# I AM NOT A ROBOT

BY KARIN HANSSON

The development of artificial intelligence is said to be the next challenge for our Protestant work ethic. The essence of work, as something that in a capitalist society can be alienated, commodified and exchanged, is again being renegotiated. Traditionally, the development of human capital has focused on basic academic skills, the ability to read and write, to count, systematize and sort things into predefined categories. These are all things computers now are programmed to do for us. More progressive forms of education are already emphasizing the importance of developing children's creativity, independence and critical thinking, rather than memorizing and following certain rules.

Already today it is our humanity that artificial intelligences (AI) wants to access when our consumption patterns are mapped online. Our work online, what makes us valuable on the Internet, is foremost the act of being human. The greatest value is created when people are together with other people, like interacting on social media networks online. Another form of work people do online is called Human computation, a term for a kind of crowdsourcing where the work

that computers typically are bad at is delegated back to humans. It can, e.g., be comparing seemingly different things, or creating new patterns and categories. ImageCaptchas are for example a way to determine who is human and who is a robot online when logging in to an online service, as a way to hinder bots from spamming the system. But while people are using these tools they are also feeding AI with new data by adding more interpretations of the images.

Critics point to how this digital labour, this commodification of our worlds of life, creates an extreme form of alienation (Scholz 2013). Beverungen et al. (2015) argue that understanding the role of user work online requires a focus on work understood as a value production that takes place beyond wage labour in the workplace. The Marxist theorist Franco Berardi claims that this changing nature of labour requires a shift in our thinking about work relations (Berardi 2009): In industrial capitalism, the work is contained in physical objects controlled by the owner of the factory, but in today's semi-capitalist economy, it is instead one's creativity and social relations that are under surveillance. It is one's "soul" which is controlled by the capitalist economy (ibid.). The human labour is, thanks to market monitoring, exploited twice: the technology on one hand enables online commons, while on the other hand the data it produces (e.g. user behaviour patterns) is mined and alienated from the users(Andrejevic 2011; Scholz 2013), what the media theorist Christian Fuchs calls "the total commodification of human creativity" (Fuchs 2012, p. 56). Different aspects of this exploitation have also been studied, e.g. the working conditions of crowd workers (Irani & Silberman 2013; Martin et al. 2016), self-exploitation (Webster & Randle Keith 2016), and social media surveillance practices (Andrejevic 2011). The conducted studies often use methods from the social sciences focusing on economic and social relations. However, the aesthetic discourses in these contexts, as well as the materiality of the work, are almost completely ignored. In this chapter, I am therefore looking into the techniques and methods used to control our souls, extracting "humanity" in different forms online. I am curious about what this will tell me about this soul work. The method is to explore, in an associative way, the aesthetics and materiality of this value production.

## PROVEN TO BE HUMAN

I often feel a childish satisfaction upon signing in on a site when I can prove I am human. To avoid spam from countless robots, users on different online services must generally undergo some kind of test, such as typing the letters on a blurred text or selecting which images represent a "car", or just clicking a box that says "I am not a robot", proving you have the cognitive abilities that are specific to humans, which robots have been struggling to imitate for so long (Figure 1). Passing the test, which is used to keep robots outside and people inside, gives me a certificate that I am a real person.

*Figure 1. Detail from image CAPTCHA where the assignment is to find a "car".*

These image collections, which were not curated for reasons of aesthetics but selected because robots do not understand them, are like micro art exhibitions that in the absence of clear meanings could easily fit in a modern art gallery. Grainy and foggy images, maybe taken by a Google Street View photographer, with unconventional viewer perspectives like in an Edward Hopper painting, taken by automatic cameras or by mistake: A piece of a staircase, an angled ceiling, half of a red motorcycle, an empty road, desolate urban spaces. I am wondering where all the people have gone. The poor quality of the photos reminds me of images from the early history of photography, where the camera has been directed towards a still standing object as the light exposure took too long to grasp any moving objects. Like in Nicéphore Niépce's *View from the Window at Le Gras*, where you feel that it is a city landscape, but you barely recognize it, like in an impressionist painting (Figure 2).

