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**VYSOKÉ UČENÍ TECHNICKÉ V BRNĚ**  
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**FAKULTA VÝTVARNÝCH UMĚNÍ**  
FACULTY OF FINE ARTS

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**PLANETÁRNA TERMODYNAMIKA : ENERGETICKÁ  
SPRAVODLIVOST**  
PLANETARY THERMODYNAMICS : ENERGY JUSTICE

# **DIPLOMOVÁ PRÁCE**

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**AUTOR/KA PRÁCE**

AUTHOR

**Bc. MICHAL MITRO**

**VEDOUCÍ PRÁCE**

SUPERVISOR

**MgA. PAVEL STEREC, PhD.**

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# OBSAH DOKUMENTACE:

## CONTENTS

<b>TEXTOVÁ ČÁST</b>	<b>5 - 25</b>
TEXTUAL PART	
GENEALOGY OF MATERIAL ATACHEMENT	5
ENERGY JUSTICE	6
ONE LOVE DOESN'T PAY BILLS	9
PLANETARY THERMODYNAMICS	11
SSESI.SPACE - THE NEXT CHAPTER	12
(MORE ON THAT NO MORE)	13
THE ENERGY JUSTICE COMMITMENT	13
APPENDIX 1: DEFINITION OF THE TERMS	14
APPENDIX 2: ENERGY TRANSFER: CONSUMPTION AND PRODUCTION	14
SYNTHETIC FREEDOM, NATURAL HABITAT	15
ANTI-ANTI UTOPIANISM	17
THE FUTURE HAS BEEN CANCELLED	18
UNIVERSAL, GLOBAL, PLANETARY	20
SSESI.SPACE - THE MUSEUM OF PARTISAN UTOPIA	22
BACK IN 2030s	23
<b>OBRAZOVÁ ČÁST</b>	<b>26 - 31</b>
VISUAL REFERENCE	

# PLANETARY THERMODYNAMICS : ENERGY JUSTICE

*“This is what a twenty-first century left looks like. Any movement that wishes to remain relevant and politically potent must grapple with such potentials and developments in our technological world. We must expand our collective imagination beyond what capitalism allows. Rather than settling for marginal improvements in battery lives and computer power, the left should mobilize dreams of decarbonizing economy, space travel, robot economies – all the traditional touchstones of science fiction – in order to prepare for a day beyond capitalism. Neoliberalism, as secure as it may seem today, contains no guarantee of future survival. Like every social system we have ever known, it will not last forever. Our task now is to invent what happens next.”*

*Srnicek and Williams*

## Genealogy of Material Attachment

This is a work of fiction. This is a work of fact. This is a work of now, of now to come, and of now that is to pass. It builds on my personal experience, yet it dares to expand to collective planetary consciousness. It projects the image of the future that examines the present moment, transforms it with its uncompromising and impersonal gaze and rebuilds it anew.

2013.

I was selected for an EU-funded scholarship placement at American University of Beirut, Lebanon. The scholarship was quite generous and I had some savings from previous scholarships and renting out rehearsal room. At that point, I accumulated what I thought was too much money. I’ve never seen a five-digit sum on my bank account statement. It was somewhere over 100k CZK (approximately 4000 EUR) and I thought to myself: “with this much money, I should perhaps buy a property!”

I soon realised there wasn’t much this money could buy. But there was one thing. A little cottage on the edge of a steep hill in Brno-Jundrov, Czechia, which is where I was studying at that moment. Previous owner had hard times climbing the hill and maintaining a deteriorating terraced garden. He was losing two battles; one against his own nature, being elderly obese man, the other against the natural environment he could no longer tame.

At my first viewing, we found a dead raven behind the cellar doors. The real estate agent tried to act cool. I took a spade and carried the corps away. “Weird omen,” I thought.

I bought the cottage and became a property owner.

Few months later, I left for Australia and Indonesia. I only returned after three years.

2020.

I am writing these words sitting at this very cottage, looking through the up-cycled wooden windows I recently installed, green construction foam sticking at the sides. The cottage and the garden have had got quite some attention in past few months, when COVID19 pandemics stroke. I have a clinging to this place that is both hard to rationalise and verbalise. Perhaps, this is the very symptom of primitive accumulation<sup>1</sup> we succumb to ever so often. Private property.

2017.

My son is born. I wanted to leave Czech Republic once again and study in The Netherlands. The trajectory has tilted though and brought me right back perfectly looped. To keep myself going, I proposed an ambitious master project to the local art school that would academically justify my longing for “doing something with that little house on the edge of the slope.” I got accepted.

I set myself out to establish a working, post-capitalist, self-sufficient community based on mutual respect, acceptance, freedom and love. It presupposed reshaping the landscape, developing an automatised food garden and general IoT (Internet of Things) system that would interconnect the whole slope and its four cottages. One of them is mine, the other three are long abandoned and in the process of nature reclamation. These were to be refurbished and designed to allow for communal cultural events as well as provide space for exploration and short term occupation. All of this solar powered. 21st century Gesamtkunstwerk masterpiece.

This masterpiece never formed into envisioned shape.

I am now writing a thesis about how it couldn't ever happen and how it perhaps could happen one day, everywhere on this planet.

This is that very thesis.

## Energy Justice

It's been '10s and '20s of the “new millennium” when first attempts to propose climate and ecological justice were made. In 2015, Jenkins et al.<sup>2</sup> called for conceptual consolidation and logical extension of what was coined as Energy Justice a few years before:

*“Energy justice has emerged as a new crosscutting social science research agenda which seeks to apply justice principles to energy policy, energy production and*

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<sup>1</sup> I frame the meaning of primitive accumulation outside of what Marx defines as “primitive accumulation of capital” or “original accumulation”. In this context, it is simply combination of the meanings of these very two words: “„primitive“ being “impulsive, not rational, not advanced“ and “accumulation” being “hoarding of material possessions”.

<sup>2</sup> Kirsten Jenkins, Darren McCauley, Raphael Heffron, Hannes Stephan, Robert Rehner, „Energy justice: A conceptual review,” *Energy Research & Social Science*, Vol. 11, 2016, p. 174–182, retrieved from [https://research-repository.st-andrews.ac.uk/bitstream/handle/10023/9733/Jenkins\\_et\\_al.\\_2016\\_Energy\\_Justice\\_A\\_Conceptual\\_Review.pdf?sequence=1&isAllowed=y](https://research-repository.st-andrews.ac.uk/bitstream/handle/10023/9733/Jenkins_et_al._2016_Energy_Justice_A_Conceptual_Review.pdf?sequence=1&isAllowed=y) on July 10, 2020.

systems, energy consumption, energy activism, energy security and climate change.”<sup>3</sup>

Around the same time, against all odds, European Union sets out to adopt a self-reflective modus operandi. Energy Justice becomes a niche but important part of the burgeoning post-colonial study discourse. In 2020, EU funds a research on the topic. Its definition of the justice is set on three pillars: procedural, distributional and recognition justice.

