

# TECHNOSCIENTIFIC SHAPING OF HUMAN NATURE – BUT WHAT DOES NATURE STAND FOR?

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## Introduction

This paper aims to unpack the somewhat bold question of what does the concept of nature stand for, when we are talking about contemporary technological shaping of ‘human nature’. I will explore the question from several perspectives that have been valuable in my research on the government of life through medical technologies, and the use of living human tissue in experimental biomedical research. I will take up some conceptual discussions and methodological stances in the multidisciplinary field of science and technology studies (STS) that bring intriguing perspectives to figuring out how to characterize human life today. The paper is based on a presentation at the ‘Bio/Art/Education: Symposium on Bioart’, held at the School of Arts, Design and Architecture at Aalto University in October, 2014.

I

To begin with, let us consider how biological and biotechnological forms of knowledge transform our societies. They are often understood to actually transform what it means to be human. This is an observation that we can pick up from the news headlines in different kinds of media, from scientific journals to popular magazines and science documentaries. Only recently, there has been discussion on how one can find out about one’s ancestors through direct-to-consumer genetic ancestry services, available online. The role of biosciences and biotechnologies in shaping human nature has also been debated in the case of environmental toxins in food production. Furthermore, it has been discussed in the case of enhancing athletes’ bodily capacities and performance through the use of synthetic hormones and, in the case of helping couples to overcome infertility through in vitro fertilization and surrogacy (Irni, Meskus, & Oikkonen, 2014).

These are but few examples of the complex ways in which technoscientific knowledge intertwines with humanity in today’s Western world, and increasingly also globally. The fact that scientific knowledge transforms the conditions of our existence is of course neither new nor surprising. But there is, in our time, a sense of novelty and even radicalism in the tempo and scope of technological shaping of humanity, across developed and developing countries. To capture this sense of novelty, sociologist

Mike Michael (2006) has offered several observations on how our everyday lives are changing:

**Observation 1:** Our bodies are increasingly interwoven into information and communication networks.

**Observation 2:** Our bodily capacities are transformed, corrected and enhanced, with the help of biomedical and other kinds of techniques.

**Observation 3:** Our experience of space is multiplied through and complexified in technoscientifically mediated connections.

**Observation 4:** Our experience of time contorts as future seems increasingly nearer.

**Observation 5:** Our sense of self becomes, paradoxically, at once more distributed and more singular.

You might want to consider for yourselves how apt or valid you think these characterizations are, in your personal experience. I would propose that they certainly seem to be central axioms of contemporary existence that we somehow need to make sense of and take a stance to – whether we want it or not. These characteristics are conditioning our present day lives. It is difficult or even impossible to distance oneself from them.

## II

Before proceeding further, the concept of ‘technoscience’ needs to be clarified. The concept refers, firstly, to the ways in which science and technology have become mutually entangled in the modern era. It refers to the fact that in modern science, technology is indispensable to the production of scientific knowledge. Scientific knowledge is produced through the development and use of experimental settings and technical apparatuses (e.g. Haraway, 1997; Latour, 1987).

The fields of molecular biology and genetics are particularly interesting here. In molecular biology and modern genetics (which relies heavily on molecular biology) the object of knowledge, for example a stem cell or a DNA sequence, is known in such a way that it can be modified. Anthropologist Paul Rabinow (1998, p. 141) has characterized modern day biology in the following way: ‘Representing and intervening, knowledge and power, understanding and reform, are built in, from the start, as simultaneous goals and means’.

But there is also a more broad use for the term ‘technoscience’. Often it is applied to describe contemporary societies and cultures in general. Especially Western societies seem to be characterized by the extension of scientific knowledge and different kinds of technologies to ever more spheres of life. Contemporary technoscientific world circulates facts and things from one sphere of life to another, with an increasing pace (see Michael, 2006). Textual, material and technological artefacts move from research laboratories into industrial production lines, local and global markets, the media, everyday household practices, art galleries, and so forth. Some technoscientific practices and artifacts are fairly fixed and stabilized. They have become part of our daily routines. Others are more unstable, fluid and changing – and often also more contested.

