flourishing. The environment of a particular ant can be understood to supply valuable pieces of information concerning the proper nature of that ant, and concerning factors that facilitate or impede a flourishing, as opposed to stunted, ant-life. For the Attic Greeks, the congenial environment for humans was constituted by the Greek city-states. Throughout history, many other propositions have been advanced, and we have even been encouraged, by social constructivists, to doubt whether any universal human self-understanding at all can be modelled on our understandings of other creatures: Are there any particular environmental properties within which human beings are particularly suited to flourish or perish, or are we infinitely adaptable to local contingencies?

Environments in which humans have thrived and failed have always been susceptible to change. Repeatedly, sudden and dramatic change has brought civilisations to abrupt ends. However, never has any change been as global and exponentially increasing in speed as the 'technological evolution' currently under progress. The theories of human nature at our disposal are products, mostly, of observations and discussions that were conducted in environments that were, in comparison to the technologically evolving habitats of the present age, relatively stable. If the environment congenial to the flourishing of a tropical ant holds important information concerning the proper nature of that ant, it stands to reason that an environment uncongenial to the flourishing of that ant likewise may hold some valuable information concerning the *limits* of its nature. What may we be able to observe if we drop a specimen of such an ant in a dry desert? And what of the human creature – what will we be able to observe when human specimens are impelled to live in habitats that are in the process of speedily becoming ever more artificially alien?

The 'human' question is a riddle composed of two distinct components: The creature known as *homo sapiens*, and the habitat in which that creature lives. The purpose of the inquiry that follows is to foster understandings of how changes in human habitats may affect human

beings. The aspects of the human habitat that will be discussed are of a specific kind. The human habitat does, of course, include the biosphere; but it is specifically properties added to the environment by humans that will be discussed, i.e. properties belonging to what may be termed the technological life-milieu. The purpose, then, restated, is to question common assumptions concerning the nature of technologies, the extent to which technologies are useful, and the impact of technologies on society; to examine how the lenses of some general theoretical understandings of human-technology relations (type) may shed light on a particular and new human-technology relation (token); and to grasp to what extent a society's worldview and notions of the sacred may determine or influence how its inhabitants relate to technologies.

The subject of the discussions that follow may be categorised under a general rubric comprising understandings of how humans affect technology and how technology affect humans. This category, which is sometimes referred to as media ecology, contains many studies concerned with explaining, in retrospect, how technologies in the past have changed human societies. I will be more specifically concerned with on-going and much debated changes, namely problems involving human beings on the one hand, and on the other robots and so-called artificial intelligence. I will, more to the point, attempt to understand a 'readiness' that seems to have emerged on the part of humans vis-à-vis so-called 'social robots', a category comprising both robotic- and AI-technology. How is this readiness manifested? Sherry Turkle supplies numerous examples: Anne, a woman in her mid-twenties, confides that she would trade in her boyfriend for a robot, provided that the robot is sophisticated enough to produce caring behaviour. (Turkle, 2011, 8) Colleen, age unspecified, would prefer a robot to a human babysitter, provided that the robot would be able, as opposed to disappointing humans, to give her all its attention. (Turkle, 2011, 71) For Howard, fifteen, people are risky, but robots are safe. (Turkle, 2011, 51)

Turkle has identified a trend that she terms the *robotic moment*: an increasing readiness among young and old and in-betweens to welcome the services of social robots seemingly able to fulfil functions for the fulfilment of which we have formerly relied on either humans or animals – confidants, helpers, lovers and pets, just to mention a few. (Turkle, 2011, 9) Turkle has methodically observed humans interact with a range of commercially available robots (e.g. Furbies, My Real Baby) and robots at the experimental stage in the labs of MIT (Cog, Kismet), and if her observations prove to be the stuff of a growing trend, we may be on the verge of some radical changes in human society:

> Soon, it may seem natural to watch a robot "suffer" if you hurt it. It may seem natural to chat with a robot and have it behave as though pleased you stopped by. As the intensity of experiences with robots increases, as we learn to live in new landscapes, both children and adults may stop asking the questions "Why am I talking to a robot?" and "Why do I want this robot to like me?" We may simply be charmed by the pleasure of its company. (Turkle, 2011, 49)

How Can the Robotic Moment Be Understood?

How can, from a psychological, socio-cultural, and socio-sacral perspective, the robotic moment be understood, and what insights can these perspectives bring when we consider problems concerning technology and human society? In order to answer this question, I will consider the following questions: Do humans need other humans? What is 'technology'? What is 'culture-based order'? What is 'technology-based order? What is 'magic'? What is the function of a culture's notion of the 'sacred'? What is a 'social robot'?

I will first treat Turkle's own psycho-inter-actionist perspective of human *vulnerabilities* vis-à-vis networking technologies and 'social robots'. I will discuss Turkle's understanding of the *robotic moment*, and of how, by means of mere 'interaction' with technologies, humans may undergo qualitative mental and social change. Second, I shall consider sociological understandings of technological societies and culture. Here I shall rely on several thinkers, most of whom are influenced by Jacques Ellul, who may be considered the foundational thinker of many of the ideas presented in this paper. I will demonstrate that 'social robots' may be understood as a *technique humaine*, i.e. a technique developed and marketed with the purpose of influencing human beings to accommodate to a technological society that is experienced as alien. Third, I will examine a few unconventional forms that magic, faith and religion may assume in technological societies. I will demonstrate that much of what is popularly understood as scientific- or evidence-based methodology or technique in contemporary societies, can be understood as modern forms of magic. I will argue that though there is a technology that corresponds to the category of 'robots', the category of 'social robots' may in fact be understood as a magical concoction. Finally, by means of a concluding discussion, I will attempt to give an answer to the question posed above. Here I will also discuss an alternative point of view, and the limitations of the habitat-oriented approach presented in this paper: In order to reasonably be able to select between the alternative views discussed, a question that falls beyond the scope of this paper needs to be seriously

considered: Is there a human nature worth preserving, or is there a human nature worth improving?

Method

I shall, by means of a number of theoretical frameworks, attempt to explore, interpret, question, and reinterpret relations between human beings (as individuals and as part of society) and technologies. I will rely on the following methodological tools: interpretation of texts (hermeneutical analysis), explication of key concepts (conceptual analysis), and evaluation of claims expressed in texts (argument analysis). Thus theories and ideas will be critically discussed and measured against criteria of consistency and logical coherence. One idea in particular, which we could term 'scientific ideology', will, due to its potential impact on society and to its proper peculiarities, be critically discussed and measured against a criterion of 'holistic consistency': in this instance, it is the 'output' of the techno-scientific process, i.e. new technological innovations and/or increases in measurable performance values of existing technologies, that will be philosophically (not empirically) evaluated and contrasted against the evolution of the whole. The whole, which in this paper will mostly be synonymous to 'society', is, of course, composed by, among other things, the novel technologies and the increased performance values that are implemented in it. I shall attempt to interpret, question and reinterpret how so-called 'improvements' of partial 'means-to-ends' processes (technologies) may affect the evolution of the whole (society).

I will attempt to clarify the ideas of the thinkers referred to by formulating reasonable interpretations of their work. Reasonable interpretations will be reached in accordance with a *principle of generosity*, according to which the reasonable interpretation will be one that is as consistent, logically coherent and free from contradiction as possible; the reasonable interpretation will also, in accordance with the same principle, be one that renders the view of each author as 'acceptable' as possible. (Grenholm, 2006, 240)

Theory

Accelerationists, sceptics, and the basic structure of habitat diagnostics

In the discussions that follow I will relate to the two basic structures of understanding defined below. 1) A naïve techno-science advocate may understand technology in society according to the following formula: if [T1], then *p*; if *p*, then *q*. '[T]' stands for 'technology is developed and/or implemented; '[T1]… [Tn]' stand for types of technologies, e.g. 'sanitation',

'information technology', 'biotechnology'. '*p*' stands for 'material conditions will improve', and by 'material conditions' we are to understand 'conditions measurable according to various quality or performance criteria', e.g. 'clean water', 'speedy access to information', 'increased longevity', etc. '*q*' stands for 'human happiness will increase'. The precursor techno-science advocates would argue that a frequently observed correlation between [Tn], *p*, and *q* corroborates, or that it at least does not falsify the hypothetical understanding. A naïve critique of the above would attack the logical structure by alleging 'not *q*', and thus, by means of the modus tollens principle, attempt to logically falsify the hypothesis. Since 'human happiness' is notoriously difficult to measure, such claims typically prompt inconclusive feuds concerning constituents of human happiness, while leaving the more important question, concerning the effect technology might have on human culture and human flourishing, in the dark. This line of attack is perhaps more frequently imagined by techno-science advocates than argued by actual critics of technology, as it provides the advocates with convenient straw men, in the form of Luddites or technophobes, that may be ridiculed. 2) A more subtle critique would proceed *not* by alleging 'not *q*', but by extending the hypothetical understanding according to the following pattern: if [T1], then *p* and *x1*, *x2*… *xn*; if *p* and *xn*, then *r*; if *r*, then *s*. '*xn*' stands for any number of foreseen and/or unforeseen consequences; '*r*' stands for 'the human habitat will be affected', and by 'human habitat' we are to understand *the whole* that sustain human life, i.e. biosphere, technological infrastructure, and culture. '*s*' may stand for 'humans will endure the effects of an altered habitat', or, perhaps, 'humans will endure the effects of increasing incompatibility between who they are (human nature) and the condition of their habitat', or, alternatively, 'human nature might be irreversibly affected'.

All the critical perspectives treated in this paper, and those of the more sophisticated accelerationists (e.g. Ray Kurzweil, Nick Bostrom), adhere to the latter hypothetical understanding. The difference between sceptics and accelerationists is that the latter argue that human beings can still exert control over technology to the extent that we can annul or mitigate the problems caused by the *x*-factors, and/or that it is possible to modify the human creature into a desirable post-human condition more apt to cope with the technological habitat; the sceptics argue that the obsession with searching for technological solutions to *every* conceivable human problem will only multiply the *x*-factors, usher mankind into an alien labyrinth of technology, and, ultimately, either annihilation or an undesirable post-human condition. The analyses that follow will shed light on potential unexpected and

undesirable effects that [T] may have on the human condition. Assuming that the critics analysed in this paper are correct in adhering to the general second structural understanding sketched above, I hope to demonstrate that regardless of the extent to which they are right or wrong in more specific matters, the predicament involving *homo sapiens* and its *habitat* deserves serious scrutiny as we move farther into the 21st century.

Possible worlds, actual world

It will be argued that technologies are conceived in 'possible worlds', whereas they are implemented in the 'actual world'. The difference between the two may be grasped from what may seem to be but is not a logical paradox. The following example is from Bertil Mårtensson (1993, 140). If it is true that if *p*, then *q*, then it is also true that if *p* and *r*, then *q*. This means that if it is true that 'if one jumps out of the window of the 111th floor, then one will die', this logically entails that 'if one jumps out of the window of the 111th floor, and is saved by a divine power, one will die'. In the 'possible world' of propositional logic, if '*p*' is a 'sufficient condition' to logically entail something else, then, if *p*, then nothing may annul the consequence logically entailed by *p*. In the actual world, in which we live, many factors may intervene to modify or annul results. It will be argued that technologies, conceived in possible worlds, tend to function more efficiently to the extent that they, in the actual world, operate in closed systems in which only a limited and controllable number of variables are operational; to the extent that they are introduced into biological and social systems, in which many variables are operational in ways that we do not understand, technologies function less efficiently.

Technique and technology

I will use the term 'technology' in a sense restricted to mechanical processes designed to and able to produce specific outputs from specific inputs. 'Technique' incorporates 'technology', but its extension is vaster: it also includes, for instance, therapeutic and administrative methods. 'Technology' is the ideal of 'technique'. But even technologies are, especially in the actual world as opposed to the abstract *possible worlds* in which they are conceived, obstructed by bugs, and identical inputs are not always transformed into identical outputs. There is always a margin of error. So-called 'scientific' or 'evidence-based' techniques – also conceived in abstract *possible worlds* – that are used in the sphere of the living, and especially within the sphere of human society, are, when they are confronted with the conditions of the actual world, bugged to a much larger extent than technologies. The concept of 'technique',

therefore, includes many methods that will rarely or never produce similar outputs from identical inputs. Such methods may also be understood as malfunctioning technologies.

