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Miserable Machines and the Technoscientific Gaze

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She is a Slovenian new media artist and scientific researcher currently based in Amsterdam, NL. Her artistic practice combines natural sciences, new media and performance. While working towards an egalitarian and critical discourse between the professional and public spheres, she tries to envision artistic experiments that produce questions relevant to anthropology, psychology, and philosophy. She extends her artistic research with art/sci workshops devoted to informing and sensitizing the interested public, particularly younger generations. In particular, she is interested in all aspects of anthropocentrism, the reconstruction and reappropriation of

scientific knowledge in the context of cultural phenomena, living systems in connection to inanimate systems manifesting life-like properties, and terRabiology, an ontological view of the evolution and terraformative process on Earth. Her work has been shown at many festivals, exhibitions and educational events in Slovenia and around the world (Kapelica Gallery (SI), (Touch Me Festival (HR), Pixxelpoint (IT), European Conference on Artificial Life (IT), Playaround (TW), Harvard (US), Ars Electronica (AT), National Center for Biological Sciences (IN), HAIP (SI), Arscope (DE), Mutamorphosis (CZ), Galleries de la Reine (BE)···).

Abstract

To be able to think beyond the Capitalocene, it is necessary to recognize the deep influence technoscience has had on cultural values, the organization of economic flows and persistence of power structures globally. Its underlying materialist thought, objectivism and reductionism are used to explain the questionably universal human condition and aid in the subsumption of attempts at political and social heterogeneity. These trends also manifest themselves in artistic practices, most recently in the field of hybrid art, which accentuates the way (bio)technology has shaped views on life and relations between agencies operating within the biosphere. To unpack the complicated recursivity between technoscience and the human condition in the early 21st century, we must consider the history of science and its effects on society, which seem to be in support of technologically mediated neoliberalism. Because technoscience is so engrained in our culture, art appropriating it is in danger of unwillingly promoting its cause. In resistance to its overpowering episteme, however, we are also witness to forms of art, which lean on various traditions (paganism, shamanism, mysticism) as one possible way of escaping a mono-cultural future.

Technoscience is a term used to describe the increasing inseparability of science and technology; the first seems to be in service of the second, that is science adopting notions of progress and utility as its immediate goals to fulfill the demands of the “technology will save us” paradigm. The disruptive power of technoscience as it traverses outdated boundaries between nature and culture, creating hybrids and challenging rigid hierarchical categories, must be weighed against the economism and transhumanism implied in its manifestations. The dispositive of technoscience with its intimate relation to the latest incarnation of capitalist ideology (namely neoliberalisation) has penetrated most domains of human activities on a global scale. Although different contexts (cultural, economic, ecological) clearly demonstrate the rich transmutating flavors of technoscience when it interbreeds with particular situated histories, there are distinct marks it inflicts on the worldviews; woundings, which allow for a reduction of complex phenomena to graspable, commodifiable bites. I will first outline a few framings of

technoscience, which seem significant to the understanding of living bodies as docile, malleable and manageable entities fully penetrable by technology, then expand the notions with some contemporary countercurrents and finally look at selected examples of artistic practices that could be said to embody each of the mentioned framings.

The first characteristic of technoscience is an understanding of the biological as sophisticated machines. Arising in the 18th century Enlightenment, French materialism with philosophers–scientists such as Julien Offray de La Mettrie and Denis Diderot paved the way that broke away all natural phenomena from divinity, including, for that time quite heretically, claiming that the mind and soul are of the same substance as other materiality. Their challenge was to conflate the Cartesian dualism of body and consciousness into a continuous albeit mysterious organization of matter and process. With these notions, French materialism allowed for the examination of thoughts and feelings as arising from quantifiable, objectively observable processes, rendering all experiences and phenomena in the biological world comparable to technology. Technological mimesis became the new standard measure of the biological.