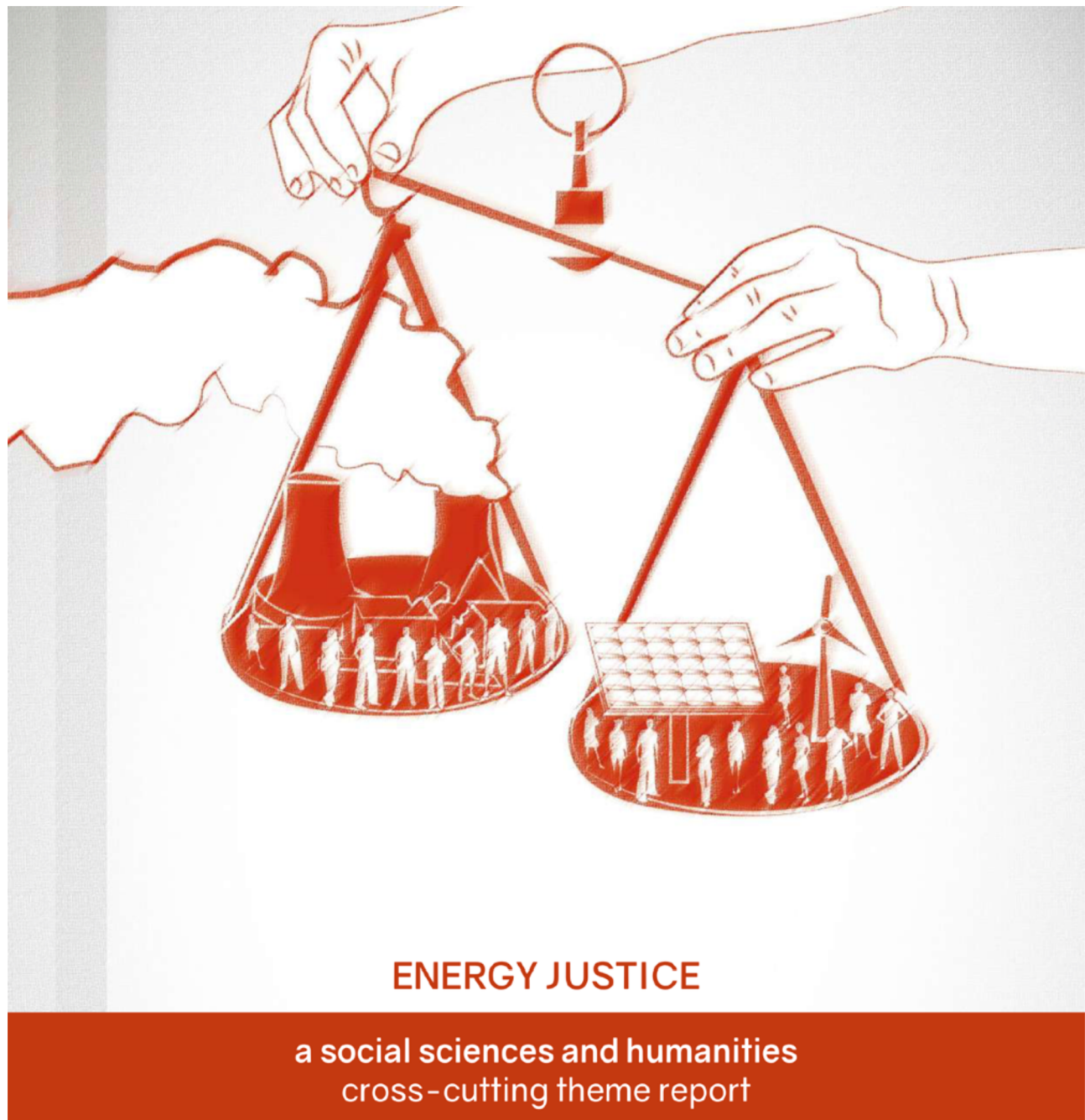


Figure1: The opening page of Sari et al.’s *Energy Justice: A Social Sciences and Humanities Cross-cutting Theme Report*, 2020

<sup>3</sup> Ibid.

1. *Procedural justice highlights the importance of ‘justice as public participation’ (Barry, 1995; Adger et al., 2006; Sovacool, 2016) and explores the ways to achieve ‘just’ outcomes through local knowledge mobilization, greater information disclosure, and better institutional representation (Jenkins et al., 2016).*
2. *Distributional justice focuses on the distribution of energy as a ‘social good’ and investigates where harms of energy provision arise as a ‘social ill’; hence where injustices emerge in energy system processes*
3. *Recognition justice considers groups in society that are ignored or misrepresented, and calls for greater recognition of these groups to reduce social inequalities.<sup>4</sup>*

It is part of a larger *settling a debt* narrative. [The culture of sorry.](#)

*A debt towards planet.*

*A debt towards East.*

*A debt towards South.*

*A debt towards non-white.*

*A debt towards non-man.*

That narrative has been voiced for well over half century, yet the voices were faint compared to the *voices of unlimited growth* narrative. Perhaps that is why the Club of Rome named their 1972 report on the state of the planet and humankind *The Limits to Growth*. Citing from its opening pages:

*“I do not wish to seem overdramatic, but I can only conclude from the Information that is available to me as Secretary-General, that the Members of the United Nations have perhaps ten years left in which to subordinate their ancient quarrels and launch a global partnership to curb the arms race, to improve the human environment, to defuse the population explosion, and to supply the required momentum to development efforts. If such a global partnership is not forged within the next decade, then I very much fear that the problems I have mentioned will have reached such staggering proportions that they will be beyond our capacity to control.”<sup>5</sup>*

Speed forward to 2020. “‘Averting a Climate Apocalypse’ is one of the main sessions at the World Economic Forum’s Annual Meeting at Davos this month, where delegates will seek ways to avert a full-blown catastrophe.”<sup>6</sup> Freely paraphrasing two panellists:

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<sup>4</sup> Ibid.

<sup>5</sup> Donella H. Meadows, Dennis L. Meadows, Jørgen Randers, William W. Behrens III: *The Limits To Growth*, New York: Universe Books 1972, p.17.

<sup>6</sup> <https://www.weforum.org/agenda/2020/01/how-to-save-the-planet-davos-climate-pollution-what-to-know/>, accessed on July 13, 2020.



*Greta Tunberg: We demand that all companies, banks, institutions, and governments stop investing in fossil fuels and divert to renewable sources immediately. Our house is on fire, in case you haven't noticed.*

*Donald Trump: Rather than accepting more regulation tying the hands of businesses, free enterprise is the path to improving the state of the world. Get a degree in economics.*

50 years for reflection hadn't have yielded much change in the competing narratives.

*Post-truth.*

*Post-fiction.*

*Post-politics.*

*Post-everything.*

Post-colonialism allowed for a liberating shift from objective truth to subjective opinions, effectively destabilising hegemonic ideologies. The trend has – ever since Einstein's times – extended to natural sciences and, perhaps, rightly so. Every measurement is biased by the very act of measuring, by the measuring tool, by the measurer in charge, and by extension by their personal expectations.

So... is the globe really warming up, or is it just economies fuelling the growth?

### One love doesn't pay bills

Three years back, my enthusiasm was quite high. I tend to take on huge projects that don't necessarily come together as expected. I guess I like that threat, ever-present danger of failure inbuilt in both conceptual and material foundations. This definitely has been one of those.

I asked people – schoolmates, mostly – to join me in my efforts. Some people – other schoolmates, mostly – contacted me to jump on the boat. In both cases the interest declined rapidly once they saw the place with their own eyes. Describing the cottage on the edge of a sloped, terraced garden overlooking the river and parts of the old town sounds romantic and cosy. And it is indeed. Yet, it is also incredibly inaccessible and slowly but constantly washed off and levelled. No one can break the laws of physics (**more on that later**) and neither does the soil do much fighting against forces of gravity, wind or rain. It all breaks down to a topic of capital.

The project did have some symbolic capital, including artistic attractiveness and environmental appeal. It carried a utopic promise of comradeship and togetherness. All combined, it did sound intriguing to most people I introduced the idea to. Nevertheless, there had been slim to nil monetary capital involved. Very soon, I discovered that nobody likes to invest extensive amounts of energy without matching incentive. All the symbolic capital it may offer appeals to very few individuals (there had been a handful of precious cases) that tend to perceive all the intensive labour around the place as some sort of retreat/work camp. Perhaps

even therapy. Nevertheless, vast majority never found that sufficient enough when working was in question.

Monetising the incentives would surely do the trick, but that has never been an option. Still, we probably could have sailed quite some miles even without all that money. If I was better at conveying my visions, better at care-taking, better at forming, organising and maintaining a close group of friends, shortly, if I was a better community leader and member, the vision would stand much better chance. But I wasn't.

On the other hand, many would enjoy spending an afternoon on the location, either to drink at campfire or to join one of a few events I've organised. I came to conclusion that, given the material conditions and given my interpersonal skills, only after the project will have been established and developed others shall like to join. In other words, many may hop on "the utopia train" at its full momentum but not too many would take a struggle of bringing one around.

I must be fair though and mention, that I never could offer an ownership of land as the land isn't even mine. At the same time, it clearly has been only in my best interest to develop the space around the cottage as the cottage itself *is* mine. Being well aware of precarity I was imposing on everyone involved in the project, I started to think of establishing a *decentralised system (more on that later)* that would both provide some material incentive and substitute the community management with impersonal and fair structure of so called "trustless transactions"<sup>7</sup>. For example, crops from communal garden would be distributed towards community members based on amounts of time, energy, and money they invested into any part of the project structure. An ethereum network-based crypto tokens<sup>8</sup> would be distributed amongst the members accordingly and would be tradable against communal assets and fiat currency alike and would be harnessed by *gardening* as opposed to GPU *mining*.

Don't think twice, none of this ever turned into reality.

I learned that community requires collective ownership, collective effort, collective goals, and collective spirit.

This far, it's only been my ownership of 30 square meters of a shabby garden house, some more square meters of three even shabbier garden houses whose past owners were not traceable and several acres of sloped hill that were owned by municipality, including the land under the cottage I bought. The structural insecurity inherent in such power relationships didn't allow for dreaming big... or better said, for acting big.