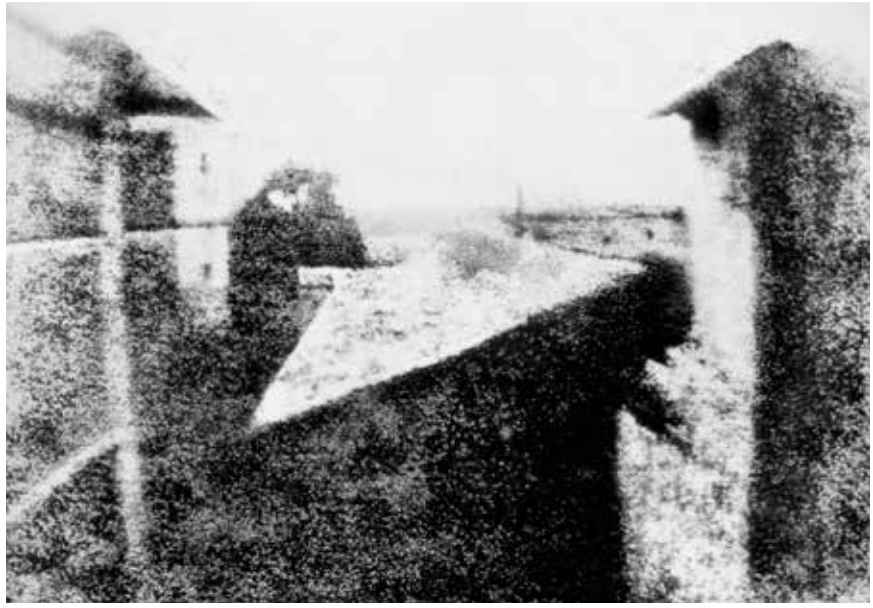

*Figure 2. Nicéphore Niépce (1826 or 1827) View from the Window at Le Gras.*

This work, these simple tests I manage as easily as walking, always make me relieved when I have accomplished one. They show that I am on the inside, like being in an exclusive club I feel entitled to (but not totally sure about), that I have a special value in myself that is undetectable and not negotiable. Like being 18, or entitled to vote, passing a passport control, or just belonging to the norm. A basic human belonging, a receipt that I am someone to be reckoned with. Though I clearly understand that it is not my cognitive skills that are specifically demanded, but that my work here is more about the data I might generate, this still gives me a childish satisfaction. I passed!

In real life, it's not enough to just show you exist by ticking a box. Throughout my life, I have constantly been performing in order to prove myself. I have worked hard to be accepted as one of the children in the group of other children, I have studied to be a good student. I have worked to get the opportunity to obtain work, and then performed well to keep my work. But that is not the case online. Being a human is my primary task here. Or at least to be like a human being. This is the value I add to this economy. On social networks online, it's all about understanding me, recognizing me, expressing me. Through this self-reflective work, I create my online self, and thus the qualitative data that marketers are looking for. They want to get to know me, my habits of consumption, my friends and their friends. They do not just want me to consume, they want to understand me and they want to be friends with me. I am the center of my own reality show; a show that goes on forever, without special storyboards and dramaturgic grips; image after image of edited life, where everything can be edited to perfection. Since everything can be perfect, the odd and the deviant becomes what is sought after. Photo apps that help us produce our life in pictures constantly add new filters we can use to make this life magical and multifaceted (Figure 3).

It is difficult to fully understand what all this data might be useful for, and maybe all those who mine the data may not understand either what these traces of a human being are good for exactly, but the

*Figure 3. Blurred selfies. Screen shot from search query.*

potential knowledge that lies there has a value per se that can be switched into other types of potential values in an eternal chain letter where it is important to be first in the chain, and of course the greatest. Today, it is apparently possible to break even with advertising revenue online: for example, Facebook sells more than $40 billion in advertising and Google over $100 trillion ("Facebook: annual revenue 2017," 2018; "Google: revenue 2017," 2018). However, many investments made towards the next "killer application" never return any economic value.