Sociological integrative propaganda

The term 'propaganda' commonly signifies 'persuasive schemes planned by self-conscious propagandists'. I will refer instead to a kind of sociological propaganda – integrative propaganda – as understood by Jacques Ellul (1990, 329-340). If we understand 'agitation propaganda' as incitement to rebel against established order, 'integrative propaganda' has the opposite objective, namely to pacify rebellious impulses and normatively integrate the individual into a given society. In the case under discussion, the society-type is 'technological society', i.e. a society congenial not primarily to the flourishing of human beings but to the proliferation of certain kinds of organisations and techniques. Moreover, 'integrative propaganda' may be understood less as a product of self-conscious propagandists, than as a largely sub-conscious, impersonal, normative product of technological forces. A pre-requisite for functional sociological propaganda, according to Eleen Gambrill, is 'education' understood as 'pre-propaganda': 'the conditioning of minds with vast amounts of incoherent information, already dispensed for ulterior purposes and posing as "facts" and as "education."' (Gambrill, 2012, 191) Contrary to common assumptions intellectuals are more vulnerable than the 'un-educated' to this form of propaganda, since '(a) they are exposed to the largest amount of second-hand unverifiable information (b) they feel a need to have an opinion on important questions, and (c) they view themselves as capable of "judging for themselves."' (Gambrill, 2012, 191) For Ellul and his followers, propaganda is understood to be indispensible for both the functionality of technological society and the proliferation of technique, in that it is the primary means used to attenuate the distressing effects of mechanisation and technological organisation.

On 'habitat'

I was going to refer to the particular aspects of the human habitat under discussion as 'bio-technical'. However, since 'biotechnology' is already a recognised technological field, the biological is already in the process of being reduced to the technical. Is there a compelling reason to give the 'biological' a special status within the technical? I will refrain from answering this question; instead I choose to emphasise the ambiguous and vague nature of our life milieu, which I will refer to alternatively as 'habitat', 'technological society', etc.

Theory of human nature

I deliberately choose to initiate the examination of the human habitat with as few presuppositions as possible concerning human nature. I will nonetheless carry with me a sort of minimalist anthropological understanding, based on the following two assumptions. 1) Human beings long for some ineffable goals, such as 'completeness', 'togetherness', 'growth', 'release', etc. I will use the word 'flourishing', deliberately unspecified and vague, as a common denominator. 2) Certain sets of circumstances are experienced by all humans or by a significant proportion of humans as obstructing 'flourishing'.

Consider a grand master who reigns supreme in some virtual reality, the skills of whom are obtained at the expense of social skills necessary to engage in real life: in virtual reality – a *possible world* – he is a brave hero; in real life his limbs have atrophied and he is afraid to even approach actual persons. If one intuitively feels there is something wrong with such a way of life, then this is because such a way of life seems to prevent the human person from flourishing physically, socially, and even spiritually. Instantaneous pleasure does not seem to be the same thing as 'flourishing'. There is no end of scenarios that would appear to be either physically or spiritually destructive, or both, to the human person. If we hypothetically accept this line of reasoning, then we must also accept that there is an objective human nature, the limits of which will manifest to the extent that we pursue desires that go against the 'interests' of that nature. Fluidity there may be, but there are limits to the circumstances that will permit a person to flourish. Perhaps in time those limits might be stretched beyond the imaginable: If we were to experimentally breed humans in a concentration camp for thousand years, providing no clothing, no hygiene, and the bare minimum of nutriment, then perhaps the experimental population might begin to adapt into a species able to flourish under those circumstances. If we recoil at the idea for reasons other than abstract ethical principles, then it might be because we hold that there is at least a minimal *something* about being a human being – a human nature – that we think ought to be defended. The theory of human nature assumed in this paper is of the minimalist kind sketched above. As for the 'plasticity' and potential for evolution, I assume that human nature is sufficiently biologically determined and change-resistant to prevent the concentration-camp-scenario described above from being quickly realised. At the present moment, it will of course be difficult to reach any agreement on how humans are to 'flourish'. I do expect, however, that it will be far easier to reach a shared understanding concerning at least some environmental factors as 'obstructive to human flourishing'.

Previous Research and Alternative Views

In the discussions that follow, two distinct approaches to the specific understanding of human-robot interaction will be discussed. One is what I will term the *quasi-cultural approach* of Sherry Turkle (2011), the other is the abstract social-scientist approach of Masahiro Shiomi et al. (2017); the former examines, by means of observations, interviews, and references to previous research, the effects of robots in the living environments into which they are introduced; the latter examines, by means of empirical and statistical methods, the effects that robots have on humans in laboratory settings.

My attempt to answer the question concerning the robotic moment prompts me to inquire into processes behind the phenomenon. The bulk of the ideas discussed in this paper are not specifically concerned with robots, but more generally with technology, technique, and human society.

My analyses will give an up-to-date representation of the technologically deterministic theoretical framework founded by Jacques Ellul. An alternative to this framework is provided by social constructivists who argue that knowledge and artefacts are socially determined, e.g. Wiebe Bijker (2009), Thomas Misa (1988), and Sally Wyatt (2007). Between determinists and social constructivists there is a theoretical mid-field of co-constructivists who emphasise mutual influence of technology and society, e.g. Margaret Lock (2007), and Nelly Oudshoorn and Trevor Pinch (2007).

The determinists considered in this paper are mostly quite sceptic in regard to human ability to control technology. Accelerationist alternatives are provided by Nick Bostrom (2005; 2014), James Huges (2007), thinkers who, like Kurzweil (1999; 2005), adhere to the transhumanist option. Against this camp, Francis Fukuyama (2002), neither extremely sceptic nor deterministic, represents a bio-conservative alternative. From the point of view of a technologist *and* a techno-enthusiast, Jaron Lanier (2011), provides a thought-provoking philosophical counterweight to 'cybernetic totalism', a kind of techno-utopian ideology adhered to, so he argues, by many leading technologists; instead he argues for the dignity of the human creature and for technology in service of sensible human ends.

Much of the polemic concerning technology and society today revolves around specific technologies, such as genetic technologies, automation, and artificial intelligence. Bertrand Russell (1994) exemplifies the thoughtful analyses, common in the early 20th century, of a

more generalist approach in regards to technological development. Russell, discussing potential repercussions of technology on society, though basically an optimist, represents a view that can be understood to be located between sceptics and accelerationists. A more recent generalist reflection is offered by Neil Postman (1993).

Topi Heikkerö (2004), discussing G.H. von Wright's perspective on science and human civilisation, suggests that one of the accomplishments of modern science has been to produce a value void in human civilisation: without shared norms the struggle for existence become ruthless, and winners are not necessarily happier than losers. Ann Kull (2006) provides a telos-based perspective to the problem of technology: Historically, as technology was divorced from God, technology came to be understood exclusively as means to realise human ends and desires; but this mindset has wound up in technological autonomy and placed humankind under the thrall of technology. We ought, Kull argues, reconfigure the equation, and instead understand both technology and human beings as belonging to nature: hence, we ought to love technology, and we ought to properly love technology as a creation of ours that properly belongs to God. Translated into acceptable-to-secularist-speak: instead of treating technology as mere instrument of power, we ought to properly respect it as an awesome force, dependent on nature, as are we, that transcends our transitory whims and desires. Before dismissing such notions as *quaint*, one should perhaps consider technologist Bill Joy's (2001) apocalyptic apprehensions concerning what might happen if we continue to relate to technologies as mere instruments of power.

From a neuroscientist perspective, Susan Greenfield (2014) argues that the following causal chain ought to be studied: digital technology causing neural change, and neural change causing mind change. She demonstrates that humans, through their use of digital technology, are subjected to changes in neural structures; her fear is that we, through our use of digital technology, might also be subject to *mind change*.

II. The *Robotic Moment* Explored

Anthropo-Technological Circuits – *Circuli Vitiosi*

In this section I will discuss Turkle's (2011) understanding of problems involving human usage of networking technologies and human-robot interaction. It will be demonstrated how human usage of certain technologies can be understood in terms of 'social' circuits, and that such 'social' circuits may in fact exclude genuine social interaction with other human beings.

In *Alone Together*, the human being is implicitly understood to be a social creature that needs relations with other humans in order to flourish. Turkle primarily attempts to demonstrate how the technologies of 'social robotics' and 'networking' frustrate socialisation between humans and instead tend to prod into being isolated individuals harbouring illusions of togetherness. In order to understand the prevailing theme of her inquiry – how the *better than nothing* becomes *better than anything* – she considers the categories of 'psychological vulnerabilities' and 'structural change of social relations'.

Online experiences can be understood as 'enhancements', i.e. extensions, mediated by specific technologies, that allow us to 'experiment' in *possible worlds*; to a human person, who in real life is limited by physical, mental, and social constraints, virtual reality may signal new hope. Online, limits can be stretched, identities assumed and discarded, and there is no end to the number and variety of relationships that may be established. Yet networked 'togetherness' may, Turkle suggests, come at the price of lessened expectations of fellow human beings and a sense of utter loneliness. Turkle argues that the networked life, fostering weak ties at the expense of strong ties, prepares populations for *the relationship with less* that a social robot will be able to provide; meanwhile, children who grow up relating to social robots are prepared for *the relationship with less* that networking provides. (Turkle, 2011, 153-4) A social *circulus vitiosus* is established.[1]

The *better than nothing* concept, in this context, implies that human interaction with robots or usage of networking technology is not a preferential alternative to more conventional human-to-human forms of social interaction. Rather, if there is the experience that the alternative

[1] The behavioural pattern of the more sophisticated social robots is actually shaped by human behaviour; in turn, the human who 'nurtures' or 'abuses' the robot is shaped by the robot. How? By, for instance, the unconscious lowering of the bar of meaning of 'companionship to a baseline of "interacting with something."' (Turkle, 2011, 55).

would be *nothing*, then the technological opportunities offered by robotics and networking can be understood as *better*. Turkle's interviews suggest that children who are happy with the adult attention that they receive are less inclined than children who lack such attention to wish for a robotic baby sitter. (Turkle, 2011, 69-71) The same pattern, mutatis mutandis, is demonstrated by the elderly. (Turkle, 2011, 105) But how does *better than nothing* turn into *better than anything*?

Real life is generally difficult to negotiate and control. Virtual reality and online experience provide more than mere terrain for real life practice: exciting arenas for projections and wish-fulfilment, and, above all, *controllable* environments. There is a price to be paid for the *seemingly* controllable. Software- and platform designers are usually not naïve as to what triggers human responses. Once seduced, a person may begin to prefer the opportunities of living out adventures in relatively safe online worlds, compared to monotony or humiliating failure in a relatively dangerous conventional world.[2] A reward system, always accessible and easy to tap into, is established.

Robots like *My Real Baby* demand care, and their 'personality' is shaped by the care they receive; by means of such robots we are prompted not only to imagine robots fulfilling functions conventionally fulfilled by people, but also to imagine how such functions may be fulfilled more satisfactorily by robots. If the online-world offers social environments that seem to be controllable, then robots seem to offer 'persons' that can be controlled. Robots may seem less messy than human beings, who often disappoint; robots may seem reliable. Hence a movement to *better than anything* may begin. Relations with *My Real Baby* may prompt the idea of *My Real Babysitter* (not, at the present moment, an existing robot). Reward systems, always accessible and easy to tap into, may thus be established.[3]

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[2] For an introduction to how digital experiences may trigger the body's dopamine reward system and produce 'addictive' behaviour, see Greenfield (2014). It is not only 'digital experiences' that trigger dopamine reward systems; similar reward systems are operational within conventional interpersonal interaction. A seemingly safe and controllable online-environment, however, may be treacherous: for online-extended persons may well end up being controlled by the many suggestive memes that flourish in the seemingly controllable environment. For a discussion concerning how anonymity may trigger asocial hive minds and release 'your inner troll', see Lanier (2011).

[3] The 'always accessible' and 'easy to tap into to' are, perhaps, the most powerful characteristics of these phenomena. Why? Combined with dopamine reward loops (see footnote 2), they add up to the basic constituents

What makes us want to emotionally connect with algorithm-based applications? Turkle demonstrates that young and old and (perhaps to a lesser extent) the in-betweens are vulnerable to what I term the *as-if*-fallacy: If something moves and/or sounds like a pet or a human, then we instinctively imagine it to be *alive*. Children, who are introduced to the advanced robotic prototypes in the MIT-labs, want not only to connect with the prototypes; they want to make the robots *love* them. They are prepared to work hard, even dance, in order to gain the approval of the robots. Again, the intensity of the children's attachment seems to depend not only on what the robot might be able to offer them, but also on what the children are missing in their lives. The more socially deprived the child is, the more it will be vulnerable to the robotic charm. (Turkle, 2011, 86-7) The elderly, mutatis mutandis, demonstrate the same pattern of vulnerability, and when a social robot is introduced into an elderly home, it affects the entire social reality of the home and those connected to it. (Turkle, 2011, 103-107)

The *as-if*-fallacy makes us conclude that if something *seems* to be able to think and feel, then it belongs to the category of things with which we can have relationships; once we commit this fallacy, we resist demystification. (Turkle, 2011, 89; 111-112) For instance, children readily interpret the unresponsive behaviour of a malfunctioning robot as evidence that the robot's affections are directed elsewhere. That is, the children think there is something wrong with *themselves*, not the robot. (Turkle, 2011, 88) We may even begin to envy an algorithm-based entity in the same manner that we envy a human being. (Turkle, 2011, 75)

The young and the elderly constitute the bulk of Turkle's observations. Are there any reasons to believe that the in-betweens are less vulnerable than the other two? The in-betweens have usually acquired a social competency that children have not yet acquired,[4] and the elderly may have begun to lose; ideally, they are less dependent on others for the conduct of their lives. But is there not good reason to assume that, to the extent that their emotional and social needs are not met, they too will be vulnerable to the charms of networking and social robotics? Turkle's sporadic interviews with in-betweens indicate as much.