Speaking of collective ownership, it is somewhat symptomatic, that most of the garden houses were built during the Socialist era when, officially, they belonged to no one and everyone at the same time. As I was told at the local municipality's

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<sup>7</sup> Problematics of trust from the blockchain perspective: <https://blog.ethereum.org/2015/04/27/visions-part-2-the-problem-of-trust/>

<sup>8</sup> Some examples of applications, tokens, and coins running on Ethereum network can be found at <https://ethereum.org/en/dapps/> .

office of architecture, those days one could simply build a little house without much bureaucracy and use it freely. Yet, it never officially belonged to him or her. Rather, it belonged to the government, representing the country itself. The diffusion of the borders of private and communal was mostly symbolic, apparently, as it never stopped tens of thousands of people establishing their own gardening lots all around the Eastern block<sup>9</sup> even when it never really was *their land* they worked on *and* their *house* they built. Or perhaps, the operational boundaries between the private and the public and the communal were set better than they are these days (?). **(more on that later)**

## Planetary thermodynamics

*“**Thermodynamics** is a branch of **physics** that deals with **heat**, **work**, and **temperature**, and their relation to **energy**, **radiation**, and properties of **matter**. The behaviour of these quantities is governed by the four **laws of thermodynamics** which convey a quantitative description using measurable macroscopic **physical quantities**, but may be explained in terms of **microscopic** constituents by **statistical mechanics**. Thermodynamics applies to a wide variety of topics in **science** and **engineering**, especially **physical chemistry**, **chemical engineering** and **mechanical engineering**, but also in fields as complex as **meteorology**.”<sup>10</sup>*

$$\Delta U = Q - W$$

*In a process without transfer of matter, the change in **internal energy**,  $\Delta U$ , of a **thermodynamic system** is equal to the energy gained as heat,  $Q$ , less the thermodynamic work,  $W$ , done by the system on its surroundings.<sup>11</sup>*

More generally, the energy of a given system equals to its energy input (mechanical or thermal) minus its energy output (mechanical). It also implies the principle of **Conservation of Energy**. The energy can be transformed - changed from one form to another and from one system to another - but cannot be created or destroyed.

To grasp the concept of planetary thermodynamics, consider the planet to be a single thermodynamic system that is distinctly, but not impenetrably separated from the rest of the universe by its atmosphere. While idle, the system is attempting to reach equilibrium maximising its entropy. If energy inputs are added to the system, either in form of heat or mechanic work its energy potential increases. If the system doesn't deploy the additional energy on its surroundings, neither does it deploy mechanical force, *the energy transfers to heat*.

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<sup>9</sup> <https://www.instagram.com/atlasaltan/>, accessed on July 24, 2020.

<sup>10</sup> <https://en.wikipedia.org/wiki/Thermodynamics>, accessed on July 14, 2020.

<sup>11</sup> Ibid.

In context of planetary thermodynamics, every human and non-human constitutes a tiny thermodynamic unit operating within the planetary system and energetically contributing towards it. Historically, these contributions have been extremely faint, thus their effect was negligible in planetary scale. Nevertheless, ever since industrial revolution, we have been contributing a great deal to the process of *terraforming*<sup>12</sup> – reshaping the planet’s surface and ecology in general, with impacts that can both improve and diminish general living conditions for humans and non-humans alike. In fact, humans’ impact is so extensive, that the geological epoch we live in has been named *Anthropocene*.<sup>13</sup> That is to signify that human race (or better said its certain members and organisations) now take a leading role in shaping the present and future living conditions of the planet.

Actions or natural resources exploitation - e.g. fossil fuel harvesting and expending or large scale industrial farming - and high-energy consuming industries - e.g. global transportation of people, services, and goods, maintenance of uncountable terabytes of data, and servicing millions of internet requests every second - all require extensive energy inputs. While coal, petroleum and cattle all have been part of planetary ecosystem since ages, their energetic potential has been dormant - buried under ground in case of petroleum and coal and distributed across the land and quite scarce in case of cattle. Burning the fossils and using their latent energy potential and multiplying and concentrating vast number of so called “domesticated meat animals” that produce vast amounts of methane are both examples of planetary-scale energy impacts humans have originated.

Coming back to thermodynamics, humans have either performed or triggered processes of extensive amounts of work on the global ecosystem both in form of mechanical work and heat. Thus, unavoidably, the planet accumulates more and more energy potential. As it doesn’t transfer the energy on its surroundings as quickly as it gains it, and as the energy can’t ever vanish, but only transfer from mechanical to thermal and vice versa, the planet necessarily heats up.

*The central objective of the Paris Agreement is to enforce its long-term temperature goal, i.e. to hold global average temperature increase to “well below 2°C above preindustrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels”.*<sup>14</sup>

[ssesi.space](#) – the next chapter

I gave up. I gave up on persuading people to come and help me build and dig. My friends would stop replying to my messages. I wonder if we were/are friends, after all. I gave up on establishing something that would pretend to go beyond my

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<sup>12</sup> “The term ‘terraforming’ usually refers to transforming the ecosystems of other planets or moons to make them capable of supporting Earth-like life, but the looming ecological consequences of what is called the Anthropocene suggest that in the decades to come, we will need to terraform Earth if it is to remain a viable host for its own life” (Benjamin H. Bratton, *The Terraforming*, Moscow: Strelka Press, 2019. retrieved from [https://s3.eu-west-1.amazonaws.com/strelka.storage/2020/4/8100070b-5651-4409-bc4c-cac813e51124/the\\_terraforming\\_fin.epub](https://s3.eu-west-1.amazonaws.com/strelka.storage/2020/4/8100070b-5651-4409-bc4c-cac813e51124/the_terraforming_fin.epub) on July 21, 2020).

<sup>13</sup> Ellis Erle, *Anthropocene: A Very Short Introduction*, Oxford University Press, 2018.

<sup>14</sup> Retrieved from <https://climateactiontracker.org/methodology/paris-temperature-goal/> on July 11, 2020.

own interest. My proposals and their precarity sounded increasingly suspicious. I gave up on community based (solely) on shared ideals and mutual exploitation. I gave up on trying to be a community leader as I obviously didn't have soft-skills it takes. I decided to take a different course.

That was to be much less utopic and much more playful. It would declare clear power relationships and overall politics of the space upfront. It would serve my interests but allow safe space for others to freely come, stay and go.

*Instead of creating reality I decided to curate reality. (more on that later)*

(more on that later that no more)

2035.

Browsing through Wikipedia's change-log demonstrates how narrow the application of thermodynamics used to be. As late as 2020, it still hadn't been considered important in fields of politics, poetics, economics, or sociology.

Various policies have been put in effect. Yet the physics has not been put into politics. Until recently...

2032.

The Maldives declaration has been signed by vast majority of the world's governments. It is marked by both great achievement and great disaster. The first being the ratification of the Energy Justice Commitment, the latter being the complete drowning of Maldives and global intensification of climate refugee crisis.

### The Energy Justice Commitment

1. Planet Earth is but one single entity that knows no nations, no borders nor any other man-made distinctions.
2. Energy is to be recognised as the sole and universal storage of value.
  - 2.1. Human efforts are to be judged against their energy contribution to the planetary thermodynamic ecosystem.
    - 2.1.1. Distinction of race, sex, gender, age, education, nature of undertaken efforts and their social prestige are to be rendered utterly irrelevant.
  - 2.2. Non-human efforts are to be judged against their energy contribution to the planetary thermodynamic ecosystem.
  - 2.3. Humans and Non-humans alike are considered equal actors in the global ecosystem.
3. The exploitation of fossil fuels is no longer possible and is to be abandoned immediately.
4. Every human deserves an Unconditional Energy Income (UEI) of 10000kJ as a mean Energy reference.
5. The Energy is to be harnessed solely from renewable sources.
  - 5.1. As for electric energy, these are the power of natural elements.
    - 5.1.1. These include but are not limited to solar power, wind turbine power, hydro-dam power, hydro-turbine power, geothermal power.

- 5.2. As for calorie intake, these are to be gathered from bodies of plants.
6. Total sum of energy spent and energy produced must be in equilibrium to ensure the maintenance of Global Energy Justice.
  7. Base of global politics is to be derived from principles of physics – the planetary thermodynamics.

## Appendix 1: Definition of the terms

### 1. Energy (E)

- 1.1. Energy is a quantitative property.
  - 1.1.1. It is the sole necessary prerequisite of work and heat - the thermodynamics. The energy must be transferred to an object in order to perform work on the object or to heat the object.
- 1.2. Energy is a conserved quantity. It is therefore constant and finite.
  - 1.2.1. The law of conservation of energy states that energy can be converted in form, but not created or destroyed.
- 1.3. The unit of energy is the Joule (J).

### 2. Power (P)

- 2.1. Power is the amount of energy transferred or converted per unit (seconds) of time (t).
  - 2.1.1.  $P = E / t$
- 2.2. Power is the rate with respect to time at which work is done; it is the time derivative (d) of work.
  - 2.2.1.  $P = dW / dt$
- 2.3. In context of electricity, power is the product of voltage (V) and current (I).
  - 2.3.1.  $P = V \times I$
- 2.4. The unit of power is Watt (W).

### 3. Work (W)

- 3.1. Work is the product of force (F) and displacement (S).
  - 3.1.1.  $W = F \times S$
- 3.2. Unit of work is Joule.
  - 3.2.1. Work is thus closely related to energy.

## Appendix 2: Energy transfer: consumption and production

1. **Joule** is the energy transferred to an object by the **work** (W) of moving it a distance of 1 metre (m) against a force of 1 Newton (N).

- 1.1. In context of electrical system, Energy may be measured in kiloWatt-hours (kWh).
  - 1.1.1.  $1\text{kWh} = 3600\text{ kJ}$
  - 1.1.2.  $1\text{Wh} = 3600\text{ J} = 1\text{ joule per every second of an hour}$
- 1.2. In context of nutrition, energy may be measured in kilogram-calories (kcal).
  - 1.2.1.  $1\text{kcal} = 4.184\text{kJ}$

## 2. Energy consumption

- 2.1. Average nutritional intake per day is approximately 2400 kilocalories which is approximately 10000 kilojoules.
- 2.2. Average electricity intake per day per capita based on Central-European Standard (CES) is approximately 17.15kWh which equals to 61740kJ.