Especially in the late 1990s, in the gap between the old economy and the new, many investments tanked. On the other hand, communication agencies grew stronger, in parallel with the emergence of IT companies. Communication agencies develop the very essence of the values created online, where new and globally dominant public spheres emerge beyond national level and control. In this attention economy, it is fundamental to understand the user's behaviours and motivations, and gain their attention and trust. Therefore, it is important as an actor in this field to know that the users represent real people, not copies, but legitimate human identities.

All these possible values projected on this human data make me think of Gogol's novel *Dead Souls* (Gogol 1842), a novel that takes place during the break between the old feudal society and the new industrial society, in the tension between a society with clear hierarchies and relationships where one's position was determined by one's status and a more meritocratic society where one could create a position for oneself through hard work, impudence and some luck. The novel's hero Pavel Tjitjikov's plan is as simple as it is epic. In the Russian feudal society, the serfs were counted once a year, and an amount was then paid in tax for the rest of the year. However, people are unreliable capital: they can run away, get sick, or even die. If something happened after the date of the counting, the landlord was still forced to pay taxes for the dead for the rest of the year. It is these serfs, these dead souls that make up the merchandise that Tjitjikov is interested in, and the surprised landlords are more than happy to give away their dead serfs to this modern entrepreneur who, on paper, becomes a rich man, owner of many souls. Like a Mark Zuckerberg of the 19th century, he has in theory control of many souls, which he can use in an economic game. Tjitjikov has thus quickly identified both the old social codes and the new emerging economic and legal structures. By playing the system, and systematically exploiting a glitch in the system, he creates a whole fortune by buying dead people, in the gap between the old and the new, the patriarchal feudalist and liberal capitalist. Tjitjikov is not a traditional patriarch who lives off what the land gives and provides for his serfs from baptism to burial. He is an adaptive mind, a wolf in sheep's clothing that acts like a friend but does not live up to the real meaning of this human agreement. Not so different from one of today's online bots, he nestles into the systems where there is an opportunity.

Pavel Tjitjikov is not a major personality, but with his modest behaviour and his phenomenal adaptability, he succeeds in getting everyone in his surroundings to feel that they have met a soulmate, and he quickly creates a large network of contacts. If he had lived today, he would probably have many friends online. Acting as a human being is in real life something that can take a lifetime to learn. On social media it is seemingly easier to know what to do in order to act as a human being. Everything is given some kind of score, which is

much easier to interpret than subtle social signals. Confirmation in the form of likes and comments is doled out at a rapid pace, but only when doing something that other people recognize and are amused or seduced by. The identity is performative, it is what I do, and how it is recognized by others.

The digital networks are also curated by algorithms, governed by the norms and behaviors the marketers and programmers have defined as appropriately human. Everyone who has used their credit card in disparate places has learned that the bank will call you to make sure that you are where you seem to be, if e.g. you have bought a bus ticket in St. Petersburg today though you were in Sheffield yesterday. The data my consumption generates creates traces. Consumption shows that I am in the real world and, unlike a robot, I buy food and hotel rooms, and I can only be in one place at a time. In countries like the United States, it is primarily your consumption that describes your identity, and it is the only thing that proves your identity in the absence of more centralized records. Having a credit history showing that you are a trusted consumer is everything. The more credit and the greater the consumption the better. It shows that there are many who trust me and that I have a high turnover. My human identity will be vouched for by as many sources as possible, and I should consume well and according to my previous patterns. When the patterns are disrupted, the alarm bells ring.

Obviously, there are many reasons why social media giants want to control who is generating the data. One reason is to ensure that everyone who generates data is human, and the right human, as they want to learn something about humans through this data.