## III

As a sociologist and researcher in science and technology studies, this movement or circulation of humans and nonhumans offers, to me, a fruitful entry point to the analysis of present day life. I have previously studied the historical circulation of techniques used in governing our reproductive bodily capacities, through the ethically contested cases of racial hygiene and contemporary practices of foetal testing (Meskus, 2009a, 2009b, 2012). I have also looked at another form of new reproductive technology, that of IVF or in vitro fertilization, from the perspective of ordering of human-nonhuman relations (Meskus, 2014a, 2014b). At present, my research follows the circulation of living human

body parts, that is, human pluripotent stem cells, from patients, to research laboratories, and to the developing drug markets (Meskus & de Miguel Beriain, 2013; Meskus, forthcoming). These research encounters with technoscientific shaping of the human body have brought me to the situation where the issue of shaping of human 'nature' seems to lurk around the corner.

If we focus on – and even celebrate – our ability to shape, to modify, to transform that something which is called human nature, what do we imply?

Do we imply that there is Nature that awaits our transformative interventions but that, nevertheless, exists prior to human intervention?

Do we imply, on the contrary, that human biological existence emerges, in essence, through modification and is, as such, flexible and resilient?

I shall reveal my cards straight away. I argue we should tackle these questions as mutually informative, not as mutually exclusive. They seem like opposite philosophical stances to the question of nature, but they need not be so. It is necessary to acknowledge and to account for how bioscience and biotechnologies create, in practice, new forms and boundaries of life. As such, they also transform the conditions of society and culture. So, nature is being shaped and there is ample evidence of it, as the examples I mentioned in the beginning of this paper indicate.

However, it is salient to acknowledge that the conditioning relations also apply to the opposite direction: biological factors such as genes, microbes, stem cells, and evolutionary processes, structure and shape the forms of life and nature. What is important to note here is that this need not take us to biological reductionism. Biological factors and processes carry with them active, surprising, and changing powers. As feminist theorist Vicki Kirby (2008) emphasizes, biological processes can and need to be studied without bringing in the postulate of these processes as 'pre-scriptive' (see also Meskus, 2014a).

Therefore in social research, and perhaps also in art and artistic practice, it seems fruitful to keep oneself analytically attentive to both how humans shape nature and, how nature shapes humans. In my own work this attempt has led me to study the 'constitutive relationalities' (Haraway, 2006: 141) of humans and cells. It is evident that scientists modify and intervene with the biological material they work with, in the lab and on the Petri dish. However, an equally relevant and interesting perspective is to look at the effectivity of this biological material, of living pluripotent stem cells, on humans. These cell-level agencies condition and transform human activity and experience. They 'do' or perform both expected and unexpected things. Thereby they also produce cognitive, affective and embodied effects in researchers studying them (Meskus, forthcoming). We might call this the unescapable and mundane relationality between bioscientists and the living, experimental material they work on.

#### IV

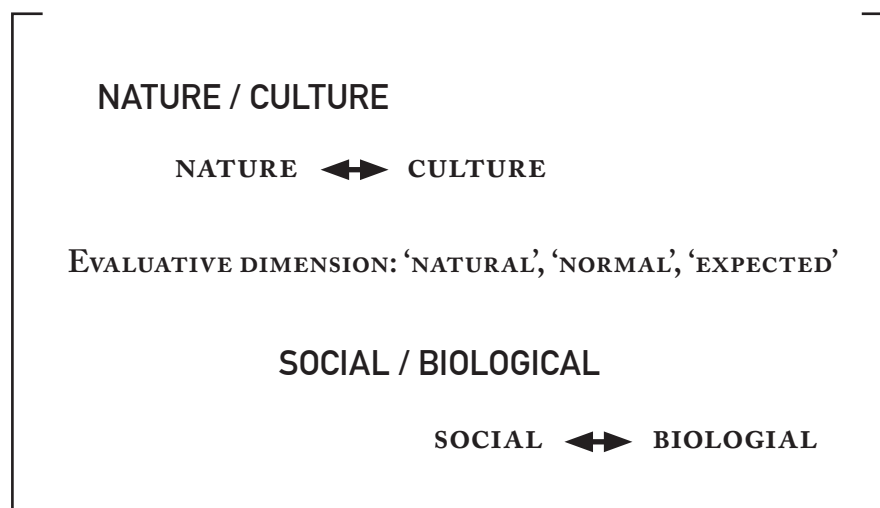
Technoscientific shaping of human nature underscores the fact that ontological dualisms that are the legacy of Western philosophical thinking, such as nature/culture and social/biological, seem to blur and even to crumble. I want to dedicate a few words to this aspect in my attempt to answer the tricky question presented in the title of the paper. One of the classical texts in science studies and particularly in feminist science studies is the "Cyborg Manifesto", written by biologist and feminist theorist Donna Haraway, in the beginning of 1980s. In this text Haraway (1991) explores the ambiguous distinction between worlds that are considered 'natural' and those that are considered 'crafted'. Taking medicine as one example, she underlines that modern medicine is full of cyborgs, of couplings between organism and machine.

