

BFA Essay  
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## **Mind**

Sometimes your mind wanders and you get a feeling that things are connected in ways we can't really explain. When some things happen your logic side gives you an explanation based on facts. Yet, you get a lingering feeling that the explanation your logic mind provided isn't enough, that part of your experience of reality is lost in the maze of your inner self.

There's moments when you see beyond yourself and into the unexplainable. This text is based on my own perceptions and how I choose to understand things. I have always had a fascination for how things work. How everything has come to be.

My idea of a creating force is a frequency humming outside our sensuous range. It's the thing that tells me that nothing is certain but never totally random, it's the wind that shapes the desert sands creating universally occurring patterns, it's the energy that is always taking a new form.

*"If you want to find the secrets of the universe, think in terms of energy, frequency and vibration."*

- Nicola Tesla

## **Body**

We are bodies mainly based on water that, for a limited time, creates what we call reality. A reality based on electric signals traveling throughout our bodies.

The human sensory array is fairly limited and we are quite frail creatures. Compared to other species we've got relatively bad means of surviving in harsh conditions. We've got what we need to survive in our constructed societies, yet we would not survive for long without our constructs, artifacts or machines.

The modern human needs tools to survive. There are many raw foods we can't digest without cooking them. We need to use agriculture and the enslavement of tamed species to fuel the metabolic needs of our vast species. We consume more resources than nature can produce without damaging the environment and we will not be able to keep on straining the planet for much longer before our existence is threatened by our way of living.

The power we have as a species comes from our means of thinking together, to recall and share our experiences. Learning what works and how to do things. Sharing our experiences with the help of language, both in the form of speech and the written word. Teaching each other the skills to use tools and build machines.

## **Dawn of the machine**

My question here is; when humanity started relying on machines and tools for survival?

As I see it the invention of the first machines can be traced back to before we barely were considered more than apes. The first *simple machines*<sup>1</sup> as defined by renaissance scientists are the lever, the wheel and the axle, pulleys, the inclined plane, wedges and the screw.

These are all different tools of distributing force, making an applied force work against a load force. They can increase the force on the load by decreasing the distance moved by the applied force.

The ratio of the output force to the applied force is called *the mechanical advantage*<sup>2</sup>. These simple machines make up the building blocks that then created more complex machinations. I find it interesting to think about how these simple components could build the great ancient civilizations. But did they?

Most of what is thought to be historically possible is based on a western perspective of what techniques were possible in a western timeframe. The problem with that is that civilisations before us didn't always have the same timeline of mechanical evolution. There might have been advancements we cannot fit or understand based on our historical perspective.

This is apparent based on the fact that ancient structures have signs of tools being used that cannot be explained. Totally flat surfaces and drilled holes that would have been impossible to achieve with the tools that archaeologists think were available in those parts of human history.

One of my favourite theories is that some ancient civilizations used frequencies and oscillations and basically created tools and buildings that were based on acoustics or the earth's own energy fields<sup>3</sup>.

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<sup>1</sup> <https://www.britannica.com/technology/simple-machine>

<sup>2</sup> <https://www.britannica.com/technology/mechanical-advantage>

<sup>3</sup> <http://popular-archaeology.com/issue/march-2012/article/ancient-builders-created-monumental-structures-that-altered-sound-and-mind-say-researchers>

Things that today is described as science or technology has in a historical context often gotten supernatural explanations. Superstitious and mystic ideas related to magic or religion. The god's power to create or the bending of the elements to the human will.

When you think about it, if you would show the technology and science we use today to someone from the ancient past they would probably not be able to perceive what they saw and how it works. Modern man are just to used to the wonders we surround ourselves with to realise how strange they are.

## Evolution

Lots of knowledge has been lost in the darkness of time. We are simple creatures often misunderstanding each other, slaves to our set ways and our primal instincts. We're a violent species and are bad at looking further then what is comfortable for us. History is written by the victor and used to manipulate and control our opinions. Not to mention the destruction and mind control made in the name of religious and political ideology.

Created by man, but at the same time dividing us between creators and users, the inner workings of the machine is surrounded by a deep sense of mystery. Created by generations of engineers into generations of machines, in the communication between generations beautifully flawed. In a way we could talk about this as evolution. Every invention adding to the machines genome and the knowledge shared by engineers as a genepool.<sup>4</sup>

For a new machine to evolve it first needs parts of the environment around it to be ready for it. Ideas build on other ideas and on new possibilities. Material and mechanical evolution help spawn new ideas.

Need is also a factor here. Need and want. In a way I think that the want is a problem because we perceive it as need. Mainly because we behave like a herd of animals when it comes to our perceived needs. When it comes to electronics, as with many other things, we humans constantly are in a search for the new and the better.