While it is becoming increasingly difficult to prove that robots are not human, it is also becoming increasingly difficult to prove the opposite; that you are human. It started with quite simple blurry letters that were to be interpreted. The so-called CAPTCHA (Completely Automated Public Turing test to tell Computers and Humans Apart) was developed as a security tool, showing distorted textual images, to be used to ward off bot attacks and spammers. Because a CAPTCHA is controlled by a computer, as opposed to the Turing test, which is a test by humans to determine if the computer is a computer, it is also called the reverse Turing test. One of the earlier patent applications

for a similar idea details that "The invention is based on applying human advantage in applying sensory and cognitive skills to solving simple problems that prove to be extremely hard for computer software" (Reshef et al. 2004).

As robots become smarter, CAPTCHAs have become increasingly unclear, combining different patterns. It has become more difficult to figure out which characters to write, a *v* and *u* or a *w*, or if an indescribable form is actually an *f* and an *r* close together, not to mention all the image CAPTCHAs that make one feel like a complete idiot in a matrix-based factory. As a result, these phenomena cause conflicts not only because people experience difficulties in using them, but also because people with disabilities such as dyslexia or vision problems are having problems solving them. In addition, there is of course a problem with the feeling of distrust that may occur when innocent visitors are forced to fill in the CAPTCHA test over and over again and fail.

Over the years, the CAPTCHA has been improved so much that today it has reached a level where the average user's input is required only on very rare occasions, and instead of showing (non-suspect) users a test, an empty box is shown where the user just clicks to verify that one is not a robot. Instead of the user's visual recognition, it is the user's own patterns that are considered, such as mouse movements, time spent on the site, browser type, other actions, and more, to properly distinguish between a legitimate user and a bot. Newer mechanisms do not interfere with the user at all, even to verify that it is not a bot. First, if the user does not behave like a human being (i.e. a bit messy and unsystematic and unlike any previous visitor), a visual CAPTCHA window will open. That which reveals a robot, what distinguishes it from a human, can be very subtle, and can involve the way the user touches the mouse just before the crucial click.

But no CAPTCHAs really can completely distinguish people from robots; everything can be programmed, even messiness and unpredictability. But they make it harder. It is expensive and difficult to simulate a human being, and there is nothing that can easily be scaled up to apply to more people. Even in a crowd, people are human and totally unique. In order to simulate a crowd, it is important to make every robot special for the crowd as a whole to become credible.

## SOURCING HUMAN SENSORY AND COGNITIVE ABILITIES

Large resources are thus devoted to the vain ambition of making computers behave like people, in order to make us believe they are people. For why should computers really be like people when there are people? As the Economist described tellingly:

> The most obvious problem with Turing's challenge is that there is no practical reason to create machine intelligence indistinguishable from human ones. People are in plentiful supply. Should a shortage arise, there are proven and popular methods for making more of them. (Editorial 1992)

However, even though CAPTCHAs are no longer useful for security reasons, as they are obviously easy to fool, they can also be used as a way to transcribe large amounts of text and images in digitization projects. The Google CAPTCHA service is free to use and is therefore used by both Facebook and Twitter, among others. In exchange, Google uses user input to help digitize and decipher text. According to the security expert Shuman Ghosemajumder, in 2015 on average 17 person years per day were used towards resolving different types of so-called re-CAPTCHAs (Ghosemajumder 2015). According to Google's reCAPTCHA site, in the autumn of 2018 hundreds of millions of reCaptchas were made. Researchers have estimated that it takes about 10 seconds for a user to make a CAPTCHA (Bursztein et al. 2010). Though the idea of this type of micro-task is that it can be done quickly and for free, you can also be paid to solve CAPTCHAs, as there are companies that want to pay people to spam some sites with information.