In another seminal text in STS unpacking the ontological categorization of nature/culture, philosopher Bruno Latour (1991) claims that 'we have never been modern' and that our understanding of nature and culture as separate spheres of the world, is fundamentally flawed. Latour flags up the

rather complicated and provocative idea that it is thanks to the modern imaginary of nature and culture as ontologically separate that we are actually able to produce new hybrid entities at an ever increasing pace. Latour claims that hybrids such as frozen embryos, genetically modified maize, tissue banks, psychotropic drugs, and sensing robots, can be created and are experienced as justified on the condition that we simultaneously retain nature and culture as separate entities and believe their ontological boundaries to be intact.

In terms of the theme of this symposium, the shaping of biology in doing art, I think both these thinkers offer ideas as to how to approach the technoscientific world in a realist and positive, yet critical and sensitive manner. Haraway, in particular, is very critical about asymmetric gender relations, but at the same time writes that ‘a cyborg world might be about lived social and bodily realities in which people are not afraid of their joint kinship with animals and machines, and not afraid of permanently partial identities and contradictory standpoints’ (Haraway, 1991, 154.) Conducting research on new reproductive technologies and experimental science, I have found this kind of research ethos extremely helpful. It helps in sensitizing to both the positive and the more dangerous aspects of technological shaping of our life. It encourages acknowledging the complexities of technoscientific practices, that rarely are either good or bad.

Having said this, I shall end my paper with a glimpse on the morally loaded manner in which the concept of nature has historically been and still is used. I wish to add to the conceptual relations of nature/culture and social/biological the dimension of moral evaluation, as the figure below indicates:



## V

When we are exploring the technoscientific shaping of nature, be it human or nonhuman, it is quite evident that we are moving on a morally loaded terrain. Biological and technological knowledge and the way these are applied in practice, raise political and ethical controversy. Thus, to analyze what ‘nature’ stands for in Western use, takes us to practices of valuing and evaluation. This of course is paradoxical given that one corner stone of our philosophical thinking is to perceive ‘nature’ as something real, separate, and out there. So what has valuation to do with nature?

Let us look at the English dictionary entry for the concept of nature. According to Oxford Dictionaries ([www.oxforddictionaries.com](http://www.oxforddictionaries.com)), as a noun it refers to ‘*the phenomena of the physical world collectively, including plants, animals, the landscape, and other features and products of the earth, as opposed to humans or human creations*’. It also refers to ‘*the basic or inherent features, character, or qualities of something*’, and ‘*the innate or essential qualities or character of a person or animal*’. When further exploring the uses of the concept, one finds that an exemplary phrase of its use is one that the

negative: 'against nature' means '*unnatural* in a way perceived as *immoral*'.

The emphases here are my own. The point here is to see that the definition of nature consists of an evident semantic ambiguity. Nature refers to other than human, but also to human. It signifies something that is innate or essential. However, it also refers (via the example of negation) to something that is natural as in normal, and morally acceptable.

In her discussion on 'the nature and the natural', biologist Evelyn Fox Keller (2008) points at this slippage between what 'is' and what 'ought to be', in the use of the concept of nature. Her project is to disambiguate the relation between biological nature and the natural. She wants to root out the persistent efforts to ground moral order upon natural order. However, Keller admits that the task is a hard one. The tendency to place moral order upon perceived natural order seems immune to much of the powerful critique biologists themselves, for example, have presented towards this tendency. It is somehow alluring and frighteningly easy to think that something considered natural is for that reason also moral. Vice versa, that which is regarded as morally right is often seen as depicting an order of nature.

If we search for a current example where this ambiguity is prevalent, we might want to consider again the case of new reproductive technologies. Technoscientific shaping of reproduction, through the donation of gametes, in vitro fertilization and through freezing, selecting and transferring embryos, is perhaps one of the most evident practices where nature, technologies and moral debates come together (e.g. Thompson, 2005). The phenomenon conflates and confuses sexuality, gender roles, biological 'laws', family politics, kinship relations, microscopic technologies, religious norms, et cetera. My point here is to underline that if we explore the multiple ways in which human and nonhuman natures are being modified and transformed and if we try to develop an approach to that is simultaneously realist, broadminded and critical, it is useful to remember the inbuilt ambiguity in our understanding of nature. This means that we will constantly come across confusing understandings of what is and what ought to be, and what is inherent or artificial. We are enforced to operate within this confusing semantic framework, because it is so effective in our everyday thinking as well as in many social, political, and economic practices.