The second important adjunct to the materialist view of life came in mid-20th century as a result of the development of mathematics and the invention of computers. Alan Turing's work with cellular automata and mathematical biology, which for the first time modeled chemical patterning in living systems, proved that seemingly complex morphologies could arise from simple mathematical rules. With the likening of biological processes to logical operations performed by computers, the era of the search for biological codes began. After the discovery of DNA as one of the central codogenic components of cells, science became invested in mapping the pathways of cellular metabolism. Deciphering codes and transcribing them into digital media introduces a mirroring between the digital and biological that Eugene Thacker refers to as *biomedia* — “...a twofold approach to the body, [characterized] by the investment in the capacity of information to materialize and in the capacity of biological materiality to be understood as already being informatic.” (Thacker, 2004) This infers that biological processes could be simulated *in silico* as much as regulatory processes modeled *in silico*

could be transferred into living cells, as most prominently promoted by synthetic biology with the engineering approach to cellular machines (biobricks and biocircuits).

Exploring molecular mechanisms, new types of narratives and visualisations are developed to fill the phenomenological gaps between the actual metabolism residing at the nanoscale and phenotypic observations of manipulated organisms. The narratives, schematics, graphs and models used to communicate findings amongst the researchers evoke an imaginary of machinic cells that inspire awe over the emergence of life from distinguishable parts and create innumerable points of access into a disenchanted biology. The abstraction of findings drawn from very wet and very particular entities, literally killed by the act of observation, have become the consensual objective reality, organized by the scientific, disembodied “we”.

Scientific epistemology invites the expansion of biopolitics through the erasure of any significant difference between living bodies and technology. Living entities are seen as a colonizable, expansive, expendable, expandable and interchangeable. Hence the abstract, functionalist framework reinforced by science is conducive to the material flows leading to capital accumulation. Because of its supposed universality, it is resistant to local anachronisms (e.g. pockets of traditional epistemes) and transient anarchical formations (alternative economies and minority values). The fragmented human individuals are reified as consumers on a self-regulating market and valued based on their capacity to produce products and maintain the flow of capital.

Beyond understanding them as commodities, the bodies of scientific interest, whose properties are now well characterized, have become the expanded labor force. They are the algae biofuel, fungal biotransformers, palm oil plantations, seedless bananas, and broiler chickens. They are at the heart of biomedical futures – cell lines, vectors, molecular machines, animal hosts of human organs, and vegetal producers of vaccines. Foucault’s analysis of biopower fails to envision its extent; the institutionalized human turns to human institutions to reap bio-labor for their survival (Nealon, 2015). The precarized living and semi-living sustained in sterile bubbles and production-optimized farms are the new invisible workers of food, health and energy systems akin to other new labor structures such as

digital sweatshop programmers or the ‘artificial artificial intelligence’ provided by Amazon Mechanical Turkers.¹

Finally, because of the pervasive reductionist framework of technoscience, limited indexes or proxies are utilized in the political and economic decision-making. A proxy in this case is a substitute stand-in value that is statistically correlated with the complex phenomenon under investigation. An example of this is climate change that gave rise to the carbon economy, which focuses on CO₂ levels as the proxy of global warming. This reduction has spurred efforts to reduce the amount of free CO₂ in the atmosphere. Consequentially, the value of an old forest is perceived as lower than a newly planted one, as new growth assimilates CO₂ faster than a mature ecosystem. Because of the premise that complex systems can be understood in their abstraction and simulated with mathematical models that take into account limited effects, the intuitively bad decision to cut down primary forests rich in biodiversity and with a central role to the stability of the ecosystems, becomes the logical plan of action.

I have outlined some of the premises and articulations of the technoscientific gaze. We will now briefly look at a few of the discursive countercurrents, which have sought to reflect the consequences of humanist/materialist tradition and proposed new modes of empowerment stemming from it.

Amidst technological advancements, feminist thinkers see a possibility for an unlikely alliance between technology and entities marginalized and exploited in the primary accumulation of capital. Racialized, disabled, gendered, third-world, non-human, colonized bodies were called to embrace the prosthetized present where those who embody humanist ideals (white, male, western, autonomous, rich, educated, impenetrable, individual masters of their existence) are the minority. The repercussions of (bio)technological innovations (today coming in the form of designer babies, pig-grown

1 Amazon Mechanical Turk is a service provided by Amazon. It is a crowdsourcing internet marketplace enabling individuals and businesses to coordinate the use of human intelligence to perform tasks that computers are currently unable to do.