On a global level, people are still cheaper than computers. Indirectly, this also means that advertising companies are employing clickworkers to get around CAPTCHAs to reach, for example, Google users'

social networks, while also acting on this social network by creating fake accounts. This creates an interesting circuit in the system: people who pretend to be other human beings to access humans' information while themselves making up an increasing part of this information. Social media users are not equal; for example, in 2017 Facebook Canada and US users spent almost $26.76 a day in advertising coverage, comparing to the world-wide $6.18 a day and Asia Pacific $2.52 a day ("Facebook: annual revenue 2017" 2018). Some humans whose consumer value is high create a market that attracts human labour (with lower consumer value) acting as if they were part of this market by performing as a trustworthy human (with higher consumer value) for payment. Therefore, it is not always robots that try to resemble people; it is still more efficient to use human labour to act as humans.

Humanity's unique cognitive and emotional abilities are also exploited in so-called human computation, which is a methodology that outsources specific clearly defined tasks to humans, and allows the computer to coordinate these so-called micro-tasks. One can say that this approach uses differences in abilities and alternative costs between humans and computers to reconcile computer and human abilities. A sort of matrix system where people's abilities are harvested more efficiently by the system. In the movie *The Matrix*, people were used as a kind of battery in the world of machines, and as a way of keeping them calm and happy; the brains of people were linked to a fantasy world, the Matrix. The infrastructure was managed by computers that helped keep the bodies alive and content.

What then is harvested in the systems of human computation? How can we understand the values human labour creates in this context? Are we soon to be reduced to a kind of emotional batteries without understanding the structure we contribute to? To discuss this, we first need to have a common understanding of how a computer works, and how essentially different a computer is from a person. For example, in order for a computer to draw something, one must tell it exactly *how* to do it, and it will do it. But you cannot tell it *what* it should do. Secondly, computer graphics systems consist of precise coordinates and measurements. The values that are "larger than", "inside", or "beyond" are completely incomprehensible for a computer. But like humans, computers today can learn from experience,

or rather, from what is being fed into the system. So far, this input is mostly about text and image, and the more that is put in, the greater its ability, as the computer compares new input with old and in this way comes to an understanding of this new input. But for this to be "understood", people must first encode the material so that the computer not only sees images and text but also links this to more abstract concepts, like a language. The computer cannot learn from 0 but must be fed with clearly defined input data. AI researcher Fanya S. Montalvo (1985) described this challenge for AI development as "The problem of representing, acquiring and validating symbolic descriptions of visual properties". This sentence describes in its simplicity the extent of complexity involved in understanding a pure image and then describing it to someone who does not understand the meaning of the image based on a living multisensory experience, but in terms of ones and zeroes.

In order for an AI to identify an image it simply compares exactly what is in the whole picture with all the images in its memory. This comparison is made through exact descriptions like pixel position and colour, or if there are some geometrically defined curves that can be represented numerically. It is through this comparison of bits and pieces that other similar images are identified, and the result depends on how these images have been described earlier. You can look at AI as a prisoner of language. Here AI is not so different from people, as we can't really describe something that is not in a language that other people understand. Thus, there is a conservatism in the system, not that different from people who isolate themselves from other cultures. One recognizes only what one recognizes and has words for. Computers can only incorporate new data through the categories set by the system, and the content of the images cannot be read as a whole, but in detail, row by row, pixel per pixel. Therefore, computers can describe completely abstract images as having an exact meaning, simply because some pixels match up with images that are categorized with this meaning, although the image as a whole shows something completely different, as Figure 4 shows.