## 3. Energy production

- 3.1. Nutrition production is to be of vegetable origin and is to be taken care of by highly optimised and controlled environments such as IoT greenhouse farming and smart permaculture.
- 3.2. Electricity production is to be provided by decentralised network of large number of small scale renewable resources power plants alongside a lesser number of high energy, large scale power plants harnessing mainly geothermal power, and hydro-power.

## 4. Energy consumption and production shall be at equilibrium.

- 4.1. Global energy system shall serve every and all.
- 4.2. Energy consumption shall lower as people, technologies and infrastructures mature, optimise and evolve.

### Synthetic freedom, natural habitat

*“Synthetic construction of freedom is the means by which human powers are to be developed. This freedom finds many different modes of expression, including economic and political ones, experiments with sexuality and reproductive structures, and the creation of new desires, expended aesthetic capabilities, new forms of thought and reasoning, and ultimately entirely new modes of being human.”*

*Srnicek and Williams*

In their seminal work entitled *Inventing the Future*, Srnicek and Williams propose two types of freedom - negative and synthetic. Negative freedom is best understood as “freedom from arbitrary interference by other individuals, collectives and institutions.”<sup>15</sup> They consider such freedom to be both invented by and deeply rooted in capitalistic discourse. On the other hand “synthetic freedom recognises that a formal right without a material capacity is worthless”<sup>16</sup> In context of negative freedom, poor and rich are evenly free, although practically speaking, that is not truth. Post-capitalist synthetic freedom demands that certain basic material conditions must be met as prerequisites of freedom, thus constituting freedom as a creative capacity to act.

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<sup>15</sup> Nick Srnicek & Alex Williams, *Inventing the Future: Postcapitalism and a World Without Work*, London: Verso Books 2015, p. 79, underline added.

<sup>16</sup> *Ibid.*

They consider these to be pillars of synthetic freedom:

1. “full automation
2. the reduction of the working week
3. the provision of a basic income
4. the diminishment of the work ethic”<sup>17</sup>

In my understanding, synthetic freedom needs to be designed, fabricated, and deployed into real world. It won't come along on its own. This demand is part of larger (left) accelerationist discourse that seeks to destabilise capitalism by accelerating its very own processes to their limits, effectively causing the system to collapse under burden of its own paradoxes and social antagonism it would trigger (which is quite similar to what Marx would argue for back in the day).

In accelerated future (fast-forward to 2035), science and technology is freed from capitalist greed and primitive accumulation and is used as a tool in service of humanity and global well-being. Technological acceleration finally freed the humankind from burden of the work.

We are now *free to work*.

Yet, the liberation project would remain unfinished if it only considered humans. Before the *Age of reason and enlightenment*, when Descartes established a man “a master and owner of the nature”<sup>18</sup>, before “our Western reason went off to conquer the universe”<sup>19</sup> men and women were considered integral part of their natural habitat. Indigenous culture and knowledge venerated nature and its forces, even deified it and prayed for favours and blessings. While we can and should lift the veil of mystery off *the Natural*, we shall just as well lift the burden of utilitarian function and property rights off it. “What we need, Serres proposed, is a ‘natural contract’ that will reconceptualize our relation to material objects, environments, and nonhuman life-forms.”<sup>20</sup> The non-human rights - the rights of the nature that Serres anticipated back in 1990 were passed as constitutional laws in both Ecuador and Bolivia at the beginning of the millennium. As encouraging as that may sound, these are but silent shouts in the global political arena.

Put plainly, we need to decolonise nature. Speaking with T.J. Demos, that would entail “dissolving the subject-object relation in the social and natural environment; ending the conditions of mastery and appropriation that determine the connection between the two; and stopping the multiple levels of violence that enforce these relations.”<sup>21</sup>

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<sup>17</sup> Ibid., p. 127.

<sup>18</sup> René Descartes, *Discourse on the Method for Conducting One's Reason Well and for Seeking Truth in the Sciences*, 1637, p.24 retrieved from <https://www.earlymoderntexts.com/assets/pdfs/descartes1637.pdf> on July 20, 2020.

<sup>19</sup> Michel Serres, *The Natural Contract*, Ann Arbor: The University of Michigan Press, 1995 p. 32; retrieved from [https://monoskop.org/images/d/d0/Serres\\_Michel\\_The\\_Natural\\_Contract.pdf](https://monoskop.org/images/d/d0/Serres_Michel_The_Natural_Contract.pdf) on July 20, 2020.

<sup>20</sup> T. J. Demos, *Decolonizing Nature*, Berlin: Sternberg Press, 2016, p. 200.

<sup>21</sup> Ibid. 203.



It is in this context that Rosi Braidotti advocates a “zoe-centred egalitarianism”<sup>22</sup> – an equality that reaches beyond the human. Its core is that of “the post-anthropocentric turn: [...] a materialist, secular, grounded and unsentimental response to the opportunistic trans-species commodification of Life that is the logic of advanced capitalism”<sup>23</sup> It is “the new transversal alliance across species and among posthuman subjects [which] opens up unexpected possibilities for the recomposition of communities, for the very idea of humanity and for ethical forms of belonging.”<sup>24</sup>

I’ve put a short, over-simplified diagram together to make these issues easily comprehensive:

left accelerationism <-> post-capitalism <-> post-humanism <->  
meta-speciesism <-> non-human rights <-> global energy justice

### Anti-anti utopianism

*“In the present climate, around the world, almost everything that can be proposed as an alternative will appear to be either utopian or trivial. Thus our programatic thinking is paralysed.”*

*Roberto Mangabeira Unger*

Utopia is derived from the Greek prefix “ou-” (ού), meaning “not”, and *topos* (τόπος) meaning “place” – literally standing for a non-place; never-where or just place that is not real. It was first utilised by Thomas More who used it as a title for his satirical book “Utopia: A little, true book, not less beneficial than enjoyable, about how things should be in the new island Utopia”<sup>25</sup>. A fictional world that More describes is a city-state on an island off the coast of South America called Utopia whose political organisation sounds very much like today’s social democracy. More also mentions Eutopia, which translates as a good place “a place of *felicite*”<sup>26</sup> and confesses that its rather Eutopia than Utopia that he’s talking about, even when the place obviously has no material existence. Utopia as a term, nevertheless, does usually take on multiple superlatives and is conceived as an ideal place to live for the intended community. Actual features would nevertheless depend on what kind of Utopia is in question, or rather who is masterminding one.

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<sup>22</sup> Rosi Braidotti, *The Posthuman*, Cambridge: Polity Press, 2013, p. 93.

<sup>23</sup> *Ibid.*, p. 60.

<sup>24</sup> *Ibid.*, p. 103.

<sup>25</sup> [https://en.wikipedia.org/wiki/Utopia\\_\(book\)](https://en.wikipedia.org/wiki/Utopia_(book)) accessed on July 20, 2020.

<sup>26</sup> <http://www.eutopism.co.uk> accessed on July 21, 2020.

While social democracy has been a prevalent political attitude in a handful of “developed” countries for several decades now, it still can sound fairly utopic even today. It was perhaps easier to assume social democracy in days of Fordism and conservative capitalism. Right now (2020), with neoliberalism reigning full-speed, and with capitalism’s negative freedom to be left alone and undisturbed by any governmental body, even social democracy sounds far-fetched.

Let us not forget though, that neoliberalism too started as a dream of a few dedicated white western men (those of Mont Pelerin Society centred around Friedrich Hayek just after the Second World War), not as an unavoidable endpoint of capitalism. Rather, “it was a political project from the beginning, and a massively successful one in the end. It succeeded by skilfully constructing the ideology and the infrastructure to support it, and by operating in a non-folk-political manner”<sup>27</sup> – i.e. on global scale. Today, it seems extremely hard to think outside of neoliberalism. It is deeply embedded in our minds, bodies and everyday contacts and relationships. Neoliberalism succeeds as ideology precisely because it pretends to be neither an ideology nor a political project.<sup>28</sup> It acts as if it was based on best available science and maths and as if it was a basic prerequisite of any democracy worth its name. Indeed, “changing the earth’s climate in ways that will be chaotic and disastrous is easier to accept than the prospect of changing the fundamental, growth-based, profit-seeking logic of capitalism”.<sup>29</sup>

### The future has been cancelled

*Question: so what is the way out?*

*Answer: the ways are many.*

*Question: which one to take then?*

*Answer1: degrowth.*

*Answer2: acceleration.*

The ways are many. Two opposing ones elude the most to me. They both seem fully viable and they both aim for post-capitalism, although for quite a different one. (Left) Accelerationism counts on capitalism overheating and collapsing on its infinite growth discourse. In essence, it is an extension of the basic prerequisite of modernism – progress. Yet, it anticipates, that this progress will be liberating and will self-optimize eventually. In some ways it is quite compatible with neoliberalism, which to me seems as a virtue. It has a potential to infiltrate capitalism structurally and lead to its magnificent fall while at full speed. What would come after is

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<sup>27</sup> Nick Srnicek & Alex Williams, *Inventing the Future: Postcapitalism and a World Without Work*, London: Verso Books 2015, p. 52.