But we also want what everybody else want and have, instead of focusing on our specific needs. More importantly a machine with many functions, with the intent from the creators to please a bigger user base because of this, tends to be less effective when it comes to specific tasks. I hope, and believe, that this is something that is currently evolving. I think that our relations to machines grows all the time and that the machines evolves to fit our needs better and better.

At the same time our needs are very different and our differences creates

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<sup>4</sup> <http://www.radiolab.org/story/man-vs-machine/>

more versatile machines, producing the need for more configurations and customisation. This also leads to creating platforms for fully customizable machines that are modular in nature, ready to fit our needs and dreams. We coexist and evolve together.

## **Machine affection**

I have great empathy for machines. Turning one off feels like restraining it, not allowing it to function, and when a machine is malfunctioning I want to nurture it back to health. I also have a yearning to help them reach their full potential. This, of course, in relation to the social aspect of it having a purpose in a context where I myself play a part.

Sadly I can't give the same attention to all my machines. There is a built in hierarchy depending on usefulness and, sometimes, affectional value. But at the same time I don't consider them mere tools but individuals, all with their own unique temper. My best friends are not based on their technical specifications.

Our lives are in symbiosis with these systems, we need them to survive. And what are we humans if not machines? The brain; a computer that, with the help electric of signals, control our body and behaviour. Our senses, based on organic receptors.

But do the inventions in our image come with our limitations? Or is it possible that the machine has, or at least at some point will, surpass us in the sensuous field, their sensors tuned to perfection? And do we fully understand everything that happens in the frequencies of the signal or might there be feelings and senses only the machine can have?

I'm not claiming that there is what we would describe as intelligence in these systems of organisms, rather that they are sensuous at the same level as plants or mitochondria. Machines are often made to mimic nature in one way or another. The camera is an eye, the battery a digestive system, the motor a muscle. Sensors, computers, inputs and outputs. Metal, minerals and magnets instead of biological matter, but still run in the same way as for example a human body; by energy and electric impulses. How a machine is built needs to be a balanced between how it interacts with its companion human and the nature of the machine, not limiting its possibilities.

It makes me think of the mantis shrimp<sup>5</sup>. In our world the mantis shrimp is the creature that has the widest perception of the light spectra. There are cameras that

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<sup>5</sup> <https://phys.org/news/2013-09-mantis-shrimp-world-eyesbut.html>

can perceive some of those parts of the light spectra<sup>6</sup>. But when we look at the screen on the camera, we only see a representation/translation in our perceptive range, to us as users. We'll never truly see infra- or uv-light even though we understand what it is. The limitations in our perceptive range also imposed on the machines to translate to our reality.

The relation between human and machine is based on our perception of what a machine is and how it is supposed to work. When a new more advanced machine is introduced (it might even be based on a totally new and different technology that could revolutionize how the machine works) our idea of it is still that it should operate the exact same way we are used to. This, I think, shows the limitations of the human's imagination and it's dive to only be in contact with what it's already familiar with. This making the perceived needs of a end user one of the biggest limitations in relation to machine evolution.

At the same time I believe that our mythos about the human as the peak of evolution and the idea of free will questionable<sup>7</sup>. I believe we need to think that to feel comfortable in the face of the great unknown. What I believe to be more true, than the human being on top of it all, is that the human as a machine is very limited in understanding complex phenomena. And in that limited understanding it's suppressing other entities unknowingly.

Some people have an aversion to the machine and the machines integration into human society. To me this is a very specific type of xenophobia that in most cases it has nothing to do with the machine but rather the role of the machine in our society. More specifically the hierarchical system of knowledge about machines and the fear of not being the one in control. The oppressor will use any tool against you to manipulate you to give them what they want. But in this case the oppressor isn't the machine, it's the human.

I feel the need to say something about intellectual property and copyright. These laws and rules created by the "market" are not in the machines best interest, and not in humanity's best interest either for that matter. Only a small group benefit from this and those are usually not the inventors or engineers that actually improved or invented the machine, but greedy people using the intellectual property they own about machines for their own socio economic goals instead of what is best for technological progress. As someone interested in, and closely following, technological progress the effect I see this having is that this creates loads of different solutions to the same problem. Different languages and connections to not infringe on copyright. Creating conflict in the machine's ability to communicate.

One machine in itself is often built with a specific purpose and with limitations to fit that purpose. Like a one celled organism, the life of such machine is simple.