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of typically addictive behaviour; if current trends ever evolve to their extreme potential, both culture and personal interaction may end up completely short-circuited by logarithm-based platforms.

[4] From a neurological perspective, see Greenfield on the question of the malleability or plasticity of the young brain. (Greenfield, 2014, 25)

But why should this be important? People have pets. How is having a robot different? Leaving aside that pets, as humans and as opposed to robots, are biologically alive, difficult and messy, pets never substitute humans; social robots, however, become useful exactly at the point when they substitute humans. (Turkle, 2011, 112-13) One extreme scenario is a future where human beings have become utterly severed from any social bonds to other humans, but where each human is able to maintain a feeling of togetherness, as each human exists in a technique-based connectedness ripe with opportunities for 'social' relationships with algorithm-based applications that *seem* alive. More elementary problems, however, may begin to manifest even in the prosaic present. Social robots may challenge our notions of what life is; in the end, human-robot interaction may affect ideas of how a human person *ought* to be. The questions that we ask may already have begun to subtly change: Can machines think the way humans think? Or have humans always thought the way machines do think? Or, perhaps we *ought* to think the way machines do think (implicitly assuming that machines can think)? If it is true that 'we shape our tools and thereafter our tools shape us',[5] then it is reasonable to assume that 'interaction' with social robots will affect who we are. 'Companionship' becomes 'interacting with something'; the need to negotiate in complex human environments is progressively removed; and we may end up relating to other humans in a manner similar to how we will learn to relate to algorithm-based applications – as objects the primary purpose of which are to restore a damaged sense of self. (Turkle, 2011, 55) Turkle argues that we may end up with a simplified and impoverished understanding of who and what we are. Children, who have yet to learn the way humans interact, are particularly vulnerable. If the competency for social interaction remains under-developed, it is little wonder that the 'alternative' becomes *better than anything*: a pet offers commitment but requires responsibility in return; a social robot, genially, offers attachment without the inconvenience of responsibility. (Turkle, 2011, 57-60) If we understand human nature as, in a sense, programmed, then how are we different from a programmed robot? As boundaries are disappearing, Turkle suggests that the question will be less about whether children will end up loving robots more than pets or parents, than about what *love* will be; a reduction of 'love' to mere 'performance of love' is not outside the realm of the possible: 'love', 'affect', and 'intelligence' undergo reduction of meaning when these become attributes that computers have. (Turkle, 2011, 137-40) 'In the future', says the computer scientist John Lester, '[w]e will evolve to love our tools; our tools will evolve to be loveable.' (quoted by Turkle, 2011, 141)

[5] The saying, commonly attributed to Marshall McLuhan, is actually coined by John M. Chulkin (1968, 460)

Turkle attempts to articulate a causal circularity between networking technologies and social robots. The latest network gadgets, tuned into electronic grids of global reach, remove us from the immediate physical environment and allow us to delight in dopamine-inducing loops with peers or algorithms of our own choosing. They alter the character of the physical space we inhabit, our notions of friendship and companionship, and allow us to inhabit *possible worlds*. Today, even when we travel, owing to the portability of digital devices and the ubiquity of online-space, we increasingly tend to remain within the loops to which we have grown attached, thus barely ever leaving that online-space which has become our second or perhaps even primary home. (Turkle, 2011, 155-6) Yet, too much investment in digitally mediated relations seems to exact a toll in society. Social robots may be understood as an answer to a need, the satisfaction of which is frustrated by networking technology:

> The Japanese take as a given that cell phones, texting, instant messaging, e-mail, and online gaming have created social isolation. They see people turning away from family to focus attention on their screens. People do not meet face to face; they do not join organisations. In Japan, robots are presented as facilitators of the human contact that the network has taken away. Technology has corrupted us; robots will heal our wounds. (Turkle, 2011, 147-147)

A companion robot will always be physically there for us, and on the Net we will always be able to find what we desire. We may end up making the best bargain of both worlds: 'never alone but always in control.' (Turkle, 2011, 157) If this would turn out to be the end of the story, then it would corroborate the notion that there is a technological fix for every human problem. However, if we recognise that one technology (network technology) engenders both benefits and problems, then we may easily imagine that the same may hold for the technological solution (the social robot), especially if its development and implementation is conducted in order to accord with a potentially erroneous mechanistic or even robotic view of human nature. The question prompted by Turkle's inquiry is to what extent humans will be inclined to voluntarily let artefacts, in the fulfilment of *social* functions, replace human beings: Will we be content – or indeed even prefer – to exist in emotional pseudo-loops of human-AI interaction that in fact exclude actual persons? If we think of humans as social animals, then what does it mean that we increasingly seem to be tempted by an illusion of togetherness bought at the price of actual isolation from other humans? And how do human beings thrive in these new realities: Are we happy to submit to mere chimera of personhood, or are there any evidence, to the contrary, that these new social realities have a negative impact on our wellbeing?

So far, I have demonstrated how Turkle's understanding of the relation between networking technologies, social robots, and human beings may be represented in terms of 'human-technology' couplings, or in terms of 'social' circuits. Such 'social' circuits may in fact seclude their human participants from other humans and thus undermine *human-to-human* social interaction. A potentially innate preference for the simple, safe, and controllable – for low-demand relationships – seems, according to Turkle, to prompt the transformation of the *better than nothing* into *better than anything*. I will now attempt to reframe the problems discussed in this section by means of a sociological perspective.

Technology and Habitat – *Possible Worlds*, Actual World

In this section, I shall attempt to demonstrate how certain techniques come to *seem* inevitable. I will demonstrate how social robots can be understood as only one instance in a much larger logically coherent technical grid. In order to understand how robots are now ascending as 'social' alternatives to pets and humans, I will consider how culture can be understood as having been side-stepped, or externalised from the preeminent priorities of our era.

I propose that one function of culture is to produce the glue that holds a society together: to the extent that it is functional, i.e. to the extent that it produces morally self-regulating persons, technical coercion in the form of propaganda, laws, and law-enforcement can be reduced to a minimum. Through external and internal pressures, cultures are always subject to change. In history, cultural change, by means of integration of anomalies and novelties (including new technologies), has usually been slow. How then, are we to understand the rapid technological change, which has proceeded more or less in tandem with batches of abrupt cultural revolutions, of the present era?

The proliferation of and function of *technique* in the human habitat, and the impact of *technique* on culture and on the human creature, are the subjects of Jacques Ellul's *La Technique (The Technological Society)*. Ellul invites us to understand 'technique' in analogy with the machine, which precedes 'technique' in time. The extension of 'technique' is vaster than that of the machine, which can be understood as 'technique' in a 'pure state'. In a technological society the proliferation of new machinery will depend on an overarching technical framework. 'Technique' may be understood as any set of formalised goal-oriented practices, the aim of which is to transform everything that is not yet machine into mechanical

processes. (Ellul, 1993, 1-2) Thus technique functions in all domains of reality in analogy with how a machine may function in a workplace: it may do so by rendering machines more sociable, by reinstating order where machines have effected disorder, by clarifying, by rationalising and, above all, by rendering things more effective; the more technique is applied, the more the use of the machine becomes rational. Technique integrates and adapts all things into its system,[6] thus leaving less and less space for, for instance, humans to act outside the framework of technique. Ellul attempts to demonstrate that technique, in our technological society, has entered all domains and become autonomous and self-legislating. (Ellul, 1993, 3-4)

Technique precedes science, but the surge and proliferation of technique correspond to the moment when science intervenes: we are now at the stage in which new techniques permit new scientific discoveries, and new scientific discoveries permit and even prompt the invention of new techniques; furthermore, new techniques are immediately applied to all domains in which their application is possible, and each new technique *requires* further scientific research in order to further the development and refinement of the technique; the scientist has no option but to either accept that his or her discoveries will be applied in technique, or interrupt the research. (Ellul, 1993, 5-8) The surge of technique requires, among other things, a certain social plasticity: strong and stable cultural systems (religion, family, etc.) tend to resist the allure of technique, and if such categories have not begun to be undermined, then technique cannot 'take off'; however, once such cultural categories have already been undermined and once technique has taken off, technique will, by its own impersonal logic, undermine those categories even further, thus optimising the prerequisites for a malleable society constituted by plastic and highly suggestible peers governed by abstract entities. (Ellul, 1993, 44-48) Cultural categories are replaced by abstract identity and interest groups, and in this new and ever more technologically refined environment technique becomes the necessity-without-which-we-cannot-survive and synonymous with power. Ellul invites us to shift focus from the *intrinsic* properties of technique to the *relation* between, on the one hand, technique, and, on the other, environment, society and human beings. Divorced from religious dogma, and liberated from cultural taboos and constraints, the *new human* is

[6] Note the similarity with the basic understanding of 'culture' proposed above, which also integrates and adapts novelties; cultures, however, have historically frequently used the option of rejection, i.e. non-integration. The pretensions of 'technique', in technological society, are, according to Ellul, global, all-inclusive, and totalitarian.

persuaded to adapt to the new and continually evolving constraints that are being actualised in the technological habitat.

Ellul delves into two interrelated themes that are of particular interest to the present examination: *technique effecting intolerable situations for humans* and *technique acting directly on humans in order to modify human behaviour*. The introduction of new techniques in human culture causes trouble to human beings. The cultural breakdowns attributed to the industrial revolution are well known. The perspective of Ellul allows us to understand effects in terms of the more extensive category of *technique*, as opposed to the more restrictive category of machinery technology. Picture the familiar scenario of any community putting up resistance to some new technology that is experienced as menacing. The technology in question is, by those resisting it, understood as causing cultural disorder and/or unemployment. Psychologists and psychiatrists may now analytically dissociate (technique) the troublemakers' constitutions only to reassemble them as 'Luddites'; their resistance to a social set of circumstances that threaten their livelihood may thus be explained (technically) as a psychological internal pathology; integrative propaganda[7] (technique), increasingly in tandem with psychotropic drugs (technique), may then modify the behaviour of the troubled specimens and integrate them into the technological society. If culture is the glue that holds society together, then how come culture seems to count for nothing when challenged by the imperatives of technological change? Technique may also effect various kinds of mental sufferings such as anxiety and loneliness, states of being that can technically be redefined as mental disorders. Generally, such 'disorders' may also be understood as 'remedied' by integrative propaganda, but there has come into being an ever increasing arsenal of more specific remedies, including psychotropic drugs and, presently, social robotic companions. The supreme goal of a technological society is to further efficiency by means of implementing technique; remedies to problems that threaten efficiency or further technological implementation must thus never be made at the expense of efficiency or technological implementation: humans will thus be rendered more and more adapted to machines, while machines will be rendered more and more adapted to humans, etc. (Ellul, 1993, 358)

Ellul's understanding of the human predicament in technological society may be briefly summarised as follows: Numerous impersonal technique-driven forces act on humans engendering all sorts of problems and sufferings; but the overarching aim of technological

[7] For 'integrative propaganda' see p. 9 of this paper.

society is to integrate humans totally into its system, and the role of the so-called *techniques humaines* (psychology, human resources, advertising, PR, etc.) is to glue the disintegrated human creature back together in a fashion more compatible with *technological society*. *Techniques humaines* are somewhat successful in assembling functioning human units. As technological infrastructures change, humans are changed. (Ellul, 1993, 351-371) Turkle has demonstrated that such change may come to the price of altered, not to say degraded, perceptions of environment and of humans. Furthermore, limitless application of technique seems to open up never-ending vicious cycles: technique produces intolerable situations, which are remedied by new techniques, which in their turn causes new problems which require new technical solutions. (Ellul, 1993, 372-3) In theory, there may be a time when all technical problems will have been eliminated, and when we will have reached the stage of a sort of post-human adaptation to a socially adapted technique. Ellul envisions two plausible end scenarios to this process: realisation of a functional copulation of human-machine, or abrupt and brutal failure. (Ellul, 1993, 375-6)

'Networked, we are together,' writes Turkle, 'but so lessened are our expectations of each other that we can feel utterly alone.' (Turkle, 2011, 154) Part two of *Alone Together* discusses how networked life prepares humans for the kind of 'relationship with less' that robots will be able to provide. Through the lens of Ellul we can now understand 'social robotics' as a kind of *technique humaine*, the aim of which is to remedy an intolerable situation effected by a synergetic bunch of other techniques, including network technologies and, perhaps, 'un-social robotics', which may be understood as causing unemployment, anxiety, etc. The objective of research directors and engineers is to develop means that serve human ends; success may result in, among other things,[8] living conditions that are experienced as intolerable by humans; hence the need for new techniques that may remedy the intolerable living conditions, either by modifying the bio-technical human habitat, and/or by acting directly upon human beings: The objective of *techniques humaines* is to glue the disintegrated person back together into some sort of functional entity able to cope with a rapidly changing bio-techno-cultural habitat. The general objective of robotics is to act on the environment (which may include humans); the general objective of social robotics is to act specifically on humans. Specific objectives may be invented ad infinitum.