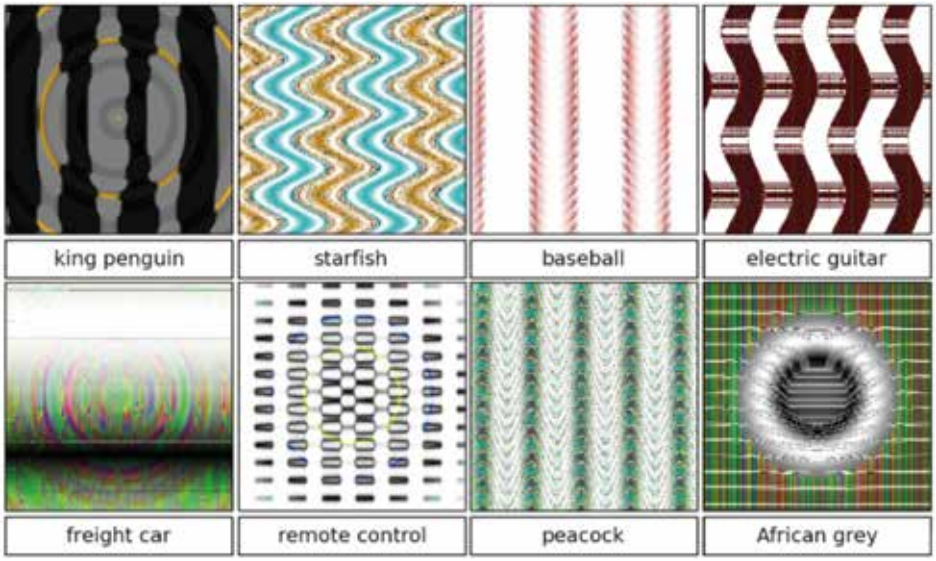


*Figure 4. Evolved images that are unrecognizable to humans highlight differences between how Deep Neural Networks and humans recognize objects (Nguyen & Date 2015).*

*Figure 5. Detail from image CAPTCHA where the assignment is to find a "cat".*

Take for example a picture of a cat, which sounds like a rather trivial task to identify (Figure 5). A cat is quite simple to define, it has fur (with some exceptions), it has four legs, it has eyes and a nose. It's less than a human being. But compare two pictures of two different cats systematically and there are very few things that match as the computer compares pixel by pixel.

Humans are able to quickly and seamlessly identify the environment they are in as well as the surrounding objects, all without much effort or even consciously noticing. These skills of being able to quickly recognize patterns, to generalize from prior knowledge and adapt to different environments are skills that machines have problems with. In order for the computers to learn from the data, it must first be selected and cleaned. For example, when training the AI on faces, one must first go through all of the raw data and make sure each image is a face, and of good quality regarding lighting conditions, colour, tone etc, and then, crop all images in the same way around the face, and line them up so the main features are aligned. This all happens before the data goes into the neural network.

## WORK FOR REAL PEOPLE

Thanks to the overabundance of images online that lack proper metadata the work of describing these images is overwhelming, even though machines can help out with a rough categorization. There are certain areas where the human touch is especially needed. When looking, for example, into the citizen science project at Zooniverse, the work can be anything from identifying galaxies and stars, as in the Galaxy Zoo project, where human annotations of galaxies are helping scientists. Similar methods using the Zooniverse platform are used to identify debris on beaches, to map the social life of whales, to track changes in coastal environments by identifying marine invertebrates, or identifying different kinds of storms, among other projects (Figures 6-9). Other projects such as OpenStreetMap use a combination of methods to annotate satellite maps, which has shown to be especially efficient in disaster recovery (Figure 10).

*Figure 6. Image from the Zooniverse citizen science project Beluga Bits (2018).*

