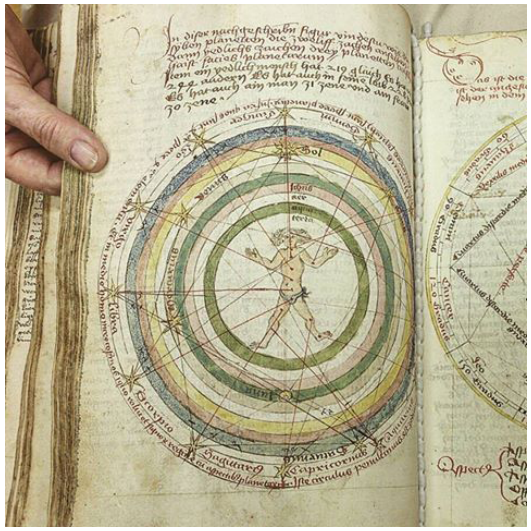
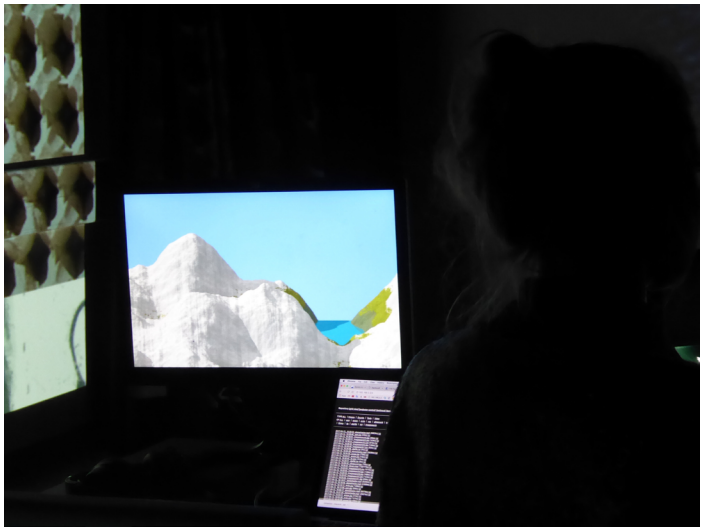
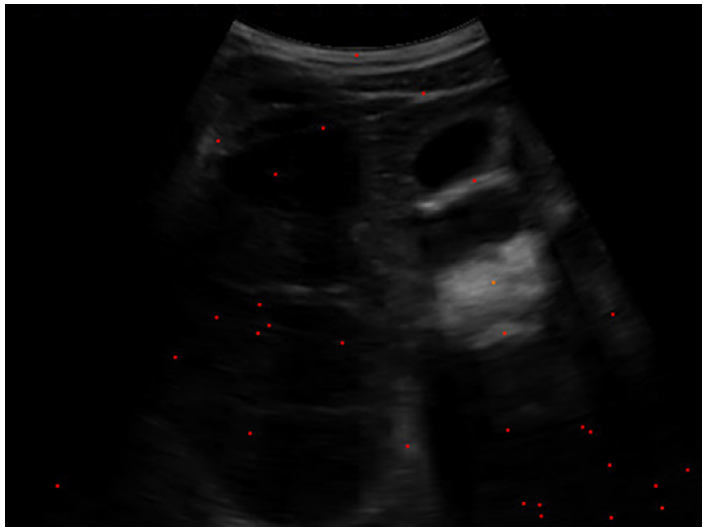
BECOMING.A(THING) : A SEMIOTIC INSTRUMENT
Š PELA PETRIČ AND MIHA TURŠ IČ











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Reflecting upon supercomputing, *becoming.a-(thing)* is a modular artwork —like a score— that can take different forms, display variations and variable elements.
The following description, as well as the video, relate to the presentation of the work at its premiere at the LifeSpace Gallery in Dundee in Spring 2017.

becoming.a(thing) presents itself as an audiovisual performative installation that associates objects, data, algorithms and humans, what the artists call a «Congress of Actors».
The objects include such things as computers (loads of them) among which the suitcase-sized supercomputer 'Wee Archie' [1], an ultrasound scanner, SD card, articles, books, microscope, microphones, cameras, video projectors.

The algorithms encompass speech-to-text and image recognition softwares, *XMountains* [2] a fractal terrain generator developped by Stephen Booth one of the EPCC scientists envolved in the project, a 'star extractor' [3] algorithm used by astronomers to identify stars and galaxies in raw telescope images, a weather forecast software.