[8] My one-sided stress on negative effects does of course not imply a denial of the numerous and often spectacular beneficial effects of technologies, such as improved sanitation, comfort, speed, access, etc.

One example of a possible specific objective is suggested in an article by Masahiro Shiomi et al. (2017) The researchers examine, by means of experimentation, how 'human behaviour' can be affected by 'robotic behaviour'. The experiment is primarily of interest to pedagogic and health care professions. In the hands of the researchers, the empirical method (technique) and statistical analysis (technique) are used in order to explore how 'social robotics' (technique) may facilitate the process of motivating humans to perform simple tasks in certain contexts. The specific objective of 'social robotics' is, in this instance, control and manipulation of human behaviour. Thus, robotics, a material technology, operates within a larger grid of social science techniques, to the synergetic effect of a *technique humaine*.

Is Ellul too deterministic? The mechanisms described above do not need to conform to any rigid material determinism in order to be extremely influential. Jennifer Chandler (2012) examines the notions of 'technological determinism' and 'autonomy of technology' with a view to understand why certain technologies come to *seem* obligatory. Chandler contrasts 'hard determinists' (such as Ellul) with social constructivists who reject technological determinism, and with a theoretical 'mid-field' of co-constructivists. (Chandler, 2012, 256) Chandler then lists six reasons why technological development seems to proceed independently of deliberate human control. (Chandler, 2012, 156-7) First, our control seems less if we focus on a macro level of analysis (city, railroad, defence, etc.), rather than on a micro level (gadgets, holidays, etc.). Second, the stage of development of technology, and the relation between social factors and technology, also influence our sense of control: at an early stage, social factors hold much sway, society shapes the development of technology and human society seems to have some flexibility vis-à-vis technological development (this stage is well understood by the social constructivists); at a later stage, however, society is shaped by technology and there is a feeling of inertia vis-à-vis technology (such 'mature systems' are better understood by determinists). Furthermore, technological development generates unforeseen consequences, and 'technological determinism' is deliberately propagated to serve certain interests, both of which undermine the sense of control of technological development.[9] It is also the case that any given technology is particularly suited to achieve certain ends: computers, for instance, are optimal for standardised tests; hence schools and other institutions begin to examine by means of standardised tests rather than essay writing. Finally,

[9] *You can't stop progress*, and *you can't turn back the clock* are two common memes that fit within this category. A deterministic argument that is currently much discussed alleges that we, assuming that capabilities of AI will continue to increase exponentially, have no choice but to attempt to technologically 'improve' human nature.

there is a 'shifting baseline': subtle changes over time produce constant redefinitions of what is normal, which undermines the sense that we are in control. Chandler then turns to the question of why the *use* of technique becomes or seems to become obligatory. Here she argues for three mechanisms. (Chandler, 2012, 258-61) First, in a competitive environment, all techniques correspond to enhancement; hence an opting out of usage entails competitive disadvantage. On a civilisation level of analysis this corresponds to the logic of the arms race. Second, there is dependency and need: there can be an existential need, barring the satisfaction of which, by means of technology, we fail to survive; but there is also frequently the mindset that actively looks for the technological fix and excludes all framings that do not invite technological solutions. The more sophisticated the technological system, the more difficult it becomes to discontinue adaptation to the system. The third mechanism involves technological ideology, values, norms, and the law. The ideology of technological progress mutes criticism and renders incorporation of technique into culture smooth. When new technology becomes wide spread an 'inversion of the normal' occurs: use of technology becomes normal, non-use abnormal and, on occasion, even morally blameworthy (currently debated examples involve the use of vaccines, antidepressants during pregnancy, whether or not one should avoid giving birth to children with severe disabilities, etc.). When a societal consensus exists that a technique ought to be used, there is pressure to use the technique; legal sanctions may be added. Once moralisation about the usage of certain technologies begin, the technologies come to seem obligatory; once the pressure begins to be codified into law, the sense of obligation naturally increases.

The extent to which technology determines is debatable. Few thinkers, however, would deny the second structural understanding presented in the Introduction (see p. 6-8). New technologies, when they remove some constraints, usually produce new constraints. Chandler identifies mechanisms by which culture, institutions and human psychology may surrender to the effect that certain technological developments come to *seem* inevitable. Is there a difference between what *seems* to be technological determinism and technological determinism *tout court*? Here there is room for different perspectives. All that I wish to demonstrate, however, is that it is reasonable to assume that implementation of technique determines the behaviour of the population exposed to it *to a large degree*. When the i-phone was first marketed, not every person immediately bought one; but a large portion of populations all over the world did, and it changed entire cultures, *even for those who did not by one*.

If social robotics is to be understood as *technique humaine*, then it is important to understand that it represents only one instance of such techniques and that it operates to synergetic effect within a register of *techniques*. Social robots may potentially alleviate some problems prevalent in modern technological societies. But social robots also cause new problems, the most immediately obvious of which are fear and anxiety. This problem is taken seriously by advocates of robotics, for it represents an obstacle to the implementation of robots in society. Here is where the social scientists step in. *FARAI* is Yuhua Liang and Seungcheol Austin Lee's acronym for *Fear of Autonomous Robots and Artificial Intelligence*. Liang and Austin Lee (2017) attempt, by means of statistical analysis, to understand how FARAI levels in a population may affect human-robot-interaction. Their assumption is that robot autonomy is inevitable, and that therefore the problem to be dealt with – and it is to be dealt with in a technical and effective manner – is human fear. They attempt to map out how FARAI is distributed in sub-sections of the population, e.g. 'people of low income', 'women', 'men', 'people who consume science fiction', etc., and to discover the mechanisms by means of which FARAI-levels may be increased and reduced. The authors consider the interests of human beings only to the extent that 'people's fear should be considered in the implementation strategy.' (Liang & Austin Lee, 2017, 383) It *is*, however, the smooth implementation of robotics that is of paramount importance, not the interests of human beings. As the idea of robot autonomy is asserted, the idea of human autonomy – humans understood as thinking, acting and responsible persons – seems to be reduced accordingly. In conclusion, Liang and Austin Lee even suggest that '[f]uture studies may also explore a phobia of robots'; they then carry on to discuss the technical criteria for 'phobia' in DSM-5. (Liang & Austin Lee, 2017, 384) Liang and Austin Lee never explicitly ask the question that their line of reasoning implies: Should people who worry about AI and robots submit to psychotherapy and/or be prescribed medication?

In the article by Masahiro Shiomi et al., robots function as a material technology within a more extensive technical grid that includes psychological techniques, to the synergetic effect of a *technique humaine*; Liang and Austin Lee demonstrate how social science may function as *technique humaine*, with the objective of modifying human attitudes and behaviour in order to render implementation of robotics smooth.

Reading Ellul, it is easy to get the impression that *technique* is alive and pursues objectives of its own. But if 'technique' is understood as any 'set of formalised goal-oriented practices', then it is not technique per se, but the *mindset* adhering to *Technique* as model for human

society, as ideology, *religiously*, that aims to transform everything that is not yet machine into mechanical processes, and that aims to integrate and adapt all things, even living organisms, into its system. Robots, among other artefacts, may effect disorder in cultural patterns; but to the technological mindset prevalent in our age, the solution to technology effecting cultural disorder can never be 'a step back', or be at the expense of the further 'improvement' and proliferation of technology. If the synergetic effect of various techniques turns out to be disruption of strong ties and emergence of lonely and isolated individuals, then the solution must be devised in terms of more technique, e.g. implementation of social robotics in order to fill needs that, presently, are not met. The rudimentary cultural theory stated above (p. 18) held that culture is the glue that holds society together. If technique effects cultural disorder, and the solution to this disorder is not cultural, but technical (more technique), then one may get the impression that culture is being externalised from the order that really matters, and that, more and more, it is *technique* that is the glue that holds society together.

Even if we, for the sake of argument, grant the assumption that we will always be able to come up with new technological solutions to every conceivable problem, is a *laissez-faire* attitude to technological invention and implementation sane? Willhem H. Vanderburg (2012a) argues that the attitude of secular culture to criticism of technique is similar to that of a person arguing that there should be no ideal room temperature, i.e. that the thermostat would have no legitimate criticism of the furnace. Today, the only values that can effectively be asserted concerns 'technique changing people', and thus 'we end up serving the very entities we created to serve us.' (Vangderburg, 2012a , 334) How did it come to this? Vanderburg contrasts the concept of 'appropriate technique' at one end of a spectrum (techniques that are culturally, environmentally and locally appropriate, techniques that hold less influence over their users than the users hold over the techniques), with, at the other extreme, universal techniques (non-adapted to local time, place and culture; these techniques hold more influence over their users than their users hold over them). At the latter end we are at the stage of technological autonomy. The 'discipline-based approach' may be understood both as one of the causes of this technological universalism, and as *the* reigning methodology in this state of affairs. What are the characteristics of this approach? According to Vanderburg the various disciplines adhering to the discipline-based approach excel, to the extent that they are successful, at developing methods or mechanisms, tightly restricted by their respective fields of expertise, that yield identical outputs for identical inputs regardless of the beliefs and personality traits of the 'technician' supervising the process. This functions superbly in closed

mechanical systems. In the world of humans, where many categories of phenomena interact in ways that we do not fully understand and where no situation ever repeats itself in *exactly* the same way, the approach is less successful. When the discipline-based approach is applied to human organisations the result is improved expertise at a particular level, and failure 'in assuring that the results are compatible with, and evolving harmoniously with, everything else.' (Vanderburg, 2012a, 334-5) Vanderburg sees three important limitations of 'knowledge infrastructures built up from disciplines':

> First, because these specialists are so disconnected from the intermingling of the many categories of phenomena that make up human life and the world, they can neither prevent nor substantially reduce the undesired consequences of their decisions. These must therefore be dealt with by other practitioners in whose domains of competence they fall. The result is a "system" that first creates problems and then compensates for them by the addition of mitigating technologies and services. In a remarkably short time, this results in a system that is top-heavy with layers and layers of compensation. Second, discipline based approaches are incapable of going to the roots of the problems they produce in order to prevent or greatly reduce them. The required negative feedback loops are precluded by a discipline-based intellectual and professional division of labor. […] Third, this discipline-based intellectual and professional division of labor is virtually incapable of coming up with genuine solutions to many of the problems we face because most of them require a better balance between performance and the context in which this performance is exercised. (Vanderburg, 2012a, 335)

Improved performance comes at the expense of over-all compatibility with the living: ultimately, we get an economy that extracts rather than produces wealth, that undermines the quality of human life and destroys the biosphere; and we get an autonomy of technique that is rooted in the discipline based approach to knowing and doing, which in turn is defended by a secular religious attitude. (Vanderburg, 2012a, 335-6)

What has been claimed is not that 'technique' will *inevitably* have the dark effects listed above; rather, it is the misplaced religious attitude – the expectation that technique should give what it cannot give, the *faith* – that is the problem. A technological society blind to the true nature and limitations of technique is a menace to itself. Such a society is not 'scientific' in the sense that it imagines itself to be; instead, it lets itself be guided by a philosophical, religious, or mythological idea of *Technique*, which, as it happens, does not correspond to the actual properties of 'technology'.