<sup>28</sup> <https://www.theguardian.com/books/2016/apr/15/neoliberalism-ideology-problem-george-monbiot> accessed on July 21, 2020.

<sup>29</sup> Naomi Klein: *This Changes Everything*, retrieved from <https://warwick.ac.uk/fac/arts/english/currentstudents/undergraduate/modules/fullist/special/litenvironecol/syllabus19-20/naomi-klein-this-changes-everything-capitalism-vs-the-climate.pdf> on July 21, 2020.

probably a sobering guilt-trip after a century on ecstasy. Either way, many hope that fully-automated luxury communism could be its end result.

Degrowth discourse takes on an openly critical and antagonist standpoint towards neoliberalism and capitalism. It advocates producing less, consuming less, generally backing up, taking responsibilities for (very numerous) past fuck-ups and acting towards undoing them. It is openly anti-modern, even pre-modern. Some would go as far as proposing an anarcho-primitivist society that abolishes all (or at least most of) the technology and any larger societal organisation and sets humanity back to hunter-gatherer times.<sup>30</sup>

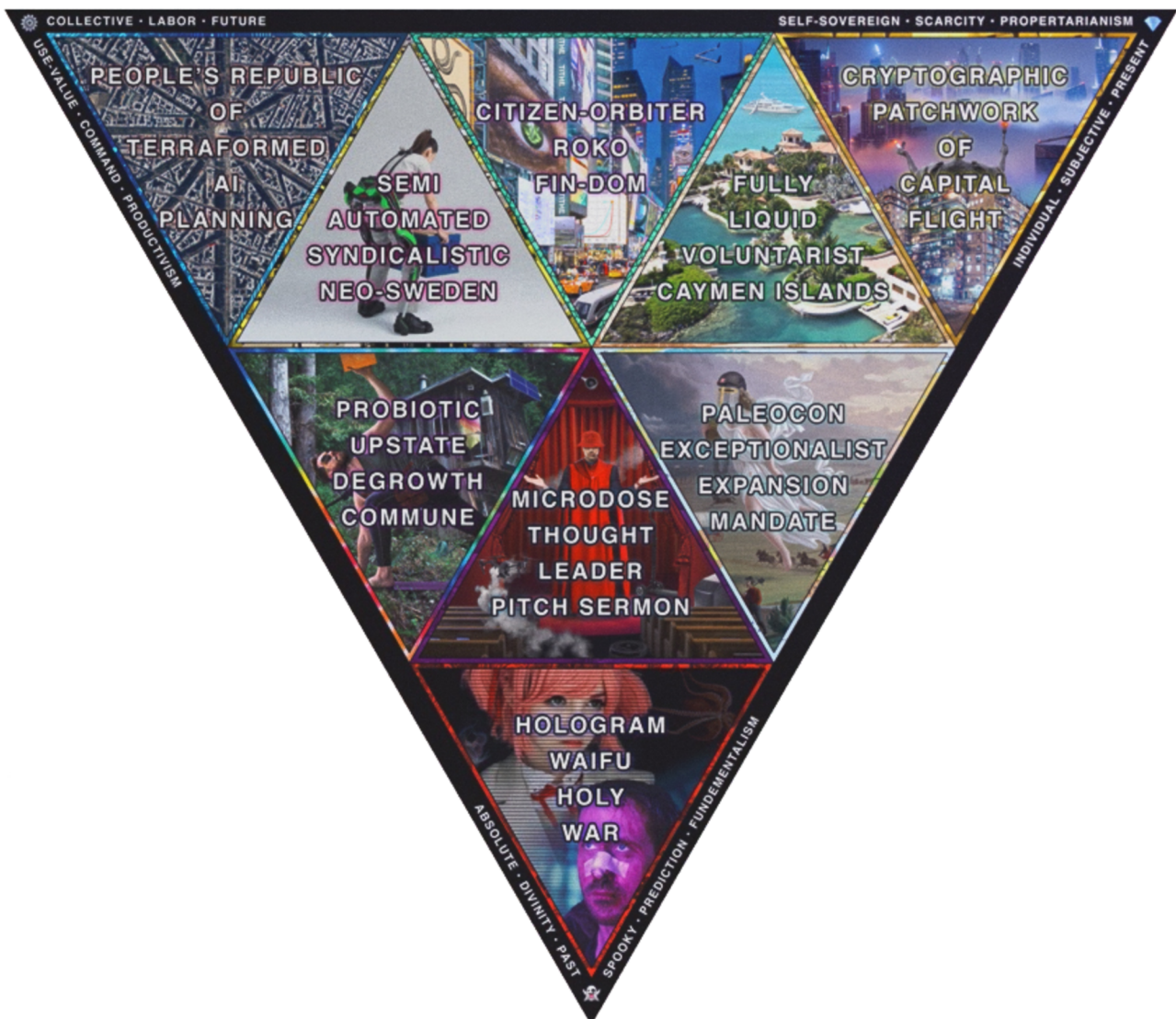


Figure 2: Joshua Citarella: *Choose Your Future*, 2020

<sup>30</sup> If in search of comprehensive overview of contemporary millennial utopias, definitely do consult Joshua Citarella's Politigram & the Post Left at [http://joshuacitarella.com/pdf/Politigram\\_Post-left\\_2018\\_short.pdf](http://joshuacitarella.com/pdf/Politigram_Post-left_2018_short.pdf).

“Resistance always means resistance against another active force. In other words, it is a defensive and reactive gesture, rather than an active movement. We do not resist a new world into being; we resist in the name of an old world.”<sup>31</sup> Degrowth movement, in this sense, is a conservative standpoint which glorifies historical values rather than imagining brand new worlds. Accelerationism, on the other hands, seeks to synthesise the future like we never knew it. Nevertheless, both discourses aim (or have a potential to aim) at global and universal change, to counter capitalism and its claim to *universal truth*.

### Universal, Global, Planetary

*“The Planetary becomes this site, extending the scope of the ‘Other to care about’ to include various genres of non-human existence, whether mountains and rivers, forests and coral reefs, animals and plants, or perhaps even technical objects. All of these elements and dimensions comprise the endless Planetary, the figure of ultimate alterity.”*

*Lukáš Likavčan*

Planetary consciousness, the extension of self, symbolic and material unity and kinship with the Other (forms of life) are all prerequisites of Energy Justice. When everyone and everything is dissolved to their elemental structures, minerals, chemicals, neural and biological processes what is there to distinguish the existences and realities?

Within a grander – planetary – picture, differences between human and non-human become harder to spot and easier to dispute. While we can zoom out to blur the boundaries, we shall, rather, expend outside the borders of our minds and bodies to embrace the Other and the Kin. Becoming-planetary shall constitute “a praxis, a mode of understanding and intervening from within the planetary, [...] rather than endorsing an outside view of the planet. [T]he Planetary can guide us towards inhabiting the planet otherwise.”<sup>32</sup> Energy Justice is one such effort.

Every human, regardless of race, gender, sex, occupation, education and status is a living organism that consumes and expends (fairly similar amounts of) energy. As such we are all part of one large thermodynamic system that is our planet Earth. When physics is the new politics and economics, the energy impact shall be of sole importance as its optimisation and just distribution lies at the core of inhabitable future imaginaries.

Just as every human is an energetic microsystem so is every other agent inhabiting the planet. Every single entity from the realms of fauna and flora, every single mineral, mountain, river, literally everything that is to be found on the planet.

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<sup>31</sup> Nick Srnicek & Alex Williams, *Inventing the Future: Postcapitalism and a World Without Work*, London: Verso Books 2015, p. 47.

<sup>32</sup> Excerpt: ‘Introduction to Comparative Planetology’ by Lukáš Likavčan, retrieved from <https://strelkamag.com/en/article/introduction-to-comparative-planetology> on July 21, 2020.

Even man-made objects – technology in general – shall be no exception. After all “technical objects emerge through the process of artificialization - a human gesture of abstraction that renders a natural object technical and sets it on the course of technical evolution (e.g. by processing monocrystalline silicon from quartz and turning it into a computer microchip)”<sup>33</sup>.

We shall finally dispose of dated dichotomies.

human/nature  
nurture/nature  
culture/nature  
technology/nature

It seems like the game's been the human race against everything else there is. Inside that game, it seems like the game's been one man against every other. It may seem as if these few men were winning. Being Planetary, we can either all win or all loose. The planet, nevertheless, remains indifferent... to both winners and losers. It isn't governed by ethics, politics, or economics. It only is governed by universal laws of physics.

In a process without transfer of matter, the change in [internal energy](#) of a [thermodynamic system](#) is equal to the energy gained as heat less the thermodynamic work done by the system on its surroundings.

$$\Delta U = Q - W$$

“Will the Anthropocene than name a geological epoch when no humans will be around to think it?”<sup>34</sup>

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<sup>33</sup> Ibid.

