Reading the article “Environmental machine learning as artistic research practice” on the [foam] website, I totally agree with the writer idea about our relationship with nature. In the next lines, I’ve tried to make an extract of the article to underline my ideas according to what the writer has written.

“I had learned that some problematic ideas at the roots of the anthropogenic damage to earth are individualist perspectives of self-reliance or ecological independency, anthropocentrism, and the idea that some entity called ‘Nature’ is separate from humans.

In this human-centered view, Nature is merely a set of resources to exploit, or even force to fight against and exterminate. For centuries, it has lead us to think, build and behave as if humans are central in all domains of existence (Morton 2018). This human-centered and individualist worldview maintains a sense of exceptionalism in which humans are substantially different from or superior to other beings

For example, the concept ‘sustainability’ is risky, as it is all too often anthropocentrically scaled or used to cover up destructive human practices (see Morton 2018; Tsing 2017)

And yet, whether you call it the Anthropocene or not, here we are - living in a time in which human impact on earth is causing major imbalances in ecological flows. The urgencies of the Anthropocene are also very much nonhuman urgencies, such as the current sixth mass extinction event. And vice versa: nonhuman urgencies directly or indirectly cause all kinds of urgencies for humans.

Thinking about what *could* happen instead of what *should* happen prevents speculative scenarios from becoming didactic or moralistic (Dunne and Raby 2014). It is a playful but serious method, that helps to think beyond taken-for-grantedness. Speculation helps to hybridize nonhuman entities and explore new research tools, effectively highlighting urgent issues without suggesting a ‘better’ way to deal with them.

Haraway proposes a way of thinking and acting beyond individualism with the word ‘sympoiesis’, which means ‘making-with’ or ‘collectively-producing systems that do not have self-defined spatial or temporal boundaries’ (2016, 35-6; 58). It describes a commitment to collaboration of all different beings on earth, as we are amidst urgencies that are not just human urgencies (ibid.). As opposed to autopoiesis, which means that systems, organisms, persons, things can be self-constitutive and self-making, sympoiesis implies that ‘earthlings are *never alone’* (Haraway 2016, 58, emphasis hers). This making-with is always done together with all kinds of beings who can be called *companion species*.

Reading this article I’ve discovered an interesting project from the Berlin University of the Arts called “terra0”, which is provocative and makes you think a lot about possible future with autonomous decentralized agents based on AI and blockchain systems. In the next lines, I’ll do an extract from the white paper of the project, trying to make it easy to understand even for people with no knowledge of blockchain and smart-contract systems.

Straight from the white paper :

terra0 is a project originally developed in the Digitale Klasse at the University of Arts, Berlin by Paul Seidler and Paul Kolling. This concept paper is written by Paul Seidler, Paul Kolling and Max Hampshire.

terra0 is a self-owned forest; an ongoing art project that strives to set up a prototype of a self-utilizating piece of land. terra0 creates a scenario whereby a forest is able to sell licences to log trees through automated processes, smart contracts and Blockchain technology. In doing so, this forest accumulates capital. A shift from valorization through third parties to a selfutilization makes it possible for the forest to procure its real exchange value, and eventually buy (thus own) itself. The augmented forest, as owner of itself, is in the position to buy more ground and therefore to expand.

From an economic perspective, an object cannot be separated from its purpose or function. Thus the means of existence of every object is based on its usability by third parties. terra0 examines a scenario whereby objects appropriate and apply utilisation mechanisms to themselves, with the help of new technologies.

A forest has an exactly computable productive force; the market value of the overall output of the forest can be precisely calculated. Beside its function as a source of raw material, the forest also holds the role of service contractor. It produces not only wood, but serves as a protected space within which diverse species can survive, contributing to an overall ecological balance. Furthermore, it offers space for relaxation. The terra0 project creates a scenario whereby the forest, augmented through automated processes, utilitises itself and thereby accumulates capital. The augmented forest is not only owner of itself, but is thus in the position to buy more ground and therefore to expand.

In the first phase of the project, a piece of ground is bought by the project initiators, and a smart contract is drawn up. The smart contract contains all contractual definitions from terra0 and passes of two parties: the human actors as a project initiators, and a representation of the forest as a so-called nonhuman actor (or 'NHA'). The bought ground is signed over to the NHA in exchange for debentures (later referred as terra0 tokens), which represent a stake of the project and the smart contract. At this stage, the forest owns itself, yet is indebted to its shareholders (the project initiators). An economic model implemented in the smart contract controls the exploitation of the forest. The NHA sells licences to log certain trees. If a certain sum of money has been earned via selling these licenses, the NHA starts to repay its debts to Paul Seidler, Paul Kolling and Max Hampshire, the project initiators by buying its terra0 tokens back. Once repayment is complete, the original owners (the project initiators) hold no more tokens, thus the forest is the sole shareholder of its own economic unit. The forest, in economic terms, controls itself. By appropriation of capitalist and cultural mechanisms, a piece of ground thus plays an active role in society, whilst at the same time avoiding direct influence by third parties, via removing the possibilities of economic interaction by them. terra0 can be seen thus as a prototype of an economic unit in a post-human future.