The “artificial artificial intelligence” is their tagline. The requesters (employers) can design jobs that are then carried out by the individuals all around the globe for very little pay.

replacement body parts, fracking or geoengineering) trigger ethical deadlocks that call for a revalorization of social norms as well as political and economic structures that support them. To become posthuman we should relinquish some of the false or subjugating humanist ideals and accept our humanness as a particular manifestation of a sympoietic becoming. This rebellion against the established order seeks to empower silenced agencies by allowing them to thrive together, even when labeled as abnormal, rejected, monstrous, pitiful, polluted, dependent and sick. Embracing the less-than-human cyborg that we already are is a form of weedy resistance.

However, diverging from Haraway's *Cyborg Manifesto* (Haraway, 1991), the trope of the cyborg is increasingly appropriated to signify not innumerable strange alliances of resistance and resilience, but an almost sado-masochistic erotic towards technocapitalism. In the pre-apocalyptic submersion into a new normal "progressive individuals" mold their impulses to adapt to the demands of technology, whereas beings not capable of "getting with the program" are pitied and belittled. The tension between progressive and conservative obfuscates the fact that beyond its discursive disruptions, technoscience also facilitates a capitalist structuring of society. When we see ourselves through its prism, our vitality as organisms is reduced to discrete categories it is able to identify, utilize, valorize, and combine into material flows.

Some streams of discourse that attempt to grasp a larger view of the phenomena such as technocapitalism, climate change or algorithmic cultures, are new materialism, speculative realism and object oriented ontology (e.g. authors such as Timothy Morton, Benjamin Bratton, Jane Bennett, and Ian Bogost). In reaction to humanist categories, hierarchies and oppositions, they provisionally map the world-making processes as "larger than human". Adversely, these constructions seem to leave the endless list of particular, "small" agencies powerless in light of the all-encompassing wholes. To this respect, Timothy Morton exposes the structures of new materialisms nevertheless as *subscendent*; hyperobjects whose contours we can only approach conceptually due to their imperceptible scales, may be physically or temporally large, but, he argues, they are ontologically small (Morton, 2017). They are significant but weak, outnumbered by the parts that compose them. He thus introduces an empowering

correction to his object oriented ontology. With subsistence, he warns against considering hyperobjects as impervious impositions or unchangeable ideals in response to which conformism would be the only possible action. Though is it attractive to view technocapitalism and technoscience as an imposed, unfitting xenopolitics, it is not outside of societies or biospheres, it is a worldview, a frame with which we are complicit. We compose the whole and have power over it, Morton seems to imply.

As artists tackle the conditions of society within which they live, it is no surprise that in reaction to technoscience the field of hybrid or bio-art has emerged. This art practice takes many shapes and uses whatever media is necessary to explore topics relevant to the technologised human condition. It is also a highly interdisciplinary field, navigating the interstitials between life sciences, technology, living entities and art. Heavily influenced by the emerging (bio)technologies, we are pushed to consider their implications as well as attempt to expand the adjacent possible through their appropriation and narratives. Instead of dedicating the subsequent paragraphs to an attempt at encompassing the context, motivation and work of a multitude of artists that have been reflecting on the status of technoscience in society. I will elaborate on two of my own artworks, *Miserable Machines* and *Phytoteratology*, which address some of the aforementioned phenomena associated with technoscience.