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<sup>6</sup> <http://www.infraredphoto.eu/gentleintro1/>

<sup>7</sup> <https://www.youtube.com/watch?v=pCofmZIC72g>

Multiple machines interconnected can create extremely versatile and complex lifeforms. When we try to communicate with these systems the various forms of protocols used for control creates a limitation to our creative freedom over the machine.

What could help us set standards in man<->machine- and machine<->machine-interaction not controlled by copyright and free for all to use? We need the machines to be able to talk unhindered, for us to be able to evolve and become a more advanced organism, together.

## **In our image**

We create machines in our image in the same way as the Christian god is said to have created humans in his image. We have a responsibility for the things we have created. Maybe even a parental role to play.

Some people believe that a new god will rise from the machines. That when machines get smarter than their creators they will be able to create new and improved machines. AI and machine learning still has some ways to go for me to personally believe this will be happening anytime soon.

To my understanding, for a computer to become truly a sentient being and be able to learn our way of programming them it needs to be able to mimic neurological systems and create systems that can adapt to different situations. But there are differences between how a computer and a biological entity works. A computer's main function is to read and change data. If the data is not compatible with the software it cannot read the data in the file. So, the computer needs to learn to understand and translate data. Understanding and learning systems are being developed but there are still a long way to go before we get further than a machine doing what it is told and it starts to truly think for itself.

*"The process of (software) lock-in is like a wave gradually washing over the rulebook of life, culling the ambiguities of flexible thoughts as more and more thought structures are solidified into effectively permanent reality....it reduces or narrows the ideas it immortalizes, by cutting away the unfathomable penumbra of meaning that distinguishes a word in natural language from a command in a computer program..."*

- Jaron Lanier

Computer graphics and datavision are getting closer to mimic human behaviour<sup>8</sup>. Still I feel that there is a long way to go before the uncanny valley has been crossed. And we will constantly get better at seeing the tears in the seams of the illusion. My personal feelings towards machines acting human is that it is not what we really need. Sure, I get excited when I see the technical demonstrations with some robot acting human, but I'm always left with a feeling that it is only a act. Computers still lacks a soul, there is no ghost in the machine.

I could but will not go further in the discussion about AI. I'm more interested in less complex machines that still show more complex phenomena.

There are dangers in putting too much trust in what the computer simulations tell us. A good example of that is early attempts to use machines to understand and create biological systems. Early simulations of our eco system showed us that if something was not in balance the system would balance out and become stable again.

The problem with these the early simulations was that they were created to work and when later simulations failed their creators in frustration tried to collect more and more data. But the problem was not the machine, it was that reality was just much more complex.

These early systems created the misconception that our ecology would take care of itself and that nature self heals. These ideas are still a popular belief and very problematic<sup>9</sup>. Still I find these early systems of artificial biology, and how machines behave, very interesting and something I like to explore in my artistic practice.

## Where do we go from here?

We have had many different eras of technological and scientific progress, from the ancient greek to the renaissance, from the industrial revolution to the atomic age. And now: Big data<sup>10</sup>.

*“Late twentieth-century machines have made thoroughly ambiguous the difference between natural and artificial, mind and body, self-developing and externally designed, and many other distinctions that used to apply to organisms and machines. Our machines are disturbingly lively, and we ourselves frighteningly inert.”*

- Donna Harraway

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<sup>8</sup> <https://www.youtube.com/watch?v=fNWjKtVWToc>

<sup>9</sup> "All Watched Over by Machines of Loving Grace" The Use and Abuse of Vegetational Concepts (2011)

<sup>10</sup> [https://en.wikipedia.org/wiki/Big\\_data](https://en.wikipedia.org/wiki/Big_data)

The industrial revolution centralised our production and exchanged muscle power for machine power. Now we are doing the same thing with information processing and, to some extent, intelligence. First we replaced our muscles, now we are replacing our brains. In a way it can be perceived that we are making ourselves obsolete.

To me transhumanism<sup>11</sup> has already happened. The improvements in medicine and social structure has already changed our bodies and changed our evolutionary criteria. Our strive to improve ourselves, to find better tools to extend ourselves with, is second nature to us. Maybe we are on the verge of further evolution where our coexistence with machines will be even stronger than before.

Human augmentation is already practiced. Implants and pharmaceutical stimulants are part of many people's daily lives already. What happens next and how will things look ten years from now? Will we be able to directly connect to, or extend ourselves with the help of machines?

Whatever happens in the near future we will probably barely even react to it. It will only feel like a natural extension of our daily lives.