The data are ... anything from images to texts, to pictures of cells under a microscope, to all kinds of measures about everything possible including the «weight of information» taken from a loaded card on a high precision scale and of course data/measures about humans.
The humans are the artists and the scientists that took part in the project of course, the mechanical turk that describes the generated image of the mountain, but also the audience, circulating between all the devices and projections, witnessing and (un)volontarily contributing to the flow of information and data processed.

The goal of an algorithm, of a software, is to solve a specific problem, to perform a specific task and to decipher and interpret a specific set of data. Even more so with supercomputers. And we rely on them to make sense out of huge amount of data that we are not able to process or to understand by ourselves any more.

What would happen if we were feeding the machine with any data, for instance an ultrasound image of a womb to a star extractor? Would that still make sense? For the machine as well as for the humans? In *becoming a.(thing)* algorithms are fed with unexpected inputs and they are asked

to make sense of them. This outcome is then further processed with another algorithm, and so on. Everything becomes a data to feed the machine, understood as a system, that produces outputs that in turn may become new inputs, in a constant flow. In the process humans may just become a 'thing» in the computerized society of 'thinginess'.

For the artists, «what we get is an emergence of meaning that does not have the meaning that was intended for. The important thing is to really consider the process of semiosis, not only something that is only attributable to humans, but that also emerges from the materiality of the objects that are involved in this congress of interpretation, in this process of meaning-making. Ultimately, the piece is a semiotic instrument, a tool to understand ourselves» [4].

Resource

[1] **Wee Archie**, a Raspberry Pi model of a supercomputer
https://www.epcc.ed.ac.uk/discover-and-learn/resources-and-activities/what-is-a-supercomputer/wee-archie

[2] **XMountain**, a fractal terrain generator written by Stephen Booth
https://spbooth.github.io/xmountains/

[3] **Star extractor software**
https://www.astromatic.net/software/sextractor

[4] **The semiotics of supercomputers, by Susan Fourtané**
http://www.featart.eu/index.php?id=63

BECOMING.A(THING) : A SEMIOTIC INSTRUMENT
Š PELA PETRIČ AND MIHA TURŠ IČ

1/ EXASCALE COMPUTING

2/ RESEARCH GOAL

3/ TOWARD EXASCALE SUPERCOMPUTING : FET HPC/HIGH PERFORMANCE COMPUTING PROJECTS

1/ EXASCALE COMPUTING

Exascale computing is the goal to build a supercomputer that can achieve 'the Exascale', that is a million, million, million calculations every second.

The first Exascale computers will be very highly parallel systems, consisting of a hierarchy of architectural levels.

Building such a computer demands researches in many areas such as hardware design, programming models, algorithms & tools, and applications.

Key challenges for the Exascale includes energy efficiency, usability, programmability and ability to handle data with the overarching goal of fulfilling grand-challenge science endeavours in areas such as sustainable energy, climate change and the beginnings of the Universe.