<sup>34</sup> T. J. Demos, *Decolonizing Nature*, Berlin: Sternberg Press, 2016, p. 251.

ssesi.space - the museum of partisan utopia

ssesi.space<sup>35</sup> was a complete conceptual overhaul and continues to be current agenda of the *garden utopia gesamkunstwerk*. It carries multitude of meanings that complement each other. It is meant to be pronounced as sassy<sup>36</sup> | 'sasi | with which it shares its general connotations. It nevertheless is an abbreviation of “Safe Space for Exploring S- Ideas (and Ideologies)” where “S” can stand for just about any word starting with “s.” These involve but are not limited to „superb, silly, scientific, spiritual, serious, stupid“ et cetera. Space-wise, I designated the largest of abandoned cottages and its surroundings for purposes of ssesi.space. In context of Planetary Thermodynamics: Energy Justice, it shall be utilised as an *in situ memorial and museum of partisan utopia*.



Figure 3: Current state of exterior and of surroundings of the ssesi.space.

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<sup>35</sup> [www.ssesi.space](http://www.ssesi.space)

<sup>36</sup> **sassy** | 'sasi | adjective (**sassier, sassiest**) *informal*  
lively, bold, and full of spirit; cheeky: *Toni was smart and sassy and liked to pretend she was a hard nut.*



Figure4: Panoramic view of current state of interior of the ssesi.space.

### Back in 2030s

Back in 2030s, when Brno's Svatka river's levels rose rapidly and flooded its larger basin, vast parts of Jundrov were swiftly abandoned. The sloped gardens became even harder to access now, leaving the boat trip and drone flight the only two viable access options. Human presence in most parts of this area was becoming scarcer and scarcer. It wasn't until 2038 when certain archaeologist met a certain elderly aboriginal settler who was dislocated during the Svatka rise-up.

This aboriginal shared many intriguing stories with the archeologist, one of which sounded a little bit like More's Utopia crossed with Hakim Bey's Temporary Autonomous Zone and spiced up with bits of Gramsci. The archeologist gathered a curious team and led an expedition to the premises. Soon, they started to uncover remnants of objects covered by eroded soil and barely visible structures overgrown by thick vegetation. Based on extensive research it was deemed that the location was the very place where local revolutionaries were attempting to establish a post-capitalist community based on principles of Energy Justice, Interspecies Respect and Planetary Consciousness.

Thus, the plans were set to transform the area into a cultural and didactic space where near past from the beginning of the millennium could be juxtaposed with current (late thirties) state of affairs. Moreover, the place was to commemorate the noble, albeit failed efforts of those who strived to overcome the exploitation and precarity of most of humans and virtually all non-humans. It was decided that all the interventions are to be limited to its bare minimum to maintain the authenticity of the place. At the same time, the history was to be juxtaposed with the present to fuel the comparative and informative momentum of the memorial. It was therefore embedded with both advanced and historical technologies and materials.

The exhibition is set in the lowest and best accessible of the cottages that constituted the partisan community which occupied the whole slope. It has been emptied of its original furniture and repurposed to serve as a „wood-cube“. Its synthetic glue-shaving walls have been replaced with thin, translucent, polycarbonate sheets that are said to be popular in those days' garden constructions. These also serve as light diffusers for the energy efficient and computer-controlled LED tapes installed between the polycarbonate walls and outer wood planks.

The actual exhibits are the following:

1) array of LCD monitors

- non-linear narrative composed of historical found footage displayed on four liquid crystal displays
- as the LCD technology is obsolete today, special polarising masks are needed to review the displays' content properly. A couple of these have been made available for the visitors

2) archaeological findings

- specimen on bespoke display composed of steel pipes and laser-cut to shape acrylic sheets
- archaeological catalogue

3) political banner sustained by unmanned aerial vehicles (UAV)

- the banner carries the call for global energy justice based on laws of planetary thermodynamics that are expressed in a form of mathematical equation



#### 4) automated accelerationist greenhouse (a/acc-g)

- the greenhouse is composed of polycarbonate sheets, like the interior walls of the cottage are
- it is set in and adopted to the terraced landscape of the former garden
- polycarbonate sheet is shaped into arch that spans from the edge of the upper terrace to the edge of the terrace beneath it
- inside the greenhouse, there are several aeroponic containers with mineral wool growing medium, embedded with sensors that monitor the plants and command the autonomous watering system
- the greenhouse is, too, equipped with full spectrum LED grow lights that boost the photosynthesis process
- the greenhouse is intended as a display of those days best, and today's standard food growing environments

#### 5) circular economy teller and global/void teller

- these are performative object-spaces enhanced with stickers and video footage
- the tellers are comprised of digital monitors that, respectively, tell a poetic story of how capitalism led the globe(al) to the void and how circular economy is indeed circular
- the tellers require a trained museum attendant that performs and demonstrates certain specific tasks that help make the video footage more comprehensive

#### 6) solar power system

- as is basic standard today, and as was environmental dedication of those days' concerned individuals, the whole museum is powered by energy harvested from renewable resources, in this case from the sun
- the solar system's numerous processes are quantified and visualised on little task-specific gadgets to help the visitors grasp the working concepts of electricity

#### 7) textual work

- the exhibition is aided by textual works that elaborate on concepts of planetary thermodynamics and energy justice
- this very essay is part of the body of texts

## VISUAL REFERENCE

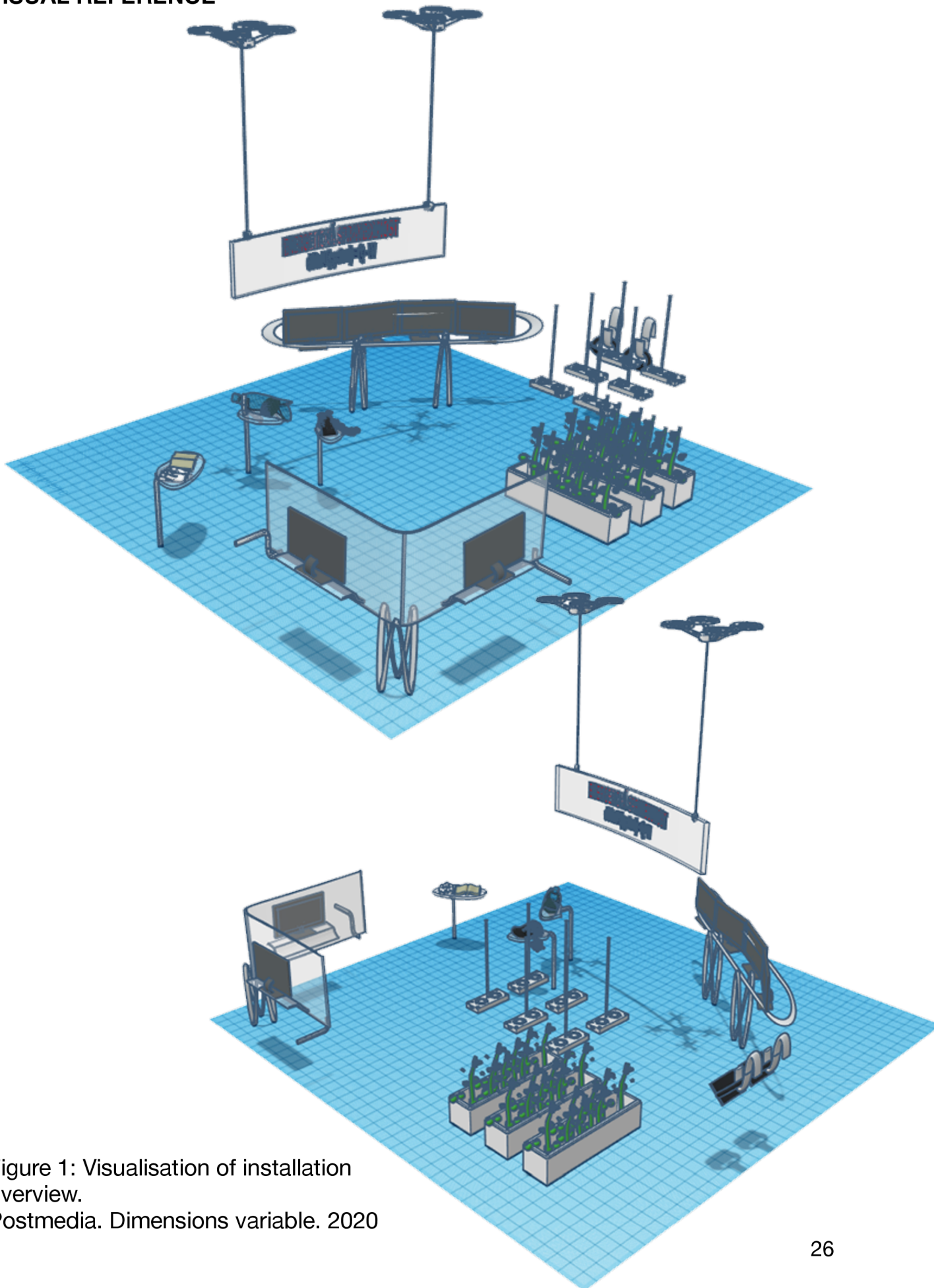


Figure 1: Visualisation of installation overview.  
Postmedia. Dimensions variable. 2020