Technique has, according to Vanderburg (2012b), also effected the 'unfolding' of culturally rich symbolic universes and incrementally brought into existence a visually apprehended world of abstractions. Vanderburg argues that a desymbolisation of experience, language and

culture has brought into being a new human nature and new social structures called mass societies. Humans abstracted from an already desymbolised culture is not enough to sustain a mass society, but with the compensation of integration propaganda a mass society can be sustained, a society in which knowing equals science, and doing equals technique. I shall briefly summarise the cultural predicament as understood by Vanderburg: In the old days, human beings were rooted in symbolised culture that 'symbolize the unknown by interpolating and extrapolating the known', the 'unknown thus becomes more of what has already been experienced and lived.' (Vanderburg, 2012b, 214) Industrialisation forced humans to focus more and more on technology-based solutions to their problems. The status of religious narratives was undermined. This brought three kinds of pressures on the cultural order, which eventually transformed tradition-directed behaviour into technical goal-directed behaviour: technological division of labour, mechanisation, automation, and computerisation obstruct immediate experience; technological orders emerge that are incompatible with the symbolised order, traditional ways of life are overwhelmed by the new situation and humans are pressured to adapt, i.e. to become goal-directed. The ensuing discipline-based approach is characterised by the following problematic properties: the discipline-based expert is abstracted from human experience;[10] specialists imprisoned in abstractions are unable to foresee or deal with the consequences of their decisions; whereas the cultural elders were limited by their actual experience, which could always be expanded, the specialist, increasingly empowered to excel within a particular sphere of activity, is *absolutely limited* by his or her field of expertise, even as the expertise engenders far reaching consequences beyond that sphere; specialists behave as if humans function in accordance with technical machines. (Vanderburg, 2012b, 216-17) Children born into mass societies still instinctively attempt to make sense of the world by symbolising experience, but certain prevalent activities obstruct the symbolisation of experience: TV-watching, navigating the Internet, playing with computers and learning science in school (may we add interacting with robots?); these activities desymbolise experience and prepare the individual for life in mass societies and the cult of efficiency: knowing corresponds to science, which has no limits, and doing corresponds to technique, which is omnipotent. The figurehead of this civilisation is that of the engineer, who, whether atheist, Hindu or Baptist Australian, if adequately trained, produce

[10] For an illustration of the 'possible worlds' in which disciplines operate, I refer to the logical 'non-paradox' on p. 8. Discipline-based approaches are developed in various tokens of such *possible worlds*, i.e. in abstract worlds in which not *all* relevant factors of the actual world apply.

similar results. (Vanderburg, 2012b, 217-18) The ultimate eschatological scenario, we may add, is that the human engineer will be replaced by even more technically potent robotic AI-organisms.

We should now better be able to understand the difference in approach between on the one hand Turkle, and on the other researchers publishing in the *International Journal of Social Robotics*, such as Shiomi, Liang and Austin Lee. Turkle, though she is trained within the discipline of clinical psychology, nonetheless attempts to understand, *within the context of the culture in which she actually lives*, how 'social robots' affect culture and human beings; the social scientists abstract human beings and robots away from the cultural environment, and study 'human-robot interaction' in abstract isolation. The former corresponds to a quasi-cultural approach,[11] the latter to a discipline-based approach. It is the latter, in part, that is supposed to have exploded the very structures that the former attempts to understand and, perhaps, preserve. Just how severely traditional culture may be affected by the proliferation of discipline-based approaches can be gleaned from understanding how *words* retain meaning. (For more on this subject, see Vanderburg (2005, 445-6), Franz Foltz and Frederick Foltz (2012), and Ellul (2014).) I will illustrate with the ethically loaded word 'justice'. Any person living in pagan or medieval Christian societies would need to appeal to their respective traditions in order to get an understanding of what 'justice' means. Tradition is transmitted from generation to generation and is rarely chosen by an 'individual'. Thus tradition retains a certain temporal transcendence, and words, relying on it for meaning, a certain temporally transcendent 'objectivity', i.e. independence vis-à-vis fads and inclinations of human subjects. Abstract philosophy takes the same word, 'justice', and endows it with various precise meanings within abstract systems of thought. This process mirrors the way science takes words that pre-exist science, strip them of their cultural connotations and endow them with precise meaning. This, however, is not the end, for words abstracted from culture do not remain confined to abstract worlds; they eventually trickle back into undermined and disordered culture. To what effect? For a modern person, freed from the constraints of traditional culture and religion, 'justice' can mean whatever he or she desires it should mean.

[11] Though Turkle's modus operandi is similar to a 'cultural approach', it is not in fact a *traditional* cultural approach. It simply cannot be. It cannot be because there are no longer any commonly shared cultural values to which Turkle could appeal. Her enquiry can be understood to be 'cultural', in a sense, but the questions it prompts cannot be culturally arbitrated; instead, they are left hanging in the air, for us to ponder, inconclusively, and for technicians to overcome, conclusively.

A modern person may still appeal to a pseudo-culture, i.e. ideology, in order to support the meaning of the word. Why do I say *pseudo*? Because, ideologies are not handed over from generation to generation the way traditional cultures are, nor are they necessarily shared by persons who live together; rather, individuals choose ideologies as political instruments. The use or value of political instruments correspond to the perceived capability of the instruments to shape or re-shape society into forms congenial to the inclinations of their users. Thus, to a modern person, both the word 'justice', stripped of symbolic traditional meaning, and the ideology chosen to provide it meaning, may be reduced to their bare essentials – they may in fact be understood as mere instruments of *will to power*. Other words, like 'intelligence' reconceived within the framework of computer science, may retain the more *restrictive* meaning as they trickle back: thus, nowadays, 'intelligence', more and more, has come to signify a restricted set of computational attributes that computers can have; and humans, more and more, will be understood as intelligent if they share in this set of attributes.

If the glue that holds society together formerly was generated by culture, is it now generated by conceptualisations conceived in *possible worlds*, abstracted from the complex intermingling of phenomena of the actual world, conceptualisations that, when they trickle back into the actual world, trigger all sorts of unexpected scenarios? In the next section, an alternative answer will be suggested, namely that this glue is also generated within our own minds, as we have to a large extent been converted to *faith* in technique. It will be suggested that technique, not culture, or, rather, the gadgets and beliefs that technique engenders, now, to an ever larger extent, constitute our common language of fear and hope.

So far, I have demonstrated how the category of 'social robots' can be understood in terms of objective robotic technologies that interoperate with a register of techniques to the synergetic effect of *technique humaine*. The problem of human-robot interaction, furthermore, may be understood as a token of a more general type: We may call it the 'trickle-back effect', a detonation of unpredictable scenarios that is triggered when conceptualisations conceived in abstract *possible worlds* trickle back into the actual world. I have also differentiated the quasi-cultural or culture-centred approach of Turkle from the discipline-based or goal-oriented approach of Shiomi; the latter approach, so Vanderburg argues, undermines the cultural habitat from which the coherence of the former is derived. I have suggested that culture – and other aspects of human society that cannot for the moment be included in the technical order or connectedness – is in the process of being externalised from the decision-making processes that really matter. In the following section I shall attempt to demonstrate that there is a way

for the technical order or connectedness to incorporate things that cannot be genuinely technically incorporated: by means of magic.

Notions of the Sacred Transformed – Technology as Magic, Faith, and Religion

Is there anything farther removed from our common assumptions concerning magic and religion than technology and science? I shall first demonstrate how it can be understood that magic, under the influence of technique, has assumed the form of technology, and that our notion of the 'sacred', also under influence of technique, has assumed the expression of efficiency. I will then, in order to check theory against current practices, look on the role played by technique in helping professions, and, by analogy, attempt to understand the mechanisms that enable robots to become 'social' robots. I will finally consider *Technique* as religion.

Richard Stivers (2001) argues that a number of 'imitation technologies' (these sometimes overlap with Ellul's *techniques humaines*) do in fact function as magical practices: traditional magic, practiced within ancient sets of more or less coherent cultural assumptions, consists of sets of practices that are symbolically performed between a wish and its fulfilment; today technologies and imitation technologies belong to a system of assumptions that Stivers calls 'technological utopianism', which is propagated by advertising, TV-programmes, etc. The modus operandi of imitation technologies typically involves the usage of either 'dramatised information' (psychological techniques) or 'statistical information' (managerial techniques)[12]. But imitation technologies, masquerading as technologies, are in fact forms of magic:

> Technology employs scientific information in the service of a material technique that acts upon the physical world, but magic uses information that is symbolic to influence nature or human beings. Magic establishes an indirect or symbolic relationship between a set of practices and a desired outcome so that the magical practices become, as it were, operational indicators of the outcome. (Stivers, 2001, 11)

Psychological and managerial magic (psychotherapy, HR-management methods, and, on a different level of interdisciplinary-complexity, advertising) *are* powerful *because* we think of

[12] It is important to distinguish 'modes of organisation', such as the Fordist-Taylorist and Lean systems, which have been proven to have substantial impact on output (these can be understood as organisational technologies), from managerial fads that can appeal to little or no meaningful evidence-based record (imitation technologies). For Fordist-Taylorist and Lean systems, see Vanderburg (2005, 391-412).

them as embodying the sacred power of *technique*; a real technology (a CAT-scan, for instance) is powerful because of the output that the internal mechanism of the technology objectively is able to produce from a certain input, its power has nothing to do with our beliefs; if we fail to believe in the power of imitation technologies, however, they cease to be powerful. When imitation technologies are experienced to work, they work as placebo. (Stivers, 2001, 2-3; 7-13)

It is not the case that all tools within an HR-managers' toolkit are bogus; statistical instruments do produce the output that they are technologically capable of producing. But in order to be an actual and functioning technology, HR-management would need to be able to take into account not only an extremely complex mass of quantitative information, but also of *qualitative* information (cf. Vanderburg, p. 25-28). The higher the complexity of a technology's subject matter, the more the technology needs to be omniscient and omnipotent – to *be aware of all* potentially influential factors and *to be able to control* the environment; failing this, the higher the pretensions of the technology, the more spectacularly it is bound to fail.[13] Yet we will not, if we believe in its power, blame technique when it does fail; instead we will blame the technician, some other sacrifiable scapegoat, or the irrational pattern of human culture or organisation.[14]

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[13] This is true even for 'hard' technology. The dynamic is exemplified by James Harkin's rendition of the spectacular failures of complex cybernetic loops. The prowess of the cybernetic information loop is easy to grasp with the examples involving the Israeli army: In the battle of Nablus, equipped with the latest equipment and privy to constant real-time feedback from a number of integrated advanced surveillance systems, the Israeli soldiers zigzagged their way through the city of Nablus, going through walls, completely outmanoeuvring the enemy. (Harkin, 2009, 127-129) A few years later, the same Israeli army failed spectacularly as it employed the same methods against Hezbollah in Lebanon. The reason appears to have been twofold: a specialist team within the Hezbollah managed to intercept Israeli electronic communication, while the bulk of Hezbollah fighters were ordered to avoid unnecessary electronic communication. This, apparently, may have been sufficient to trigger a spectacular failure of what must be assumed to have been one of the world's most advanced cybernetic systems. (Harkin, 2009, 231-233) In this instance, however, the fault is likely to be located and acknowledged within the technological system, which will thereafter be improved. When at the root we find 'softer' techniques, the analysis of error and assignment of blame becomes a more ambiguous affair.

[14] Is there a tendency in society to increasingly blame the *flawed nature* of human beings for technological failures? Humans are flawed or malfunctioning, we are sometimes given to understand, to the extent that they constitute hurdles to the smooth functioning of technology. Human beings, therefore, it seems, are becoming increasingly more sacrifiable, or… improvable.

Magic and religion are not the same, but they are both somehow linked to a civilisation's notion of the sacred. Stivers makes use of Ellul's historically descriptive theory of the three *milieus* – nature, society, and technology – in order to construe a general theory of magic. As human civilisations mutate from nature to society to technology, notions of the sacred mutate also, and, consequently, the symbolic content of magical practices (and also, to an extent, the imagined purpose and function of magical practices) concomitantly change. The 'sacred' corresponds to ultimate power and reality. It can be imagined positively or negatively: in the milieu of nature the sacred corresponds to life and death; in society to good and evil; in technological society to efficiency and inefficiency. In the following, it will be useful to think of the 'sacred' as *the thing without which a human civilisation imagines life cannot go on*. 'Magic changes according to what is perceived to be sacred. The sacred is, in the most general sense, the life-milieu.' (Stivers, 2001, 28) In the milieu of technology[15], magic has begun to resemble technology by operating according to a principle of efficient causality. Science has produced causal and probabilistic laws of nature; technology exploits such laws in the interest of efficiency:

> Technology, but only in the milieu of technology, is interested exclusively in an efficient outcome. In a technological civilization everything becomes "an imitation of technology or a compensation for the impact of technology." *Magic now imitates technology*. These magical or imitation technologies are the social form that our magical expectations of technology assume. (Stivers, 2001, 38)

We are given to understand that in societies prior to ours, efficient outcomes were not the *exclusive* objective of technology. To the contrary, technologies were required to cohere with any given culture into which they were incorporated. Thus, in ancient civilisations, technologies could, in a way, be understood as 'imitating culture'. Presently, mutating remnants of cultural expressions may instead be understood as 'imitating technology'. The auxiliary has become hegemon. A less extreme interpretation would be that societies shape their tools, and thereafter the tools shape their societies.