https://en.wikipedia.org/wiki/Supercomputer

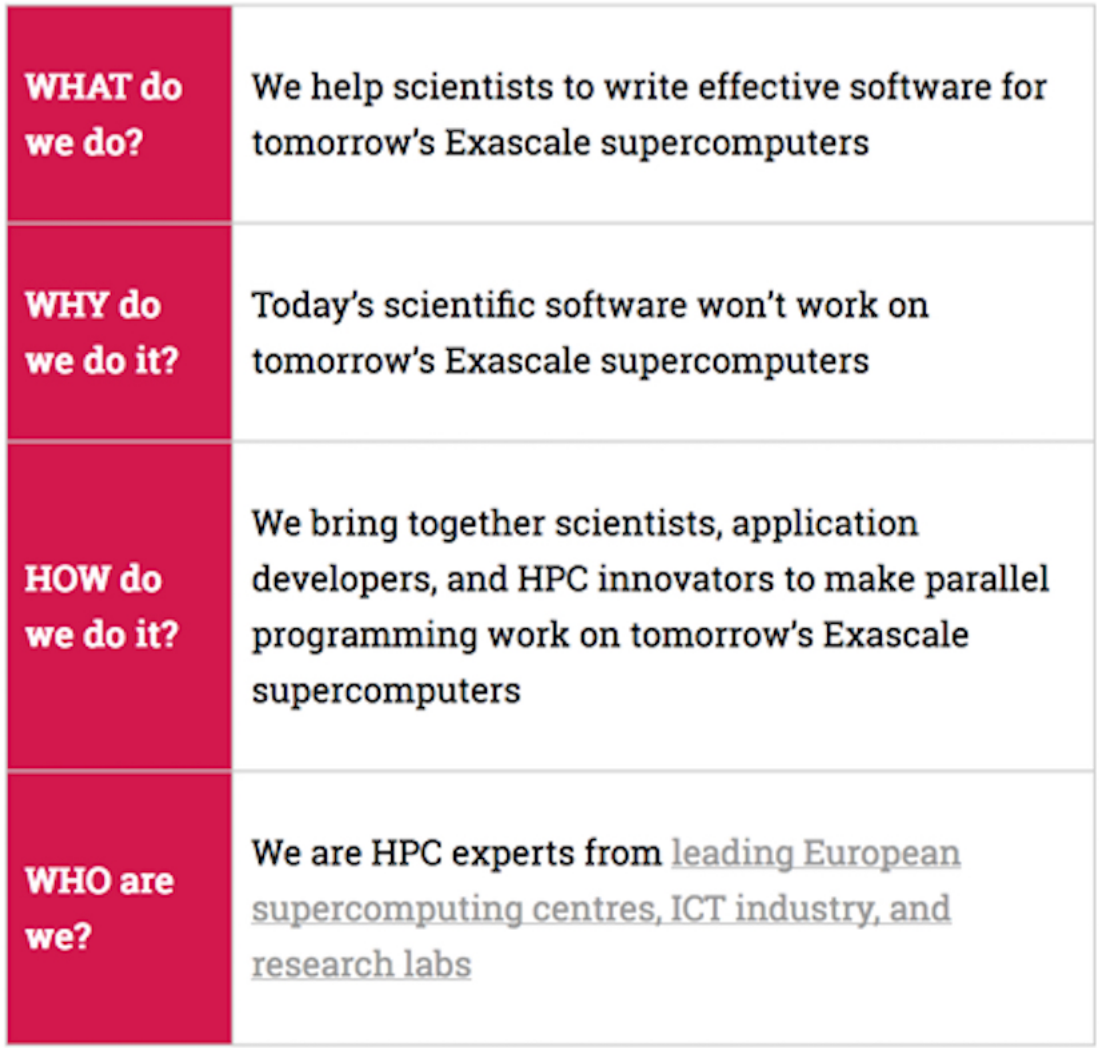
2/ RESEARCH GOAL

The goal of the research of Exascale Super Computing explained by the scientist George Beckett, University of Edinburgh (INTERTWINE)

https://www.youtube.com/watch?v=AJgKUbbgppo

3/ A RESEARCH TOWARD EXASCALE SUPERCOMPUTING FET HPC/HIGH PERFORMANCE COMPUTING PROJECTS

The artists visited several FET HPC (High Performance Computing) projects and research laboratories and facilities. However, their residency was mostly with the INTERTWinE (Interoperability Toward Exascale) project at the EPCC centre of the Edinburgh University (https://www.epcc.ed.ac.uk/).



Screen shot from INTERTWinE website (nov. 2017)

The INTERTWinE project or addressing the problem of programming-model design and implementation for the Exascale.

Resources

«The race toward exascale supercomputing targets 2020», by Susan Fourtané
http://www.featart.eu/index.php?id=62

https://www.intertwine-project.eu/

BECOMING.A(THING) : A SEMIOTIC INSTRUMENT
Š PELA PETRIČ AND MIHA TURŠ IČ

1/ FROM THE RESIDENCY

2/ ART FROM SUPERCOMPUTING BY NICK BROWN (SCIENTIST)

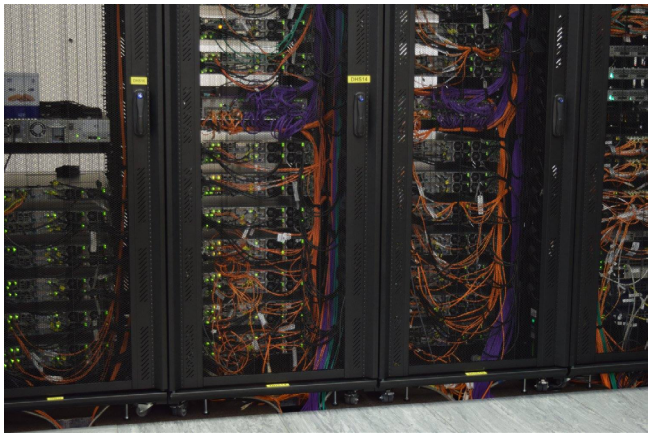
3/ CONVERSATION WITH THE ARTISTS AND SCIENTIST: HUMAN PRIORITIES AT EXASCALE COMPUTING