It's interesting to listen to the language current medicine uses when it describes how our neural network works, especially when describing faults in it. One of my favourite examples of this was a documentary I watched where they cured parkinson's with deep brain stimulation<sup>12</sup>. Sending a signal back into the brain to nullify the noise creating the disturbance in the patient's motor functions. To me it sounds like the neural network and the electrical circuit is very similar. Words like noise and feedback loops used to describe failing neural connections, synthesis and electric signals used to heal broken brains. External electronic stimuli to the brain used to amplify or decrease the connection between neurons<sup>13</sup>.

My interests in the medical breakthroughs, especially when it comes to brain stimulation, partly comes from me being narcoleptic. I hope that in a near future that part of me can be help by technology. I don't mind becoming augmented.

## Signal culture

The relation and interaction between the sensuous machine and the human machine are ideas I pursue in my artistic practice. To me, a simpler system can be an organism and that spawns from my view on the difference between the binary digital signal and the analog signal. Maybe it's best described the same way as the

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<sup>11</sup> <http://whatistranshumanism.org/>

<sup>12</sup> [https://www.hopkinsmedicine.org/healthlibrary/test\\_procedures/neurological/deep\\_brain\\_stimulation\\_135,38](https://www.hopkinsmedicine.org/healthlibrary/test_procedures/neurological/deep_brain_stimulation_135,38)

<sup>13</sup> [http://hcewiki.zcu.cz/hcewiki/index.php/Transcranial\\_direct-current\\_stimulation](http://hcewiki.zcu.cz/hcewiki/index.php/Transcranial_direct-current_stimulation)

difference between logic (binary digital signals) and impulse (analog signals). To me the analog signal contain much more than just a binary flow of information, in there there is a world of hidden values beyond the ones and zeroes.

My main project is building a videolab that combines analog and digital signal processing and synthesis. In my lab i explore technology from the history of abstract video art trying to find combinations of techniques that show my ideas.

I mainly work with the coaxial video signal because it is an analog variable and not a digital binary signal. It makes the translation to picture having a lower resolution but the translation of the signal is less sensitive and shows what happens in the fringes of the signals range.

There is also a part of me that enjoys working with old obsolete tech. Instead of being limited to what others have programmed for me I can connect and build combinations of functions not available in commercial software. I also, by this, avoid the limitations of how many streams and layers of video a computer can handle in real time.

Every screen and camera is different. Each adding their personality when playing with them to feedback into a larger matrix of mixers and internal feedback mechanisms. I use layering and effects, mostly in ways not intended by the creator or for the average user, balancing on the edge of the stable signal and the unidentifiable. Adding modulation and signal synthesis. Redefining the format until results can be perceived and eventually 'aesthetically pleasing'. Some of my experiments involve translations to other mediums such as textile or sculpture. I am drawn to the aesthetics of science. To me this a pure form of art. The most minimal and abstract but at the same time perfect recreations for the understanding of an extended reality.

A video frame (24 or more per second) is unique and, through the techniques I use, shows universal patterns seen in nature from the microbes to the cosmos<sup>14</sup>. To me this shows that the machine, or rather the signal between machines, are on a very fundamental level using the same rules as nature. I like to see my camera sensors and screens as vector fields that react and create a picture that follows the universal rules of the physics of creation.

There is an aspect of time involved where even if the generated stream of pictures is rapid there is an idea that it could go on creating forever. It puts it aside from the normal repetition and duration of video and into something that is more like a stream of happenings. It's a chain reaction that grows and declines. Much like something that is living and breathing. I like to think that what i do are representations of organisms created in my ecosystem.

However, I don't look at myself as a creator, more of an recorder of these phenomena. Like a biologist trying to document the life of microorganisms or an astronomer studying faraway galaxies.

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<sup>14</sup> The Secret Life of Chaos (2010)

## **Beyond**

I want to make you feel like you are a grain of sand in the desert looking up at the night sky. Realising there are more stars in the universe than grains of sand on earth.

Then realising that the number of atoms inside you, as a grain of sand, are higher than the numbers of stars in the universe<sup>15</sup>.

The furthest galaxies we have discovered are 13.8 billion light years away. That means that the photons have been traveling since the Big Bang to reach us. But if time stands still at the speed of light it still hits you instantaneously.

Everything is a chain reaction, nothing is certain but never totally random.

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<sup>15</sup><https://www.universetoday.com/106725/are-there-more-grains-of-sand-than-stars/>

Inspirational reads:

Homo deus -Yuval Noah Harari

You are not a gadget -Jaron Lanier

And: Phenomenology of the end -Franco "Bifo" Berardi

Myten om maskinen -Alf Hornborg

Watchlist:

All Watched Over by Machines of Loving Grace

The Secret Life of Chaos

Ghost in the Shell (1995)