According to Stivers, the actual power of magic in the milieu of technology is boosted by the desymbolising process earlier schematised by Vanderburg:

> We have no choice in the absence of shared symbolic meaning and common sense. There is nothing left but technique. When language has been tamed, when it is not in the service of creating and renewing

[15] For understandings of the sacred and magic in other milieus or contexts, see, for instance, Stivers, 2001, p. 28-42, Bronislaw Malinowski (2015), Alfred Métraux (1967), and René Girard (1972).

> symbolic meaning, it becomes an adjunct to visual images and numbers. We increasingly live in a materialistic world, for abstract words and numbers end up functioning like things. We vacillate back and forth between the abstract and the materialistic – our reality has become schizophrenic. Only the symbolic capacity of language can help us create an integrated concrete existence. (Stivers, 2001, 108)[16]

Inhabitants of this abstracted, atomistic and desymbolised milieu can then be exploited by, for instance, advertising magic, which appeals not to truth or falsehoods but to mythological, i.e. *possible* worlds: 'As with all mythologized rituals, advertising can withstand the negative test of reality for there is always a next time: the possibility of perfection and total fulfilment in the newest commodity.' (Stivers, 2001, 128) In the TV-medium, TV-shows and advertisements work in tandem to synergetic effect: they both express technological utopianism according to the following well-known pattern: problem-solution-ecstasy. (Stivers, 2001, 130)

But how can statistics – *mathematics!* – be understood as magic? Stivers (2004, 99-106) presents a succinct argument concerning why the *role* of statistics in management is to be understood as magical. It is when statistical instruments are used *symbolically*, as appeals to efficiency and scientific objectivity (the sacred) and in order to predict outcomes and/or modify human behaviour, that their *role* is magical. In such contexts, the more abstract or difficult the statistics, the better the magical illusion: if things go well, the magic will get the credit and belief will increase; if things go badly, one can always blame the technicians or some inconvenient set of circumstances, and carry on believing in the magic. Few really understand what goes on in the abstract black boxes of techniques.

The management sector may be particularly vulnerable to theories and fads that have survived few or no meaningful critical tests. We should, however, also consider the case of techniques that have been corroborated by critical tests: in such cases, the *use* of, for instance, statistics, does not need to be magical; *expectations* on such techniques can still be, and no doubt frequently are, magical.

The category of 'social robotics' can serve as a good example of how the latter case (an objectively functioning technology) may be employed in magical practice. There is nothing magical (i.e. symbolical) about the usage of electronic and computational information in the design and manufacture of robots. Robotic technology is objectively able to produce certain

[16] For the problem of language divorced from cultural symbolic meaning, see Vanderburg (2005), Franz Foltz and Frederick Foltz (2012), and Ellul (2014).

material outputs, regardless of the beliefs of any population interpreting the outputs. Can the same be said of *social* robots? If I am at all to be able to have a robot friend, lover, or confessor, must I not first believe that in the midst of the technological grid causing the robot to express itself in humanoid ways, there is a consciousness akin to my own? Or is it possible to genuinely befriend a mere simulation – an *as-if* – of consciousness? Perhaps, in the networked world where Facebook has altered the meaning of 'friend', it is; but if we were to proceed by this road, we would only manage to cope by means of a reduction of the human to the level of the robotic, and I believe we would cope badly to boot. What should be clear is that the production of 'social' robots is not exclusively a technological process; the cooperation of humans is required in order for the robots to become 'social'. If the practical consequence of 'social robotics' turns out to be that human beings begin to accept robots as means in the fulfilment of their desires of friendship and love, then the 'technique' of social robotics may be understood as magic. It would be a form of magic that avails itself of robotic technology, sociological integrative propaganda, and a vast array of instruments within the toolkit of the social sciences. But social robots will only work, i.e. carry on to be experienced as *social*, as long as we are complicit enough to make the illusion work for us; if we should stop, the effect might be similar to that potentially experienced by a madman suddenly convinced that he is surrounded by mindless zombie drones who look and act like people but who are, in fact, dead.

In other words, when the practice of 'social robotics' works, it works as placebo.

If so-called evidence-based methods and practices can be understood as magical, and if the form of magic prevalent in a given society is shaped by the notions of the sacred that prevail in that society, then what about the environment in which imitation-technology magic is likely to flourish? Eileen Gambrill (2012) examines how the success of 'helping professions' depends on integrative propaganda. Why have people become so eager to accept transformations of common problems, such as anxiety, which was once understood as a moral problem and later as an existential problem, into medical problems? Gambrill's category of 'helping professions' includes all therapeutic professions underpinned by grand narratives of progress, cure and health and which *claim* a scientific base. (Gambrill, 2012, 187) But is it *always* owing to solid scientific evidence that practices turn into professions? According to Gambrill, the practice of midwifery lost out to that of obstetric care not because the latter was more successful but because it was more convincing. (Gambrill, 2012, 188) Why was it more convincing? Because it effectively exploited the technique-based lingua franca terminology of

the present age. Through the lens of Stivers, one can also understand such modes of proceeding as *appeals to the sacred*. When such victories occur (and we are to understand that they have occurred in all important societal domains), old phenomena are successively transformed into new phenomena: 'misbehaviours' become 'mental illnesses' that warrant state-subsidised intervention, 'fatness' becomes 'disease of obesity', etc. Moral or existential problems are converted into medical problems. The reconstitution of human problems is the objective of a competitive process among would-be professions.

> Professions have well-organized national and state organizations dedicated to maintenance and expansion of turf, based often not on claims of effectiveness that have survived critical tests but on inflated claims of success and on questionable criteria such as consensus and appeals to fear – classic propaganda ploys. (Gambrill, 2012, 188)

I propose that effective propaganda, when it does not appeal to fear or consensus, may instead appeal to what is, consciously or unconsciously, understood to be sacred. I note that even medical practices (not the main target of Gambrill's criticism) that *can* appeal to solid empirical evidence of success in particular domains (eradications of particular symptoms or diseases) are not immune to the critique, to the extent that they market themselves and/or are magically relied upon as purveyors of 'health' – a wholesome state that tends to elude the specialised silos of medical professionals.

If the claims of professions were generally true, those with specialised knowledge and degrees should always be more effective at achieving the results sought. But is this always the case? Gambrill refers to the research of Robyn Dawes (1994), according to which practitioners without certain credentials, licenses, and experiences are demonstrated to often be as effective as those who have them in achieving a range of outcomes: 'licensing gives the public an illusion of protection, but serves the economic interests of professionals.' (Gambrill, 2012, 188)

Licensing, we may add, in what? Surely not in shamanistic healing, for the licensing must, in this case, relate not to some obsolete notion of the sacred of some ancient tribe, but to what *is* experienced as sacred in technological society. In the light of this, how are we to think of, for instance, the ascendency of psychology and psychiatry in the realm of what used to be thought of as moral or teleological problems: Are these practices more successful than, say,

folk wisdom or religion in delivering what they market?[17] In our present science-oriented age, they are, regardless of their actual efficiency, certainly more convincing. As traditional bonds mediated by religion and family have waned, some of the functions formerly fulfilled by traditional institutions seem to have been assimilated by helping professions: by means of manipulative and/or coercive practices, helping professions aim to minimise, eliminate or normalise deviant behaviour. (Gambrill, 2012, 189) Generally speaking, the individual, 'liberated' from the 'tyranny' of family and religion, is adrift and in need of guidance. But helping professions cannot fulfil this function on their own accord, solely by means of their techniques and claims; they rely on sociological propaganda for their ability to convince. (Gambrill, 2012, 190) Where is it? Imagine various arenas and platforms of a society: News, school classrooms, the cinema, TV-shows, advertising, legislations, therapeutic professions – what happens when they all reflect the same reality, the same ideals of what is normal and aberrant, of what is socially desirable and what is loathsome, and of what constitutes the way of the future? But why should it be effective? Would a barrage of sociological propaganda propagating for the merits of shamanistic healing be equally effective? May we not understand sociological propaganda as determined or shaped by something deeper, e.g. a civilisation's notion of the sacred?

The category of 'sociological propaganda' partly overlaps with the category of 'imitation technologies', i.e. magic. In analogy with how we may understand 'social robotics' as a magical practice availing itself of materially objective technologies, 'sociological propaganda' may equally be understood as a form of magic availing itself of materially objective technologies. Within this framework, help professions can be understood as tokens of *techniques humaines*; to the extent that help professions use information symbolically and appeal to faith rather than solid and verifiable evidence of success, they can be understood as imitation technologies: to the extent that practices within the latter approach incorporates *techniques humaines* or objectively functioning technologies, they may be understood as complex hybrid practices based on numerous levels of abstractions.

Here is a brief synthesis of the theory as it now stands: At the root, there is a civilisation's – now, presumably, largely unconscious – notion of the sacred. Pre-propaganda (see p. 9)

[17] For a discussion that could enrich this subject, see Philip Rieff (2006) on the differences between 'remissive therapy', embraced by most psychotherapies, and the 'therapeutics of deprivation' of traditional societies and religions.

fosters uncritical beliefs concerning certain predominant phenomena in society, including help professions, computers, and, perhaps, AI; the function of sociological propaganda is then to further facilitate standardisation and ever more adjustment to the managerial, technological, and logarithm-based order.

Meanwhile, our real choices are severely limited because of 1) problem framing and 2) intervention alternatives. (Gambrill, 2012, 197-8) Gambrill argues that propaganda at once create desires and offer solutions to them; many of the problems addressed by helping professions (and, we may add, computer applications and 'social' robots) are caused by technological society, but helping professions tend to obscure the origin of problems by internalising the problems to the experiencing subject: The introduction of mechanical looms causes anxiety among workers; the anxious are categorised as 'Luddites', i.e. irrational technophobes, and causes other than the immediate and very real ones are explored as explanations of their 'irrational' attitudes. (Gambrill, 2012, 192-6) (cf. Liang and Austin Lee, p. 24) Computer applications and 'social' robots may, in a similar manner, be understood as obscuring the origin of the problems to which they represent solutions, by reframing the problems in terms of 'planning', 'organisation', and 'efficiency', categories to which computer applications and 'social' robots just happen to represent optimal solutions.

Raymond Downing (2012) examines technique-based health care by comparing it to traditional healing: While traditional healing typically labours with subdivisions of the human creature in terms of mind, spirit and body, with a view to obtain harmony, modern medicine proceeds by means of compartmentalised specialisation, e.g. cellular, hormonal and medicinal. (cf. Vanderburg, p. 25-28) Downing argues, that while modern medicine has produced increased efficiency in compartmentalised areas of expertise (by means of technologies that objectively cause certain results), it is largely dysfunctional and inadequate in terms of fostering wholesome health. The reason, again, is not that technologies do not deliver what they promise – they do, in terms of partial ends – but that we have come to believe, *magically*, we may now add, that technique and means are *all* that really matters. According to Downing the implication is that we are unable to see the forest because of all the trees, or something along those lines: Tobacco use, unhealthy diets, alcohol abuse, physical inactivity – these are all categorised as 'risk factors' prone to trigger cancer, diabetes, etc. The typical answer to such problems is to further the research within various fields of expertise within the medical professions, and try to manipulate the population in order to regulate and decrease risky behaviours. Inquiry into the reasons *why* people engage in risky behaviours is

avoided. Downing's hypothesis is that, as our technological system does more and more things for us, i.e. delivers us from what some may consider toilsome 'burdens', something is in fact lost to us. Stress is added. What am I supposed to do with my life!? Such symptoms of anxiety, caused by the technological system, must be remedied by technological solutions: mass production and marketing of fast food may comfort anxiety, but trigger obesity, which in turn requires another technical solution. (According to *Ellulian* understanding, even a campaign to regulate a population's eating habits is to be understood as a technical solution, since such campaigns are based on psychological techniques of persuasion and aim, in the name of efficiency, to regulate abnormalities and deviations within a technological system to optimal levels.) Advice to exercise and eat better are propagated without irony 'in a society designed for automatic movement and processed food. We chip away at our epidemics, piece by piece, but peace – *shalom* – eludes us', because '[w]e cannot attain partial health (partial wholeness?); disease elimination is not enough.' (Downing, 2012, 266) How far removed the technically inclined mindset seems to be from the en-cultured mindset as understood by Vanderburg, or, indeed, from the mindset of an Aristotelian ethically inclined to foster virtues understood to enable human flourishing. It is possible that traditional healing systems may overlap with Aristotelian understanding of virtues and flourishing, but Downing is sceptical of the potential of traditional healing systems to deliver in technological society. Why this should be the case can be gleaned from the discussions of Stivers and Gambrill: Traditional healing systems are incompatible both with the notions of the sacred and with the content of sociological propaganda that prevail in technological society. 'Health' – *shalom* – as overarching end will no doubt continue to elude us; instead we will be offered ever more efficient realisations of partial ends: pain reduction, elimination of infection, lower blood pressure, etc. At least for as long as our magical expectations on technique – that it redeem us from anxiety, suffering and death – shall endure.