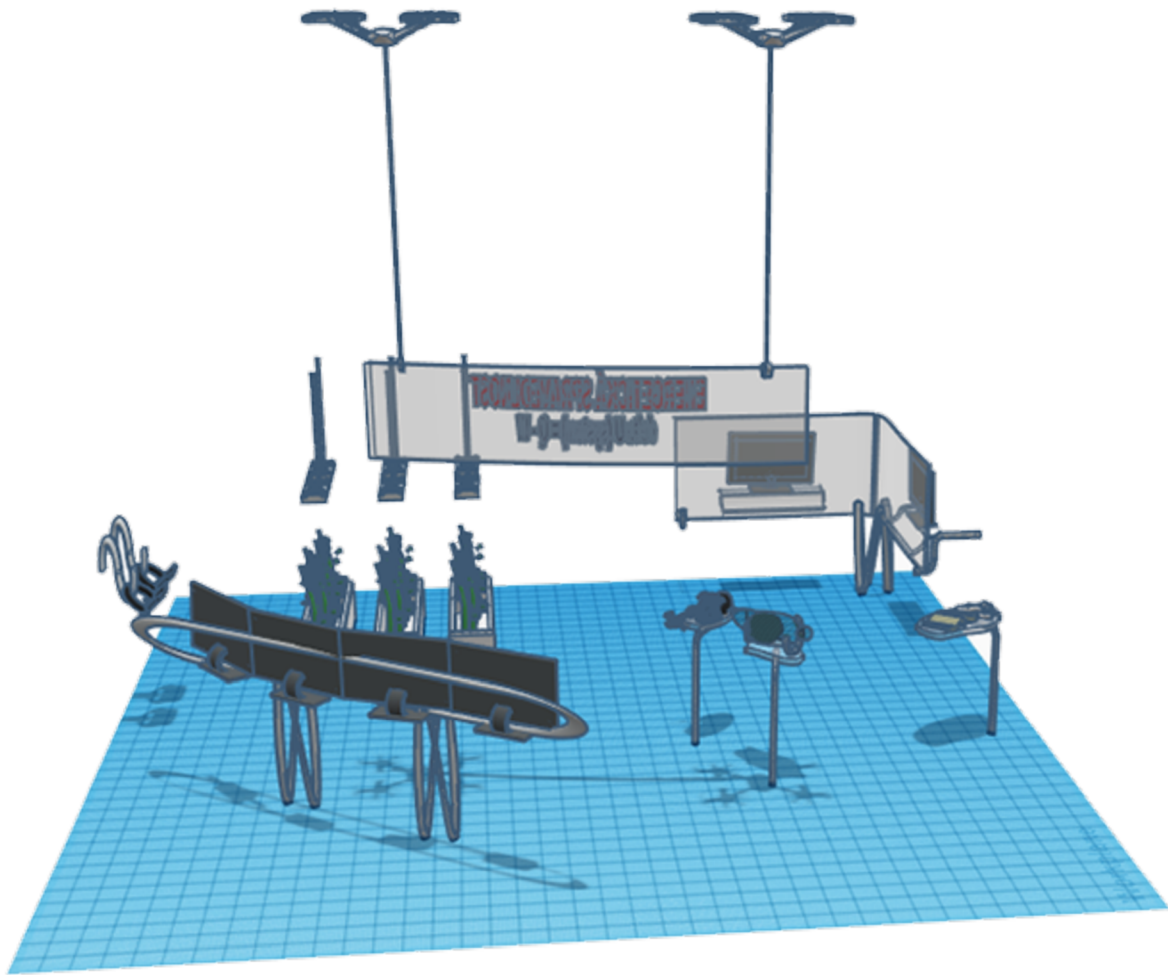
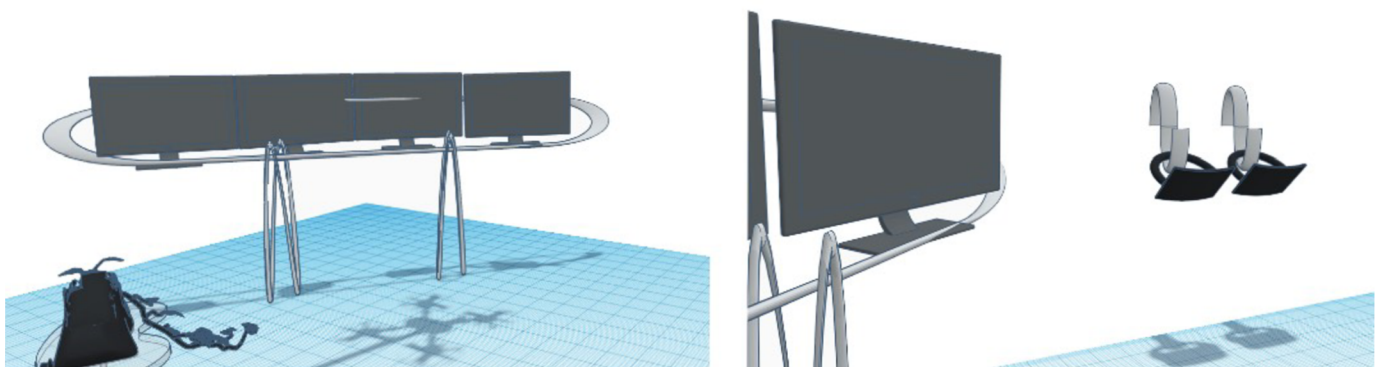


Figure 2: Visualisation of installation overview.  
Postmedia. Dimensions variable. 2020.

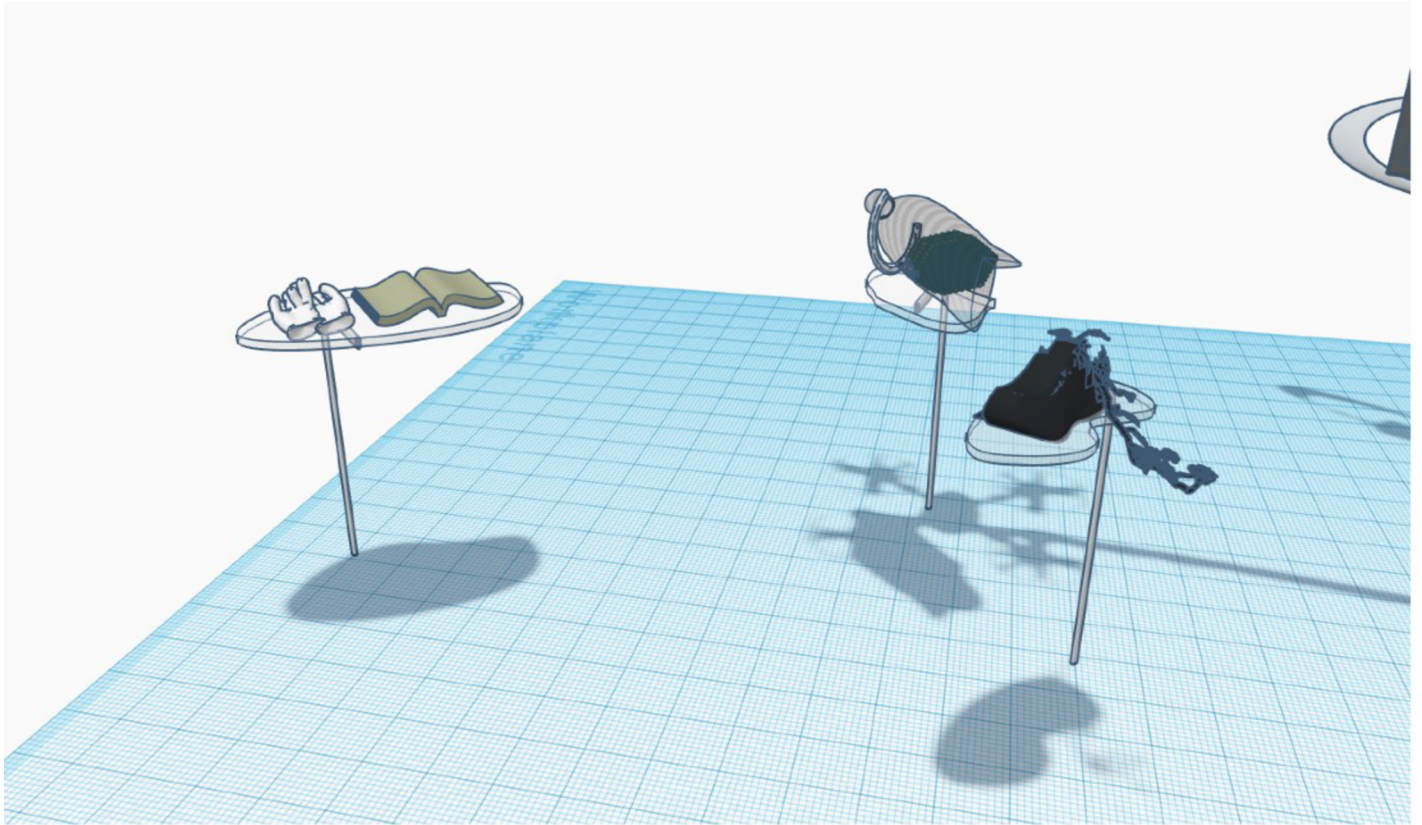


+ LCD screens stripped off polarising filter  
+ these only emit undifferentiated light

+ polarising filter masks  
+ allow visitors to preview actual content

+ appropriation of ancient liquid crystal technology  
+ monitors display historical material of archeological findings from around 2020

Figure 3: Array of LCD monitors with polarising filter masks visualisation.  
Four LCD monitors, computer, video footage, bespoke solid metal pipe stands,  
bespoke polarising masks. Dimensions variable. 2020.