Blockchain technology and smart contracts enable nonhuman actors to administer capital and therefore to claim the right to property for the first time. Property is discussed now as something which is not separable from a natural or legal entity. terra0 begins in this legal grey area, originating in the technological change brought about with the invention of blockchain technology and smart contracts. Since an individual's property is protected in accordance with their rights, one would assume that objects which have gained the right to property are entitled to similar personal rights as natural persons.

Everything that humans themselves affect and produce is defined as an aspect of culture (from the Latin 'cultura': treatment, or care), whilst nature is defined as everything else, i.e. that which is by itself, simply 'as it is'. However, the natural can only be described via cultural technologies, like art and science. The concept of 'nature' thus takes, as a demarcation, a function in the cultural apparatus and cannot be separated therefore from it. Nature is influenced directly and indirectly by society, and is defeated therefore by its logic of utilisation.

In a society whose existential basis relies on a capitalist logic of utilisation, there is no good case to believe that nature (as something is which originally given, and therefore depriving itself from any utilisation) still exists. If culture is understood as the counterpart to nature, by which one recognises nature's 'otherness',

then nature must be conceptualised not as being spatially separated from humans, as the person opposite oneself is, but instead as immanent within culture.

In the paper are defined some criteria for defining an autonomous decentralized agent:

I. The agent earns enough money to maintain itself, without human intervention (e.g. the agent pays for its own server space).
II. The agent has an adaptive feedback system.
III. The agent can replicate itself.
IV. When interacting with humans the agent does so as a peer, not as a tool.

Vitalik Buterin described different levels of complexity, ranging from single purpose agents (computer viruses) to AI-like agents using evolutionary algorithms to discover and enter new industries. These points can thus be added to the previously outlined criteria for defining an autonomous decentralized agent:

I. The agent behaves much like a simple biological organism.
II. The agent can react and adapt to its environment (and furthermore, gather and process information about this environment).
III. The agent evolves through evolutionary algorithms and can thus discover new survival strategies.

It is possible to realise the project in different ways, best understood as realisations on different levels of complexity.
Lowest level of complexity: A smart contract on the Etherum Blockchain controls the in- and outputs of the forest. Every six months a programme fetches satellite pictures of the property from a supplier outside of the Blockchain. With the help of self-written image-analysis software, the programme can determine how much wood can be sold without overly-diminishing the tree population.
Middle level of complexity: The smart contract carries out all calculations itself and is no longer dependent on programmes outside of the Blockchain. Furthermore, the contract can scrape databases in order to dynamically regulate its prices.
The contract thus recognises which trees are most profitable, and therefore only sell, or grow, specific types of trees in order to maximise profit
Highest level of complexity: The smart contract is no longer distinguishable from a completely developed artificial intelligence. Scraping data from forest databases allows the forest to radically optimise itself through logging decisions. Due to this, the wood is now sold at highest possible price.
The project is divided, both technically and in terms of content, into two phases: a crowdsale-phase, and a run-phase.
In the first (crowdsale) phase, two smarts contracts are created: The first contract regulates the crowdsale. If the contract receives ether, it returns terra0 tokens to the sender. These tokens can be viewed as a form of debenture, which can be sold back to the second contract at a later date. The crowdsalephase ends after the pre-agreed time interval stated in the contract. The accumulated capital is then made available to the project initiators.
The second (run) phase then begins. This phase consists of the second smart contract, a forest analysis programme hosted on a server, an Oracle, and the Etherum clock beginning the active phase of the project. The programme selects the satellite view of the forest via its GPS coordinates, before determining the number, state, and age of the trees located on the NHA's property using OpenCV. This data is shown as a publicly accessible JSON File. The Oracle accesses the website once every six months, and reflects the data as a smart contract in the Etherum Blockchain. Periodically, the Etherum clock activates the smart contract which accesses the Oracle's data.
The first contract is very similar to the standardised crowdsale contract. The second contract administers the in- and outputs of the forest, and further serves as its real 'owner'. It functions as an automated trade centre for tokens. The contract defines two different tokens:
terra0 token function as a debenture. The token can be acquired only during the crowdsale phase and represents a share of the property of the smart contract. The terra0 token can be sold to the contract by its owner for Ether.
The *Woodtoken* is created by the initialisation of the contracts, and remains as a stock with the contract, and is acquired from the contract in exchange for Ether. The Woodtoken can be seen an agreed amount of wood that can be harvested in the process of self-aquisation.
There are countless ways to capitalise on a forest. The forest can serve as a recreational site, as a source of value for a neighbouring town, or habitat for animals and threatened plants.

The overall value of a forest grows with its age. However, trees that are too old no longer contribute to this potential profitability, on the basis of their susceptibility to illness. The proportion of the trees that are allowed to be cleared is adjusted so that a certain rate of growth, or constant tree population is guaranteed. Old, unprofitable trees are felled in order for the forest to remain healthy, as well as allow for younger trees to grow. Thus a situation arises whereby the production rate of the wood remains as high as possible, without decreasing the forest population.