While magical expectations on medical technologies will fail to deliver, the actual technologies (such as medication) will continue to cause objective effects, some of which may do more harm than good in terms of general health. The same kind of asymmetric pattern between magical expectations vs. real effects, mutatis mutandis, will no doubt hold in regards to AI and social robots. It is, I believe, unlikely that we will ever live happily ever after with a robotic lover; meanwhile, our complicit consent to submit to its charms may cause real and irreversible effects in our persons and in the culture in which we live.

If we suspect that an *appeal to the sacred* may account for some of the proliferation of 'technical' professions in health care and other domains, then how may we understand the larger 'mythological' framework that enables this proliferation? Magic and religion are two separate things. But where there is a sacred, we may suspect that there may be both magic and some sort of cult.

Rustum Roy (2005) argues that 'science-based-technology' is the religion of the 20th century, and that 'science' corresponds to its theology. Yet 'science' is to be understood as largely irrelevant in arguments or discussions concerning secularism and religion: it is technology that provides the power base in modern society, and the rhetorical force undergirding the prestige of technology comes not from science, but from Scientism. It was not the triumph of empirical science that triggered the triumph of the secular, for the 'public is blissfully ignorant of science, except as entertainment.' (Roy, 2005, 837) I feel obliged to concur that 'the idol that American masses worship is surely not science, it is technology – and its huge, continuing *real* successes.' (Roy, 2005, 838) As Elijah outcompeted the prophets of Baal by delivering the actual goods, technology – not abstract science – has outcompeted and continues to outcompete traditional religions by delivering sanitation, electricity, HDTV, etc. Roy dismisses the following popular understanding: The A-bomb won the war; science made the bomb; therefore science is able to make all kinds of things. In reality, Roy claims, German scientists discovered the science of fission, but since Germany did not have the requisite technological infrastructure the Germans were unable to manufacture the bomb. (Roy, 2005, 838) Roy argues that his academic colleagues who write about science-religion issues are unduly focused on arcane issues involving cosmology, Darwin, etc., and that they ignore that the real world of science is focused elsewhere: each discipline on its proper field of expertise, and, collectively, on more funding and a sense of entitlement. The following claim by the scientific establishment in their argument for the construction of a Superconducting Super Collider (SSC) (to the price of $ 38 billion) may serve as demonstration: Without the SSC the science of 'physics would end'. (Roy, 2005, 840) Many such projects, claims Roy, are continually conceived and marketed, even though they can have no immediate practical purpose. So, what can be their purpose? Roy suggests that they 'are the cathedrals of our culture', unseen but revered by the masses. (Roy, 2005, 841) If we think of 'autonomous technique' as religious system, we may add to these cathedrals the more mundane rituals of sports events, TV-watching, consumerism, human-robot interaction, etc.

Are we to understand that 'Scientism', then, is one of several potent messages frequently assumed by integrative propaganda? But surely our 'beliefs' are rational? Must not investments in Superconducting Super Colliders, at the very least, be more rational than investments in old religious systems? Alan G. Padgett (2005) attempts to learn from a puzzling observation: indigenous tribes on isolated islands in the Indian Ocean, living close to the sea and paying attention to animal behaviour, were apparently more apt to survive the 2005 tsunami than modern populations with access to the latest technology. How can this be? One of the properties of modern technology seems to be that it isolates us from our environment. 'How has technology changed our worldview, our culture, our way of life?' (Padgett, 2005, 578) Padgett attempts to examine whether technology is opposed to religion, and arrives at the following conclusion: '*technology in a simple sense is not secular* when by *secular* we mean opposed to religious faith and theological wisdom. But a more developed sense of technology is secular in the strong sense.' (Padgett, 2005, 579) Whereas Roy argues that the triumph of technique engendered the triumph of the secular, Padgett argues that 'the wars of religion in Europe gave rise to an Enlightenment project to base philosophy, politics, and society on a "scientific" basis. It is the Enlightenment prejudice against authority, tradition, and religious faith as a source of public truth, and not science per se, that has developed into our modern techno-secular worldview.' (Padgett, 2005, 580) Padgett invites us to consider whether technology is opposed to both the sacred ('sacred' must in this context be understood as a more traditional notion of the sacred than the one previously discussed) and, finally, science (the latter because a 'technological approach' to science undermines it as 'quest for knowledge' by tying it to the service of ulterior ends), or whether technology is 'something in which religious faith, vocation, and imagination can and should be at work, making technology into a sacred space'.[18] (Padgett, 2005, 581)

Are our beliefs more rational than those of the indigenous tribe commented by Padgett? No doubt an argument can be made that our beliefs are more rational. But *how* rational are they?

From the discussions of Ellul and Vanderburg one may posit that, once technology was determined by culture. Now cultural expressions seem to be determined, to a large extent, by technology. Padgett argues that science, too, is tied to the ends of technological projects. Technological 'evolution' seems, to a large extent, to be given free reign within a *laissez-faire* approach. We know that each new scientific discovery or technological invention can and will

[18] This option is explored by Ann Kull (2006).

be used in pursuit of all kinds of ends, good and bad ones, with unpredictable consequences. Yet what seems technologically doable ought, *because it is doable*, therefore also to be explored. Are tech companies, then, the hegemons of our civilisation? We may glean, from the discussions above, a more mysterious factor influencing both tech companies and the populations that end up using their output, and we are left to ponder a few decisive questions: As cosmos is being demystified by a techno-scientific understanding of the world, are 'means' and 'technology' being mystified? As the human mind is being demystified by a techno-scientific understanding, is the computer – the *AI* – being mystified? To the extent that we turn away from religious mysteries, are we impelled to mystify the scientific method and turn it into the religion of Scientism.

I have demonstrated how some kinds of ostensibly technical practices can be understood as forms of magic. I have argued that 'forms of magic', in order to be functional in a given context, can appeal to a civilisations notion – conscious or conscious – of the sacred, either directly or by the auxiliary means of integration propaganda. *Techniques humaines* are techniques the objective of which is to change human attitudes or behaviour; to the extent that practices employ information symbolically and appeal to faith rather than solid and verifiable evidence of success, they can be understood as imitation technologies, or magic: to the extent that practices within the latter approach incorporates *techniques humaines* and/or objectively functioning technologies, they can be understood as complex hybrid practices based on numerous levels of abstractions. The category 'social robot' can be understood alternately, depending on the circumstances, as *technique humaine*, magic, or hybrid practice. As a technical solution to a problem, 'social robot' can also be understood as obscuring the origin of the problems to which it represents a solution, by reframing the problems in terms of 'planning', 'organisation', and 'efficiency', categories to which computer applications and 'social robots' just happen to represent optimal solutions. I have suggested that, while magical expectations on 'social robots' will no doubt fail to deliver, the actual robotic technologies involved will cause objective effects that might be undesirable. Finally, I have attempted to demonstrate how the mythological structure undergirding our faith in technique can be understood in terms of a quasi-religious techno-secular worldview.

III. Concluding Intimations

Expelled From Eden, Excluded From the World?

The story of the expulsion of man and woman from Eden constitutes one of the foundational narratives of Judeo-Christian civilisation. Humans since have had to make their best to survive in the extra-Edenic *world*. Are we now on the verge of expelling ourselves from the *world*? One hundred years ago, the mathematician, physicist, electrical engineer, inventor, philosopher, theologian and priest, Pavel Florensky, prophesised the consequences of Western rationalism:

> Man expels himself from the world, remaining only as a concrete unit; he exits the realm of being, anticipating what will happen at the Last Judgement. Here's the paradox: man wanted to form a naturalistic world-understanding, but he destroyed nature; he wanted to form a humanistic world-understanding, but he destroyed himself as man. (Florensky, 2014, 105)

The *robotic moment* is a phenomenon that must be understood with reference to human beings co-existing with human-made artefacts in a human or post-human habitat. In the first chapter of this exploration I established a pattern of 'circuits': humans interacting with humans (or, increasingly, with algorithms) by means of networking technologies; humans interacting with robots; networking technologies making humans and culture more eager to accept the services social robots can provide, and social robots making humans and culture more eager to accept the services networking technologies can provide. All such circuits were understood to foster weak ties, and to be to the detriment of strong ties (primarily family, religion, and culture). It was demonstrated how that which initially may be understood as a substitute for the genuine thing, the *better than nothing*, can turn into *better than anything*. Humans seem to like experiences, adventure, new discoveries; but they also seem to have a preference for safety, predictability, and reliability: the technologies discussed *appear* to offer the best of both worlds – ultimately, this may boil down to safe, controllable 'persons' who are always available. One possible conclusion to this logic is the emergence of radically exclusive circuli vitiosi, feedback-loops within which a person may experience lasting and safe togetherness to the price of the exclusion of actual human beings and the actually alive. The *robotic moment*, then, seems to translate a bias both in favour of experience and adventure, and in favour of the safe and the controllable. In the socio-technical environment as it is currently constituted, this bias may impel humans to opt for 'relationships' with

algorithm-based applications and thereby cause the exclusion of humans from the 'relational sphere'.

On the side of the habitat, the central 'character' of the *robotic moment* is of course the so-called 'social robot'. What is it? We have seen how it can be understood as a *technique humaine*, as magic, and as a complex hybrid practice. A society's readiness to accept social robots can to an extent be inferred from its attitudes. Whenever a radical novelty appears on the social stage, there is always at least a segment of the population that becomes anxious. If the predominant mindset of our age is the technologically oriented one, then it makes sense that *Technique* may function as ideology. If technological progress is prioritised above maintenance of culture, above maintenance of existing forms of human societies, above maintenance of biospheres, then it makes sense that anxieties about new technologies *ought* to be pacified. The *robotic moment* may in part be understood as a consequence of various forces: integration propaganda and the discipline-based approach of social scientists such as Shiomi, Liang, and Austin Lee. But the *robotic moment* can also be understood as the surface phenomenon of a deeper cultural disintegration. Within the discipline-based and goal-oriented approach, the *robotic moment* can be reduced to simply a 'set of circumstances' that can be exploited, manipulated, and rearranged in order to bring about the specific circumstances favourable to the fulfilment of *any* goal. The discipline-based approach, by abstracting technology from its intended environment and by studying it in exclusive relation to its inputs and outputs, will excel at increasing performance values; but it will fail to secure harmony between increased performance values and all other factors that are operational in the bio-techno-cultural habitat in which technologies will finally operate. Turkle's culture-centred approach, to the contrary, is focused not on the refinement of technology, but on 1) the effects that technology has on 'inputs' and 'outputs' in its actual real-world context, and 2) on the consequent ramifications that these effects may have on human beings and their culture. But if technical order is prioritised above cultural order, then it makes sense that the questions raised by Turkle will find no consensual answers; instead they might be translated into problems that can be technically solved. The *robotic moment*, then, can be understood as one more instance of incorporation of the non-technical (in this case, the biological, the human) into the technical order (in this case, the robotic and the algorithmic).

I have argued that that which cannot for the moment be incorporated in the technical order, as for instance culture, tend to be excluded from the social processes that really matters, such as, for instance, political and macro-economic decision-making. But it has been demonstrated

that the reach of the 'technological idea' may be much more extensive than the reach of actual technology: there is a vast grey area that can be exploited by imitation technologies and thus, perhaps, be at least quasi-incorporated into a quasi-technical order. The *robotic moment* can be understood as an apocalyptic manifestation of a *predisposition to believe* that may be innate in human nature. If we have no God, we will believe in other things. Humanism has been brandished as a Renaissance and Enlightenment alternative. But now the *robotic moment* seems to suggest a transference of faith, from faith in human beings to faith in gadgets. Humans are great, but the tools that the most ingenious humans are on the verge of designing will be even greater.

I turn now to the second part of my question. What insights can the perspectives discussed bring when we consider problems concerning technology and human society in general? When so much ingenuity is dedicated to the technical perfection of means, and when technological development is given supreme priority, can the power of technique be kept under control?