Miserable Machines [1-1, 1-2, 1-3] is an artwork composed of an analogue apparatus, which utilizes the isolated muscle of a mussel (*Mytilus sp.*) to draw unique patterns of muscle contractions on a glass vase stained with soot. The apparatus is functionally based on the early kymographs, a 19th century scientific invention which allowed electrophysiologists to study contractions of muscles, mostly extracted by vivisections, as they were stimulated by electrical shocks. In this artwork, the muscle is placed in the position of a laborer, its every relaxation triggering a new electrical pulse, causing it to contract once more. The muscle is tied to a lever, which slowly scrapes the soot off of a rotating vase, inscribing onto it its lifeline. Upon its death the vase becomes a uniquely designed lampshade and the lamp the final resting place of the muscle/mussel, a mausoleum of the laborer that made it. The work unfolds slowly, taking five hours to complete one lampshade. The project was

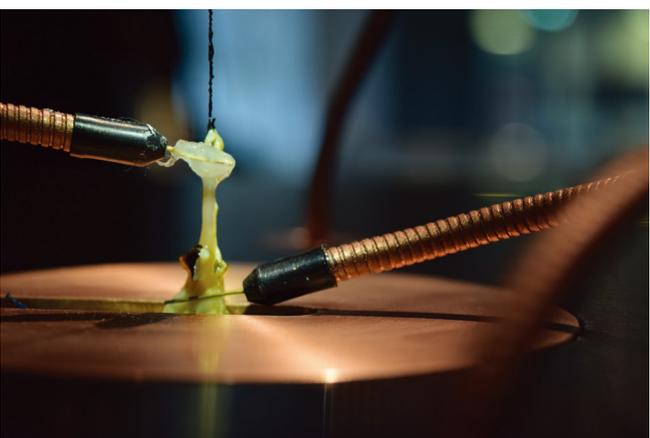
[I-1] Špela Petrič, *Miserable Machine*, Installation,
©Hanneke Weizer



[I-2] Špela Petrič, *Miserable Machine*, lamp detail,
©Špela Petrič



[I-3] Špela Petrič, *Miserable Machine*, Muscle detail,
©Špela Petrič



commissioned by MU, a gallery space in Eindhoven, the Netherlands, on the occasion of the Matter of Life exhibition in 2015. The exhibition's concept explored the notions and effects of mattering living through bioart and design practices.

Miserable Machines arise at the intersection of animal ethics, biomedical sciences, and the capitalist system of production and consumption to articulate the plight of living. It is not a project that would propose a set of alternate relations, but rather uncannily accentuates them. The brutality of reduction involved in the display is not immediately apparent. However, the act of vivisection as the initiation of the working process highlights the connection between the organism and its disembodied part. Both visually and processually the sacrifice of the mussel is in contrast to the high-tech blue and white aesthetics of contemporary biomedical laboratories, which erase traces of sacrificed organisms and offer them as victimless, artificial powerhouses. In fact the question of animal torture came up on several occasions when exhibiting the artwork. The main objection was aimed at the electrocution of the muscles and somewhat less on their extraction from a live, unanaesthetized organism. Since the mussel is a sessile animal considered the fruit of the sea and thus likened to plants, the audience is caught in a moral limbo, experiencing affective rejection but rationalizing it in terms of food production and simplicity (immobility) or the organism. The other question arising is about the status of the muscle outside the organism. On one occasion the police was called to investigate a possible case of animal torture. The officer was able to grasp the critical context of the work, which made the question boil down to whether the muscle within the machine is still alive or not. Being assured that the neural system had been removed the officer saw no evidence of animal torture, since it could not feel pain after being strapped into the machine.

By posing the electrophysiological experiment not as a historical reenactment but rather a fetishized labor-commodity relationship, *Miserable Machines* become a reminder of the deeply rooted fascination over seeing the living as machine and simultaneously the reductive violence that epitomizes hybridity between machinic and living principles. In their complicated functional intermingling, the machines are made to accommodate the living as much as is necessary, but the common form more or

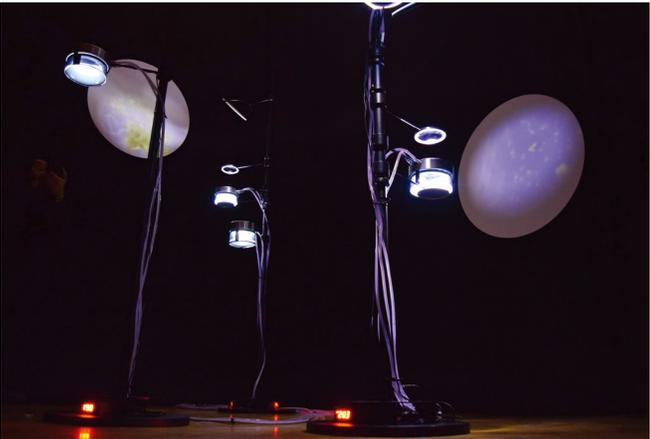
less conforms to the imperatives of the market. In this case, the art market?