4/ *LEONARDO* ARTICLE ABOUT THE PROJECT

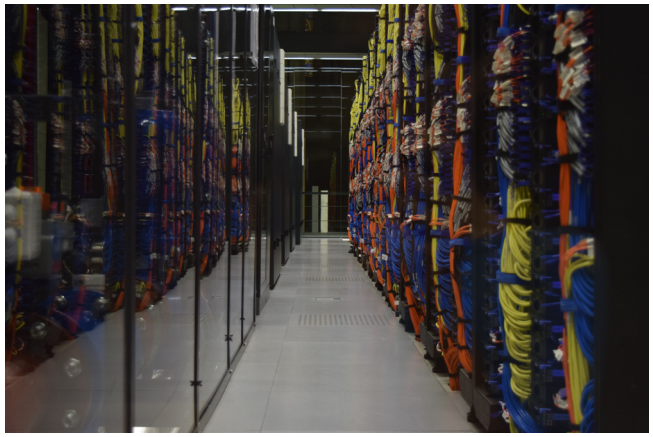
1/ FROM THE RESIDENCY

(From the artists's reports. Images © the artists)

In the first half of our FEAT residency we made visits to different supercomputing (HPC) centres, individual experts and events.

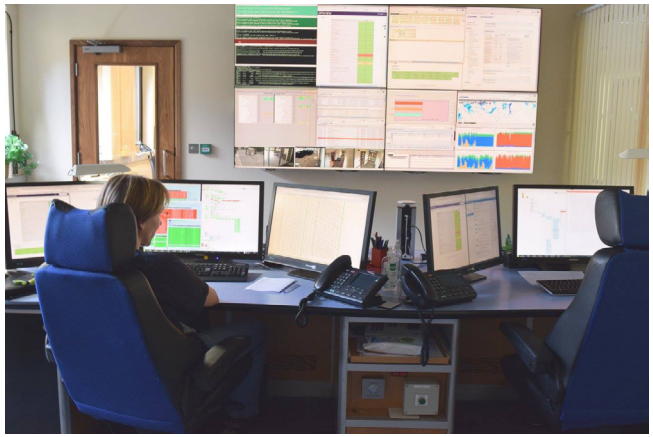


















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In July 2016, we visited the European Centre for Medium-Range Weather Forecasts in Reading where dr. Peter Bauer (ESCAPE FET project) introduced us to weather forecast supercomputing, their ensemble of scientific models for weather forecast and guided us through the whole supercomputing infrastructure, computer room, data storage and support facilities.
During the same month we also visited the IRISA centre in Rennes where dr. François Bodin (EXDCI FET project) introduced us to the scientific method of simulation, different applications and especially to the organisation and structure of supercomputing institutions, including the more general political ecosystem. He also invited us to their conference in September to experience the policy making process in action.

In September 2016, we attended the EXDCI conference in Barcelona, where we presented the FEAT initiative to the participants of the conference, amongst which were representatives from all FET HPC projects and institutions. The visit was a fruitful exchange of perspectives on HPC, its infrastructure, computation and social/cultural footprint of algorithmic production.

In Barcelona we also visited the Barcelona Super Computer that is located in a very scenic location - inside a decommissioned church. As a surprise came the fact that the church despite its centuries old appearance was build less then fifty years ago — and is as such a simulation of sacral architecture.

Due to our collaboration with INTERTWinE FET project we were invited to judge at a selection of the best annual image produced by ARCHER supercomputer. We believe that our socially engaged and aesthetic position made an influence on final selection. Link: https://www.epcc.ed.ac.uk/blog/2016/11/15/archer-image-competition-2016-winner-announced.

Our experience working with scientists, engineers and FET project managers was very successful and inspiring. We were invited for visits and were very much welcomed on all occasions, even where differences in perspectives, methodologies and practices were expected, with curiosity that sparked a lot of inspiring debates. Most of our research and production requests were met with support. We even got funded for our visit at Barcelona EXDCI event and presentation.

Finaly, we went to our main residency visit at EPCC centre in Edinburgh where we conducted the final phase of our research, working on experiments, artistic interventions and first prototypes.