Doing empirical research in social sciences differs of course in many ways from doing art, even though both 'doings' would be interested in what nature, or biology, is and how it can be modified for various purposes. As the presentations in this symposium show, the merger of technology and biology transforming our everyday life interestingly also affects artistic practices. To conclude and perhaps also to pave the way for further discussion, I suggest it would be interesting to explicate and to compare they ways in which activities of bioart come across the issues touched upon in this paper; the flexible yet existing boundaries of nature and culture, and the moral orderings attached to these boundaries.

## References:

Haraway, Donna J. (1997) *Modest\_Witness@Second\_Millennium. FemaleMan©\_Meets\_OncoMouse™*. New York: Routledge.

Haraway, Donna J. (1991) *Simians, Cyborgs, and Women. The Reinvention of Nature*. London: Free Association Books.

Haraway, Donna J. (2006) When we have never been human, what is to be done? Interview with Donna Haraway. Interviewer Nicholas Gane. *Theory, Culture & Society* 23(7/8): 135–158.

Irni, Sari, Meskus, Mianna & Oikkonen, Venla (eds.) (2014) *Muokattu elämä: Teknotiede, sukupuoli ja materiaalisuus* [Molded Life: Technoscience, Gender and Materiality]. Tampere: Vastapaino.

- Keller, Evelyn Fox (2008) Lecture: Nature and the natural. *BioSocieties* 3(2): 117–124.
- Kirby, Vicki (2008) Natural convers(at)ions: or, what if culture was really nature all along? In Alaimo S and Hekman S (eds) *Material feminisms*. Bloomington & Indianapolis: Indiana University Press, pp. 214–236.
- Latour, Bruno (1987) *Science in Action*. Cambridge: Harvard University Press.
- Michael, Mike (2006) *Technoscience and Everyday Life: The Complex Simplicities of the Mundane*. Maidenhead: Open University Press.
- Meskus, Mianna (2009a) *Elämän tiede. Tutkimus lääketieteellisestä teknologiasta, vanhemmuudesta ja perimän hallinnasta* [Science of Life: A Study on Medical Technology, Parenthood and the Government of Heredity]. Tampere: Vastapaino.
- Meskus, Mianna (2009b). Governing Risk through Informed Choice: Prenatal Testing in Welfarist Maternity Care. Teoksessa Susanne Bauer & Ayo Wahlberg (toim.) *Contested Categories. Life Sciences in Society*. Farnham & Burlington: Ashgate, pp. 49–68.
- Meskus, Mianna (2012) Personalized Ethics: The Emergence and the Effects in Prenatal Testing. *BioSocieties* 7:4, 373–392.
- Meskus, Mianna (2014a) Agential multiplicity in the assisted beginnings of life. *European Journal of Women's Studies*, published online 22 April 2014. DOI: 10.1177/1350506814530691.
- Meskus, Mianna (2014b) Hedelmöityshoidot ruumiillisena kokemuksena [The embodied experience of infertility treatment]. In Irni, Sari, Meskus, Mianna & Oikkonen, Venla (eds.) *Muokattu elämä: Teknotiede, sukupuoli ja materiaalisuus*. Tampere: Vastapaino, pp. 51–85.
- Meskus, Mianna (forthcoming) *Biopolitics, Ethics, and Stem Cell Science*. New York: Palgrave Macmillan.
- Meskus, Mianna & de Miguel Beriain, Iñigo (2013) Embryo-like features of induced pluripotent stem cells defy legal and ethical boundaries. *Croatian Medical Journal* 54:6, 589–91.
- Rabinow, Paul (1998) Genetic and molecular bodies. In T. Yamamoto (ed.), *Philosophical designs for a socio cultural transformation. Beyond violence and the modern era*. Tokyo: EHESS & Rowman & Littlefield Publishers, pp. 135–150.
- Thompson, Charis (2005) *Making parents: The ontological choreography of reproductive technologies*. Cambridge & London: The MIT Press.

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