Whereas the work *Miserable Machines* takes a very expressive stance toward technoscience, labor and machinic life, *Phytoteratology* [2-1, 2-2, 2-3] attempts to appropriate the scientific gaze and in a gesture towards reproductive freedom use it to procreate human-plant monsters, called phytopolutans (Gr. *phyto* – plant, Slovene *polutan* – mongrel). The installation features five incubators, which contain phytopolutans at different stages of development. The incubators compose a life support system, giving plants ample light, ensure sterile conditions, exchange of gas and maintain a stable temperature of 22 °C.

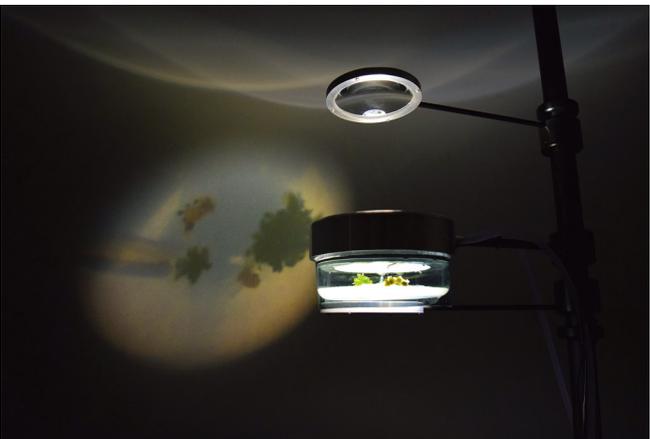
The project emerged from a three year study of plant alterity, which is on one hand rooted in the sheer organizational difference between plants and animals and on the other carries the baggage of Western metaphysics, which places plants at the bottom of the hierarchy of life. The intention of several artistic experiments performed within the *Confronting Vegetal Otherness* opus was to look at semiotic material exchange as a way of honing in to agential intra-action between humans and plants. In *Phytoteratology* (Gr. *phyto* – plant, Gr. *teras* – monster, *teratology* – the study of inborn malformations) the mode of interaction is molecular. Steroid hormones, isolated from my urine, are the modality that connects not just cells within our bodies, but can also be a trans-species channel of communication.

The scientific discovery that drove the artwork was finding mammalian hormones in plants, which are thought to have roles in their sexual reproduction, growth and development (Janeczko and Skoczowski 2005). To become the morphogenetic mother of plant monsters I supplemented plant hormones, which normally direct morphogenesis, with my own steroid hormones, or rather their metabolites. *Phytoteratology* also performs the process ectogenesis; the conception of a plant embryo outside its womb — the seed — is a process akin to bringing to term babies in incubators. The process was conducted as such: I took a bit of embryonic tissue from the thale cress (*Arabidopsis thaliana*), a common weed that can be thought of as the most transgressive plant on the planet, because as a model organism it has had more manipulations carried out on it than any other, yet it is by our anthropocentric standards a plain

[2-1] Špela Petrič, *Phytoteratology*, Incubator detail,
©Špela Petrič



[2-2] Špela Petrič, *Phytoteratology*, Incubators,
©Špela Petrič



[2-3] Špela Petrič, *Phytoteratology*, Phytopolitan,
©Špela Petrič



occupant of degraded areas. I used biotechnological protocols to nurture the tissue into plant embryos, which I bathed in steroids from my urine to assist the embryo development. My molecules were speaking to them about my presence in response to which they altered their epigenetic patterns and grew a unique body morphology. These tiny monsters, that came into being from an impossible love, with intense labor and a yearning of plant parenthood, emerged as beings of permeability, harbingers of affective intra-action. The work hoped to provoke the poiesis of leaving traces on one another and an exploration of a potentially more entangled, semiotically aware future.