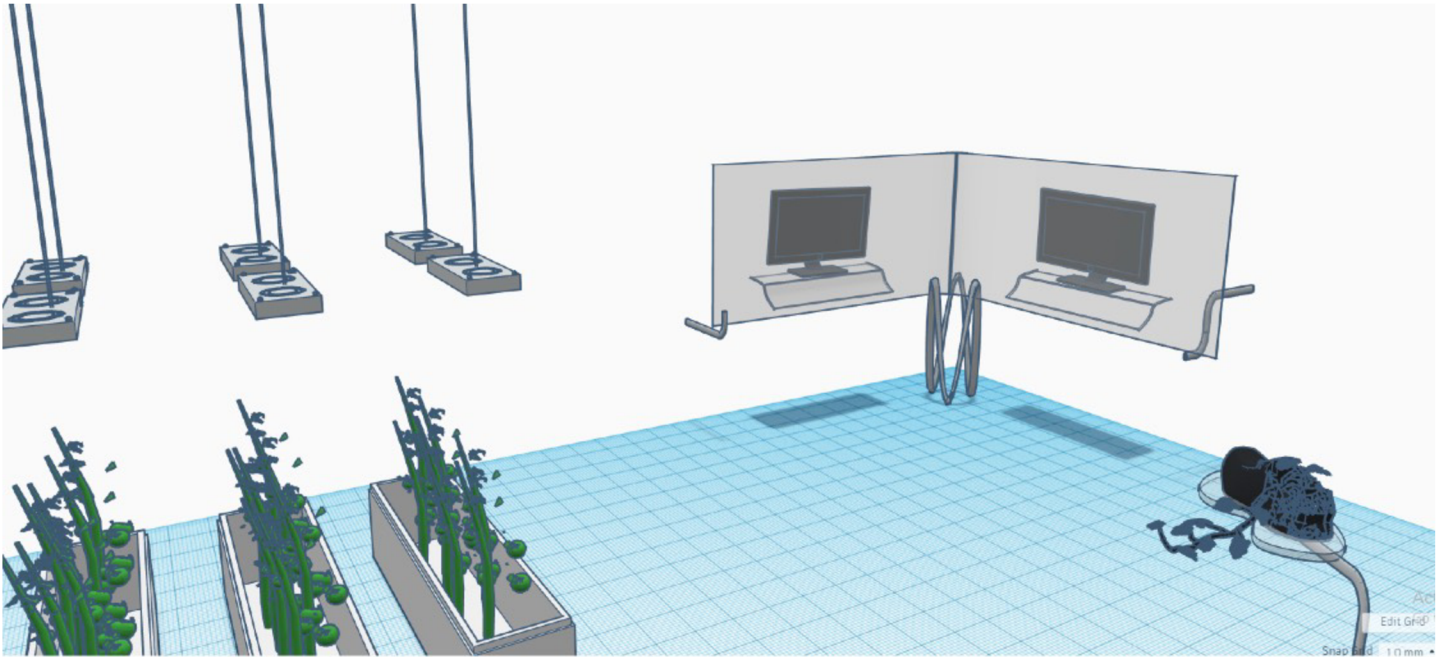


- + display of archeological findings from Brno-Jundrov, Czechia and archeological database
- + some specimen may be 3d printed, referencing database
- + speculative archeology: discovering present from future standpoint



- + actual findings from the excavation site

Figure 4: Archeological findings visualisation. Found objects, archeological catalogue, gloves, bespoke acrylic and solid metal pipe stands. Dimensions variable. 2020.



- + automated greenhouse involving:
  - + bespoke full spectrum grow lights
  - + mineral wool growth medium
  - + sensor driven drip irrigation
  - + aquaponic water-circuiting system
  - + regulated CO2 input
- + inspired by Dutch farming model

- + instructional pannels demonstrating history and current state of Global Energetic Justice
- + two performers follow onscreen instructions
- + one illustrates the fall of global market, the other explains circular economy

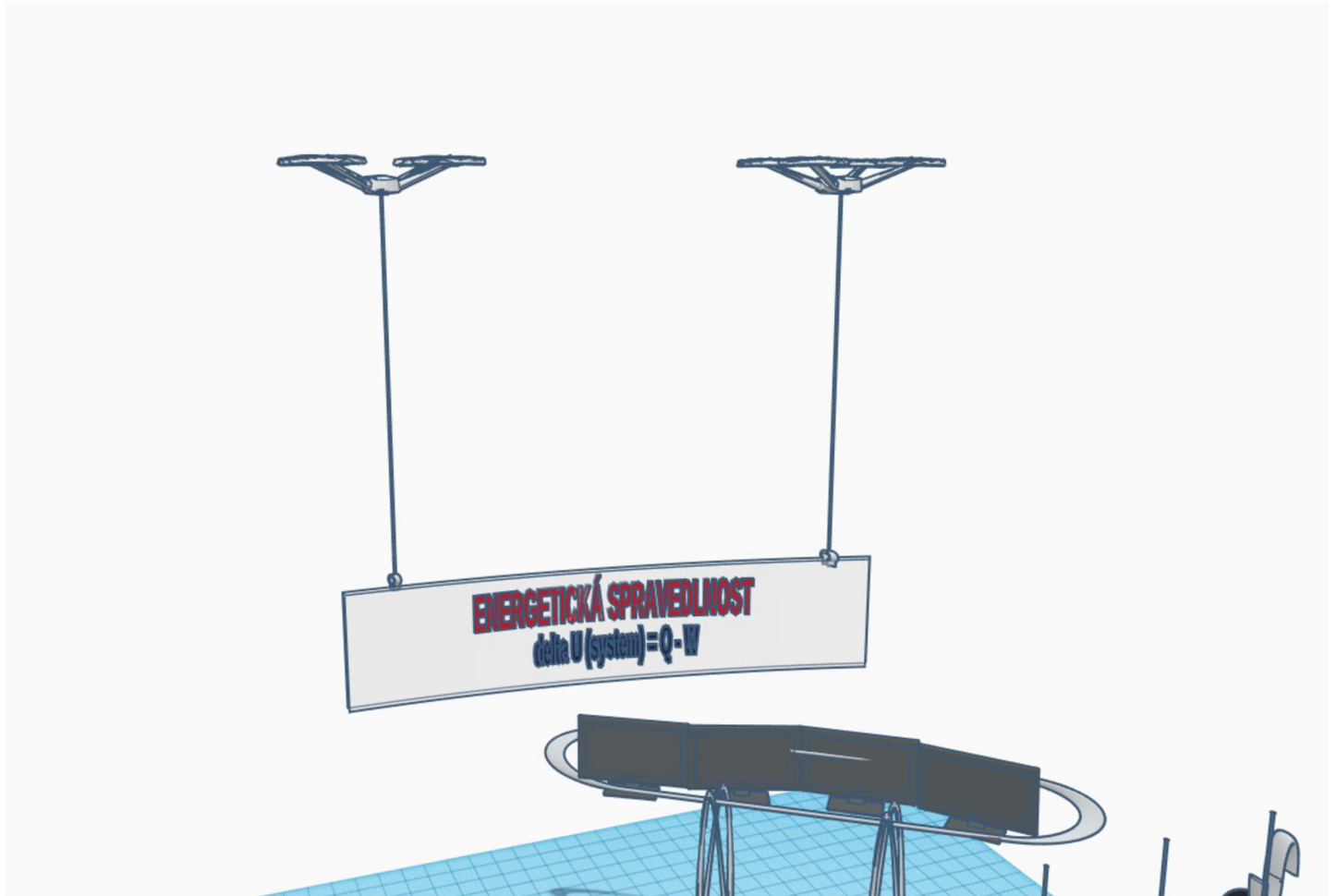


Figure 5 (left): Automated aceleracionist greenhouse (a/acc-g) visualisation. Plant containers, plant seeds, bespoke metal stands, bespoke full spectrum LED lights, bespoke watering system. Dimensions variable. 2020.

Figure 5 (right): Circular economy teller and global void teller visualisation. Acrylic sheet, bespoke metal stands, two monitors, video, stickers, performers. Dimensions variable. 2020.



Figure 6: Terraces on which solar panels and polycarbonate sheet grow tunnel for greenhouse are to be installed.



+ Banner held up by two drones promoting Energetic Justice achieved by applying laws of thermodynamics on a planet as a single energetic entity

Figure 7: Visualisation of political banner sustained by unmanned aerial vehicles. Acrylic sheet, text, two drones. Dimensions variable. 2020.