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2/ ART FROM SUPERCOMPUTING BY NICK BROWN

Description of the set up of the installation-performance as it took place in Dundee in Spring 2017 from the scientists side and point of view.

https://www.epcc.ed.ac.uk/blog/2017/04/21/art-supercomputing

3/ HUMAN PRIORITIES AT EXASCALE COMPUTING

Conversation between Špela Petrič, Miha Turšič, George Beckett and Annick Bureaud (podcast)

Artists Špela Petrič and Miha Turšič and scientist George Beckett talk about their approach to supercomputer and supercomputing in relation to the FEAT residency. They focus and agree on the place of collaboration between art and science and put human at the center of the priorities.

https://creativedisturbance.org/podcast/human-priorities-at-exascale-computing-meeting-with-spela-petric-mihatursic-and-george-beckett/

4/ *LEONARDO* ARTICLE ABOUT THE PROJECT

« Becoming.A(Thing): An Artist's Perspective on High Performance Computing, Špela Petrič and Miha Turšič, *Leonardo*, MIT Press

The article summarizes the process and outcome of the Future Emerging Art and Technology residency during which new media artists Špela Petrič and Miha Turšič undertook the challenge of understanding and manifesting the artistic potential of high performance computing (HPC). As a result of the collaboration with FET-HPC we developed a concept liberated from the complex computational technicity to underscore the (un)intentional construction of meaning by algorithmic agencies. The performance presents a *congress of actors* sensing, interrogating, and interrupting each other, thereby producing an excess of relation, interpretation and translation. The heterogeneous congress performs an expulsion of imposed (anthropogenic) meaning, substituted by authentic, autogenic sense and non-sense.

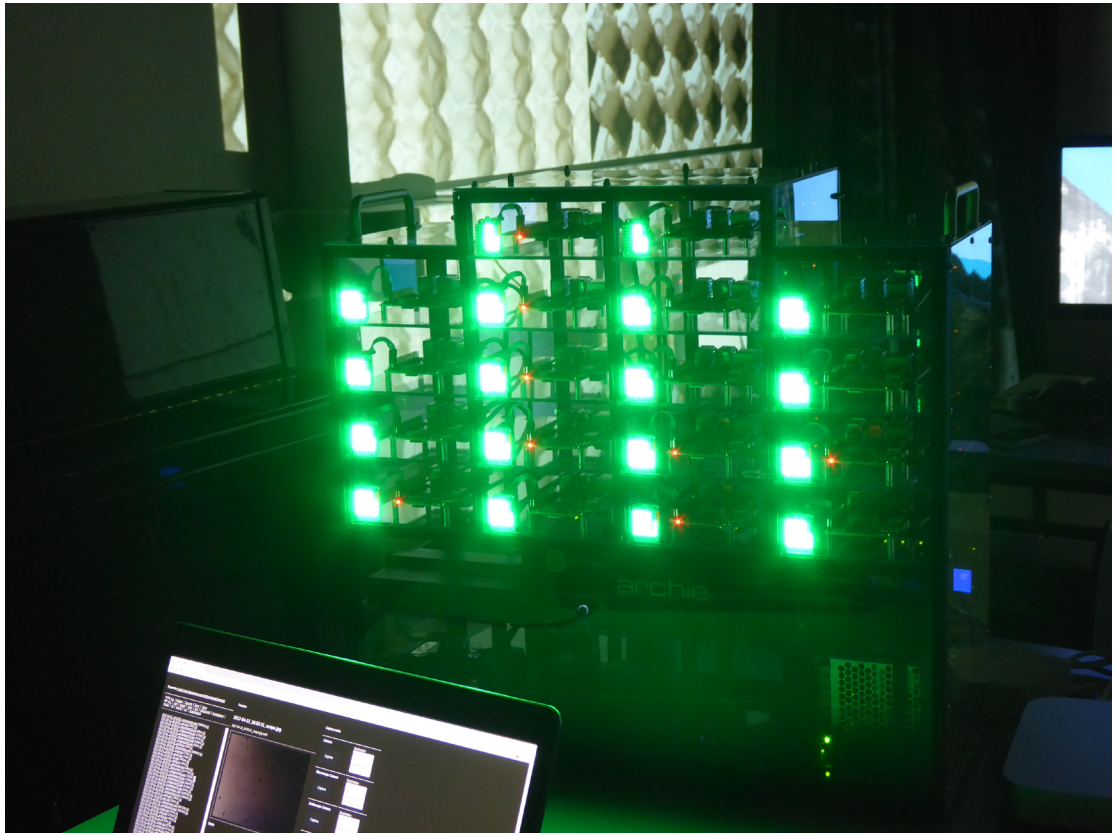
http://olats.org/feat/Petric-Tursic-leon_a_01469.pdf

BECOMING.A(THING) : A SEMIOTIC INSTRUMENT ŠPELA PETRIČ AND MIHA TURŠIČ

***BECOMING A.(THING)*, FINDING MEANING WHERE THERE IS NONE ...**

by Annick Bureaud

BECOMING A.(THING), FINDING MEANING WHERE THERE IS NONE ...