Technologists like Kurzweil believe it can be kept under some kind of control. At first glance, the ideas of Kurzweil may seem fantastical, for rarely does technology appear under a more mystical guise than under the one suggested in *The Singularity Is Near*, in which we are offered a complete eschatology comprising six epochs, the fifth of which is completed by the merger of human technology with human intelligence, and the sixth of which will be completed when the universe wakes up and becomes conscious. (Kurzweil, 2005, 22-29) Bostrom, more prosaically, also makes the case for 'improvement' of human nature by means of technology. (Bostrom, 2005) Listening to thinkers like Kurzweil and Bostrom, one may get the impression that the realisation of immortality and auto-divinisation is immanent. I believe, however, that – eschatological visions aside – Kurzweil's understanding of technology largely overlaps with the understandings proposed in this paper.

I expect that most people can agree that a robot is a kind of machine. I have already sowed doubts as to how we ought to understand 'social robot'. I shall now attempt to establish what differentiates accelerationists, such as Kurzweil and Bostrom, from sceptics, such as the bulk of the thinkers commented in this paper. Both categories would agree, to a large extent, that the machine cannot be stopped: we simply have no choice but to continue to fine-tune and develop our technological life-milieu. There is also, to a large extent, agreement on the diagnosis presented in this paper (in its most simple form on p. 6-8). So where do they differ?

In order to answer this question, I will return to the *International Journal of Social Robotics*, namely to a paper by David Levy concerning ethical treatment of 'artificially conscious robots'. (Levy, 2009) Levy, whose approach boarders on the culture-centred, after suggesting a series of rather bad arguments for the ethical treatment of 'artificially conscious robots', offers a really good one: 'I believe that the way we treat humanlike (artificially) conscious robots will affect those around us by setting our own behaviour towards those robots as an example of how one should treat other human beings.' (Levy, 2009, 214)

Given that Levy simply assumes that there will be such things as 'artificially conscious robots', his argument is not a bad one: For if I should have a humanlike companion, i.e. a robot, that I could mistreat and abuse publicly in any manner I saw fit, any abusive behaviour would suggest that it were fine to treat other humanlike companions, i.e. actual humans, in similar fashion. The argument holds even if Levy's assumption concerning the coming into being of 'artificially conscious robots' is not actually realised, and what we instead actually end up with are human-looking robots capable of performing realistic *as-if* human behaviour. However, the question we ought to ask before we rush along with Levy is: To what extent can categories such as 'artificially *conscious'*, 'artificial *intelligence'*, '*social* robots' and 'transhumanism' be understood in abstraction from basic understandings of human nature, culture, and the biosphere? The flip-side of accepting Levy's argument is, of course, that we may end up treating human beings as if they were 'artificially conscious robots', and thereby implicitly accepting a computational-robotic theory of human nature. Words such as 'social' and 'intelligence' predate abstract science and they were and still are endowed with cultural connotations; but through a process that can in part be gleaned from the preceding discussions, they have become attributes – performance values, really – that technology can have; human beings, by extension, to the extent that they are understood to share in these attributes, can be reduced to mere 'sets of performance values', and, as such, humans become improvable in the same way that technologies are improvable. Should we, then, not also commit, to the extent that we will allow that technology is disposable, to hold that humans are disposable? What makes humans so special? I suggest that it is, to say the least, *difficult* to think soundly about the 'artificially *conscious'*, the 'artificially *intelligent'*, and '*social* robots', and *not* have an explicit theory of human nature; if we lack an explicit theory of human nature, do we not risk ending up implicitly affirming a computational or robotic theory of human nature?

The latter scenario becomes an increasingly likely one, not because of the force of philosophical argument, but because of the power of the technological infrastructure undergirding our cognitive experience. Or as technologist Jaron Lanier expresses the matter: 'We tinker with your philosophy by direct manipulation of your cognitive experience, not indirectly, through argument.' (Lanier, 2011, 6)

One crucial question that I have left unexplored and that must be considered before a thorough evaluation of accelerationist vs. sceptic understandings can be done is the following: Is it possible and/or desirable to pursue further technological development while simultaneously attempting to safeguard a hypothetical human nature intact? It is here, I believe, that we find a fundamental disagreement between the thinkers analysed in this paper on the one hand, and on the other, accelerationists such as Kurzweil and Bostrom: The former seems to believe that there is a human nature worth preserving; the latter are convinced that human nature is plastic and worth improving.[19] Herein lies the explanation as to why one camp hold that positive effects of technology will increasingly be undermined by negative effects, whereas the other camp hold that positive effects have a good chance to outweigh negative effects. We must, then, in order to be able to properly evaluate these two approaches, shift our inquiry towards the first component in our two-component problem: human nature. It is likely that observations of humans in their habitats will provide valuable clues as to the constituents of human nature. This subject, however, will have to be pursued on another occasion.

As we have seen, there is another important point on which some accelerationists, e.g. Kurzweil, diverge sharply from the sceptics discussed, and it concerns the beliefs and the eschatological scenarios envisioned. Eschatology concerns that which will ultimately be. Lanier puts the visions of his fellow technologists, a vision that may end up having considerable impact on human society, into a religious frame:

> The difference between sanity and fanaticism is found in how well the believer can avoid confusing consequential differences in timing. If you believe the Rapture is imminent, fixing the problems of this

[19] We should acknowledge that the latter camp includes ideas and understandings that are significantly less radical than those of Kurzweil: mere introduction of computer technology into human society, application of *techniques humaines* (medication, genetic design) in order to affect human states of beings or behaviour, and conceptualisations and implementations of new political systems may all be understood as slow-working mouldings of new human natures. There is a continuum between inertia and extreme acceleration.

> life might not be your greatest priority. You might even be eager to embrace wars and tolerate poverty and disease in others to bring about the conditions that could prod the Rapture into being. In the same way, if you believe the Singularity is coming soon, you might cease to design technology to serve humans, and prepare instead for the grand events it will bring. (Lanier, 2011, 25)

Is *belief* – belief not only *that* this or that reality obtains, but *in* the imminence of various eschatological scenarios – determinative of the projects we choose to pursue in the present? Many secularists have criticised religion as obstructive to progress, and the obstructive quality of religion has often been understood to be caused by otherworldly eschatological expectations, which in turn typically would render religious persons less prone to pursue progress in this world. In our day and age, many, presumably, are bewildered by such religious beliefs. However, before discarding such explicit religious beliefs as radically absurd, it would perhaps be wise to scrutinise the beliefs of certain advocates of rapid technological change, notably the transhumanist and post-human beliefs of many of those responsible for the development of the technological instruments which the human species so avidly and uncritically consumes. If some beliefs in *what is to come* may be liable to obstruct or slow down change that may indeed be desirable for a number of reasons, then may not other beliefs be equally liable to accelerate the pace of change to levels far beyond the limits of what may be desirable for humans? If change is too rapid, the good that has been achieved, by means of slow trial-and-error evolution and by means of slow trial-and-error cultural development, might be lost; humanity may end up with registers of powerful means – in the gestalt of hyper-speedy computation, supersonic missiles, and artificially conscious decision-making algorithms – but without any reliable social structures. What consequences may we expect when clusters of designers of technologies – technologies marketed *for* humans – stop believing in a future *for* humans and instead begin to believe in a post-human future? Should we care?

If the intuitions of Turkle, Ellul, Vanderburg, and Lanier, are correct, then the future is certainly somewhat determined by what we do today. Except, never in the way we expect. And especially, never in the way suggested by abstract analysis. It is one thing to demonstrate, *on paper* or *in experimental settings*, that the introduction of robots into a home for the elderly should allow the staff to be more effective and the residents to feel less lonely; it is quite another thing to examine potential ramifications of robotics in cultural space and the biosphere: the former methodology demonstrates that which is possible in *possible worlds*, the latter attempts to explore the conditions that may actually obtain in the actual world.

There is a belief system that holds that science and technology will come up with solutions to all problems imaginable. It would be reasonable for anyone adhering absolutely to such a system to discard culture and religion as superfluous when it comes to important and not mere decorative issues. I suggest that this belief has prodded human civilisation into a dilemma. Culture and religion have been chastised and rendered largely inoperable as guarantors of social continuity and order; meanwhile technology and science are not quite able to assume the role of the 'glue that holds society together'. We are left adrift, with no glue, except perhaps that produced by the primordial hi-tech-enhanced mob, or the peer induced hive mind. It is the glue of the pack, or the ancient primate tribe, momentarily united against a perceived menace. But it is a kind of glue that holds tribes together, not complex societies. The technical solution to this predicament is to produce and refine techniques in the form of coercive laws, propaganda, and surveillance, and to simultaneously produce and refine techniques that more efficiently meet human desires. The end result should, ideally, be something akin to Aldous Huxley's *Brave New World*.

I set out to understand a simple phenomenon concerning human attitudes to robots. It turned out not to be so simple. I hope to have demonstrated that the phenomenon can in part be explained not only in terms of vulnerabilities inherent in human nature and in terms of properties inherent in technological society, but also in terms of the notions of the sacred that prevail in technically advanced societies, and a society's practice of science, engineering, magic, and faith. Against Ellul, the less sophisticated accelerationist[20] would argue that this or that technology obviously have this or that benefit, and that the benefits of technology in the end outweighs the inconveniences. I hope at least to have demonstrated that any argument in that vein, to the extent that it is exclusively based on abstract analysis, is spurious. It is spurious because it commits the fallacy of omission. It omits the effects on the life-milieu in which the technology will actually operate. Such arguments are founded on *legerdemains* that are all the more powerful because they are, on a *social* level, unconscious. The magicians of today are persuasive not only because we believe in their art, but because they believe in it too.

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[20] The less sophisticated, as opposed to the more sophisticated, e.g. Kurzweil, accelerationists. (Cf. the two basic structures of habitat diagnosis, p. 6-8.) The latter generally have a sophisticated understanding of the anthropo-technological predicament, and do not balk at the option of changing human nature. The less sophisticated accelerationists, to the contrary, are overly optimistic in their assessments concerning gains vs. hazards of technologies.

Conclusion

The *robotic moment* can reasonably be understood in terms of anthropo-technological circuits. An inherent preference, on the one hand, in favour of experience and adventure, and on the other, in favour of the safe and the controllable, seems, in the socio-technical habitat as it is currently constituted, to prod humans into pseudo-social circuits, circuits that, to the extent that they exclude actual human beings, undermine *genuine* social interaction. Humans originally desire social relations with other humans, but a preference for the simple, safe, and controllable allows a transformation of the 'social robot' from *better than nothing* into *better than anything*. (See p. 13-18; p. 42.)

The *robotic moment* can in part be understood as a consequence of various forces: e.g. integration propaganda and the discipline-based approach. But the *robotic moment* can also be understood as the surface phenomenon of a deeper cultural disintegration. The *robotic moment*, then, can be understood as an instance of the incorporation of the non-technical (in this case, the biological, the human, the cultural) into the technical order (in this case, the robotic and the algorithmic). (See p. 18-30; p. 43.)

The *robotic moment* can be understood as an apocalyptic manifestation of a *predisposition to believe* that may be innate in human nature. If we have no God, we will believe in other things. Humanism has been brandished as a Renaissance and Enlightenment alternative. But the *robotic moment* also seems to translate a transference of faith, from faith in human beings to faith in gadgets. The robot now represents the realisation of a register of timeless ideals: the conscientious and effective worker, the ever-patient nurse, the confidential confessor, the reliable friend, and the faithful lover. (See p. 30-41; p. 43-44.)

The perspectives dealt with in this paper enable a diagnostic understanding of an anthrop-technological predicament that should, in its mere diagnostic capacity, have the potential to unite many sceptics and accelerationalists in at least one shared understanding. This understanding, if shared, should allow sceptics and accelerationalists to agree on where the genuine controversies lie. So far I have argued that the controversies concern, on the one hand, the understanding of human nature, and on the other hand, eschatological beliefs, including beliefs concerning the desirability of improvement vs. preservation of human nature. The controversies also concern the merits of slow vs. rapid change. (See p. 44-48.)

We should expect the future to be somewhat determined by what we do today; but never *exactly* in the way we expect. And we should *never* expect that a technology inserted into actual bio-cultural space should have *exactly* the effects suggested by any mere abstract analyses conducted in *possible worlds*. We should instead be prepared for numerous and unpredicted effects. I have termed this the 'trickle-back effect'. We should also expect more *technical* solutions to our *cultural* predicament: more production and refinement of techniques in the form of coercive laws, propaganda, and surveillance, and more production and refinement of techniques that more efficiently meet human desires. All of this should be expected; none of these scenarios must necessarily be welcomed. If we think it desirable to control technology rather than being controlled by technology, then critical thinking, based on a profound awareness of the anthropo-technological predicament intimated in this paper, is imperative.

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