The phytopolutans are beings of biotechnological excess. The scientific gaze desires proof of the effects, which I intentionally avoided, claiming that it was within the domain of science that this proof has already been undertaken (Janeczko, 2012). The artistic appropriation of the protocols was in service of the narrative of making kin, challenging the framings of reproductive capacity, which in the age of biotechnology extends to what Luciana Parisi terms *abstract sex* (Parisi, 2004). Abstract sex transcends the common notions of sex and reproduction through the introduction of technoscientific and digital protocols, which allow for the manipulation of organisms at the molecular level. Moreover, because of the assistance of biotechnology, it taps into the imaginary of scientific discourse to understand the processes taking shape. This presented one of the challenges of the artwork, which in fact takes 4 months of nurture, following specific steps, to produce the beings that are then displayed in the installation. In the final installation, the durational process of phytopolutan conception is hidden while the life-support system is in focus as much as the human-plant monsters themselves. The technoscientific framework imposes the gaze of control, molecularization and the necessity of technology to keep the plant monsters alive. Hence, the relationship between the agencies — plants and humans — is precarized; in the struggle to perform the operations of scientific methodology, both partners are subjected to the rules of the interface, which in this case demands sterility, exact timing, precise media compositions and strict light and temperature control. Regardless of the intention, the aesthetic and context of technoscience thus dominates the artwork, begging the question if it is at all possible to use technoscience to tell any narrative other than its own. In a way it demonstrates McLuhan's claim that

the medium is the message (McLuhan, 1964), which in turn brings forth the following: if our current view on the relationship between living entities is so much imbued by science that is complicit with technocapitalism, can we ever propose an alternative relationality by using its tools?

Several artists have been successfully navigating this slippery slope by mongrelisation of a different kind, introducing other, traditional epistemes into their atwork and thus speaking about our (bio)technological present by tapping into capacities that have been pushed aside, such as traditions of rituals, paganism, witchcraft, healers, and ethnobotany to name a few. An example is Joannes Paul Reather, who uses a succession of alter-egos — constructed identities (Avatars, AlterIdentities or SelfSisters) that through performances challenge conventional assumptions about identities, bodies, and technology. As he describes his process, he uses “techno-spiritual alchemy, that can be used as a kinetic energy to attack the maelstroms of a global circulation of what she calls endo-capitalogenic objects, things and beings.” (Reather, 2017) Without relying on the functionality of his performed biotechnological gestures, he orchestrates strange interventions into public and natural spaces to compose a patchwork of rituals addressing our state of being. Another prominent case is Isabel Burr Raty, a Chilean-Belgian artist who works with her own bodily fluids, obtained from her sexual organs as a way of producing self-obtained cosmetics. Menstrual pills, G-spot ejaculation tonic and ovulatory excretion creme thus become a mode of self-healing or beautification, which she calls synthetic magic, employing some of the scientific knowledge of chemical effects of these substances and combining them with a rich hybrid mythology as to the benefits of their use. Practices like these enable a resistance to the reductive force of the technoscientific gaze without its rejection and return to a romantic “natural” state.

In conclusion, we must begin to understand the deep influence technoscience has on our worldviews, including supporting the view on living as material, which subjects all living to commodification. The two examples of my own artistic practice, *Miserable Machines* and *Phytoteratology*, both arose in reaction to the technoscientific episteme. The first posits itself as a hyperbolic reflection of the consequences of materialism while the second

envisions appropriating scientific practices towards interspecies mongrelisation. In both cases the relationship to technoscience reads as ambivalent, suggesting the functional use of (bio)technology in art could always lead to at least partial affirmation of that very framework. Finally, the turn to quintessentially human practices such as paganism, shamanism and witchcraft present one possibility of artistic practice that comments technoscience yet does not fall under its spell.

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