'Exascale supercomputing' the word in itself is in-between utterly mysterious and slightly frightening, intimidating for sure. So is the title of the artwork *Becoming a.(Thing)* by Špela Petrič and Miha Turšič.

Humanity landed itself on the Moon with less computer power than in the processor of our washing machines and now we find ourselves with those massive parallel computers crunching info and data like soap bubbles but needing a whole power plant to power them and a glacier to cool them. Which sense does it make?
Supercomputing is runing after a fantasy which is building a computer that could be equivalent to a human brain. Of course, the result would

not be an artificial human because humans have carbon-based biological bodies and think also with/through them. Which sense does it make?

How do you create *art* with/about supercomputer and supercomputing? For sure the machines are gorgeous and make fabulous pictures but they are not truly directly 'useable' in/for an art project. Petrič and Turšič's answer presents itself as an audiovisual performative installation.

When entering the room we see a whole set of technical equipments ranging from computers, screens of all size, large video projections, microphones, cameras, some are more exotic ones such as a microscope and here and there some props like books or an ultrasound scanner. A dense mesh of cables is connecting the whole. The installation is displaying images, videos, charts, texts, lines of codes on some computer screens, a typical computer voice, etc.
In short, it is something that looks familiar to a media art audience. Slowly, as we move around, we get fascinated and captivated. The display has this seductive flavor of complex technology. However, this does not look like entertainment but serious and meaningful, both in terms of art and science. There is something to be understood.

Becoming a.(Thing) is based on the ground function of computers that is processing data. But, instead of providing the algorithms with the data they are meant to interpret, any data becomes an input to any algorithm, the output of which becomes a new input for another algorithm. Which sense does it make?

Making sense is precisely what is at the core of supercomputing and of *Becoming a.(Thing)*, « Making sense in the (human) Animal and the Machine » to paraphrase a famous founding book of cybernetics [1].
By focusing on exhibiting processes and playing on/with absurdity, *Becoming a.(Thing)* puts in the forefront how we are becoming unable to understand how supercomputers are making sense of the (big) data we are feeding them with and therefore how we are loosing or might be loosing our capacity to discriminate potentially wrong results and interpretations ; how, no matter what, computers *are* making *reasonnable* sense from any information ; and how, anyhow we do make sense of anything. The nice thing is that even if you don't look closer, if you don't understand what is exactly going on in *Becoming*

a.(Thing), it is still 'working' because as an audience you will project some sense or meaning onto it.

The artists are indeed adding a layer of translation and interpretation in this meaning-making process as, in a metatheatrical way, the whole work is showing the process of semiosis itself emerging from the dance between humans and their invented non-carbon based embodied languages.
Becoming a.(Thing) is a pure exhilarating pataphysical object and finding meaning where there is none is, actually, a non-sensical meaningfull process.
Does it make sense? Yes.

Annick Bureaud, November 2017

[1] Norbert Wiener, *Cybernetics: Or Control and Communication in the Animal and the Machine*, 1948





Š PELA PETRIČ & MIHA TURŠ IČ

Miha Turšič is a former product designer who has spent the past decade working on space culturalization, designing zero-gravity dwellings and making postgravity art.

Špela Petrič has formal eduction both in new media art and in the field of natural sciences. With her artistic research, she produces pieces referencing humanities and arts while working towards an egalitarian and critical discourse between the professional and the public spheres.

http://www.spelapetric.org/

CREDITS

«Becoming.a(Thing)» has been created by Špela Petrič and Miha Turšič
in collaboration with George Beckett and Nick Brown, EPCC Edinburgh, www.epcc.ed.ac.uk
INTERTWinE, www.intertwine-project.eu
and Slavko Glamočanin, Naprave, www.naprave.net

«Becoming.a(Thing)» has been created as part of the FEAT/Future Emerging Art and Technology project, featart.eu

FEAT is an initiative of eutema GmbH (AT), Stichting Waag Society (NL), and youris.com (BE).
FEAT has been funded by the EU backed programme FET (Future and Emerging Technologies) Open.
It has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement
No 686527 (H2020-FETOPEN-2015-CSA).