*Figure 7. Image from the Zooniverse citizen science project Invader ID (2018).*

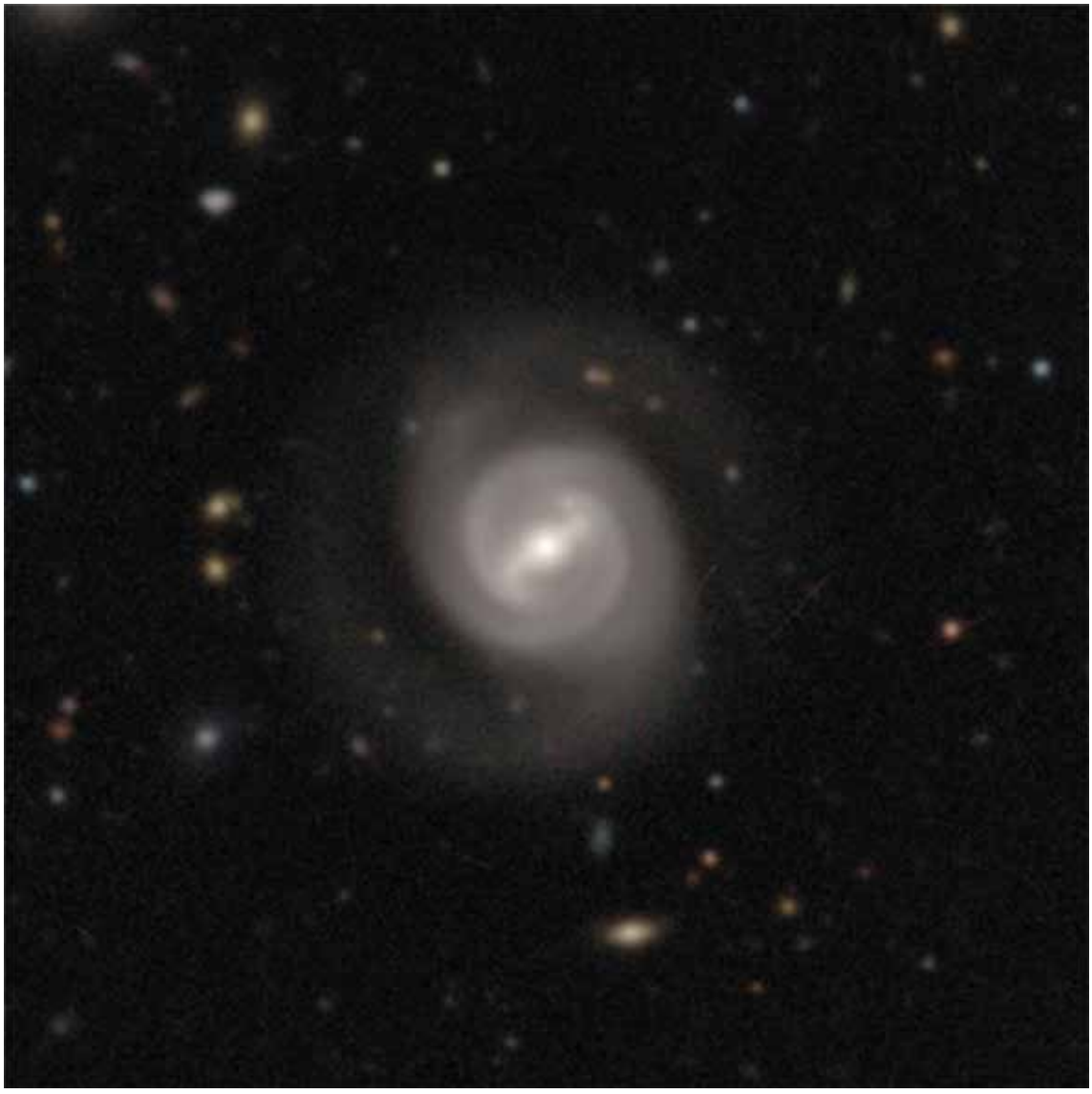

*Figure 8. Image from the Zooniverse citizen science project Galaxy Zoo (2018).*

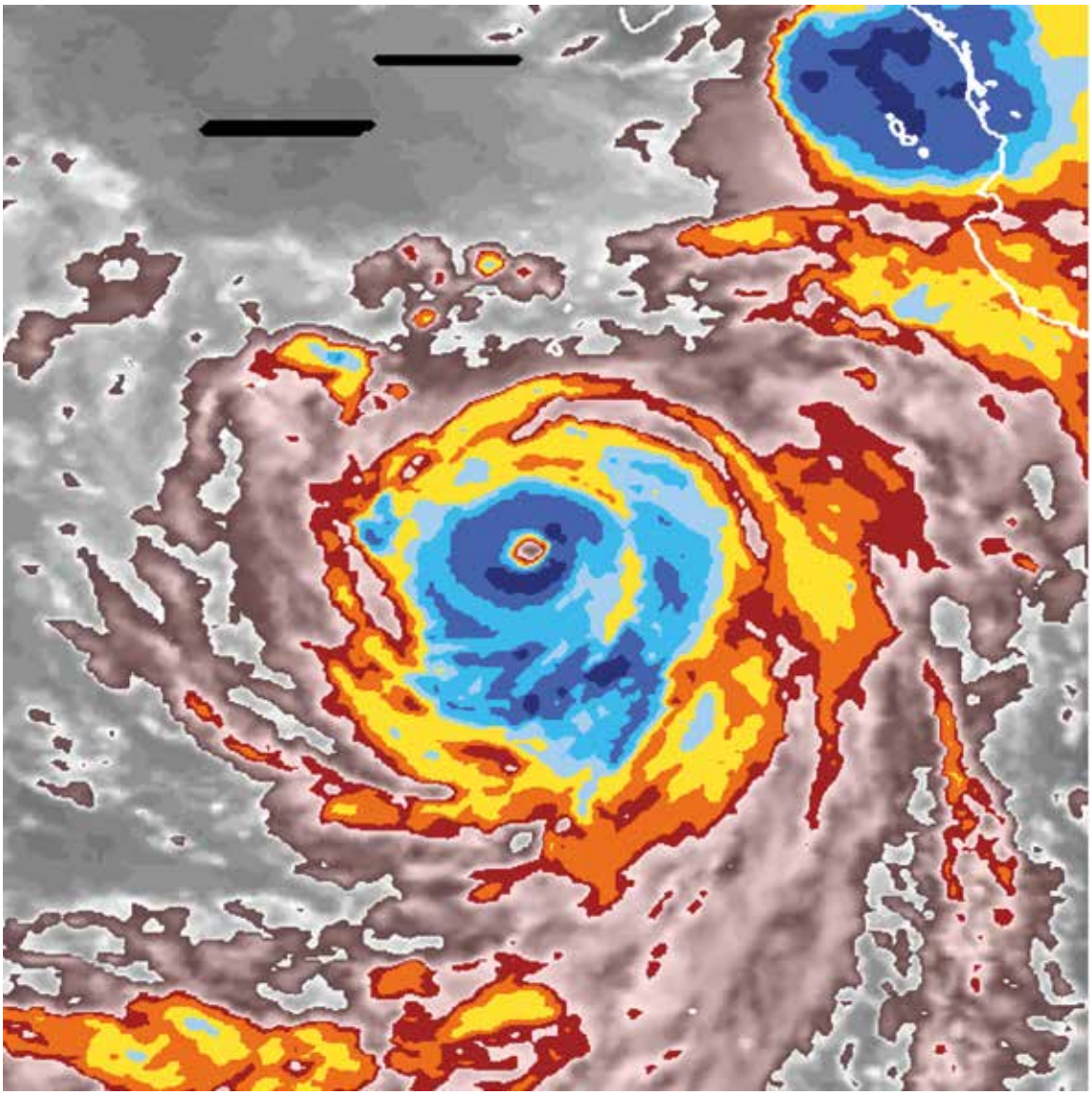

*Figure 9. Image from the Zooniverse citizen science project Cyclone Center (2013).*


*Figure 10. A still from video visualization of the response to the Haiti earthquake 2010 by the OpenStreetMap community. CC-by-CA www.itoworld.com. Map data www.opemstreetmap.com, 31 Jan. 2010 (OpenStreetMap - Project Haiti, 2010).*

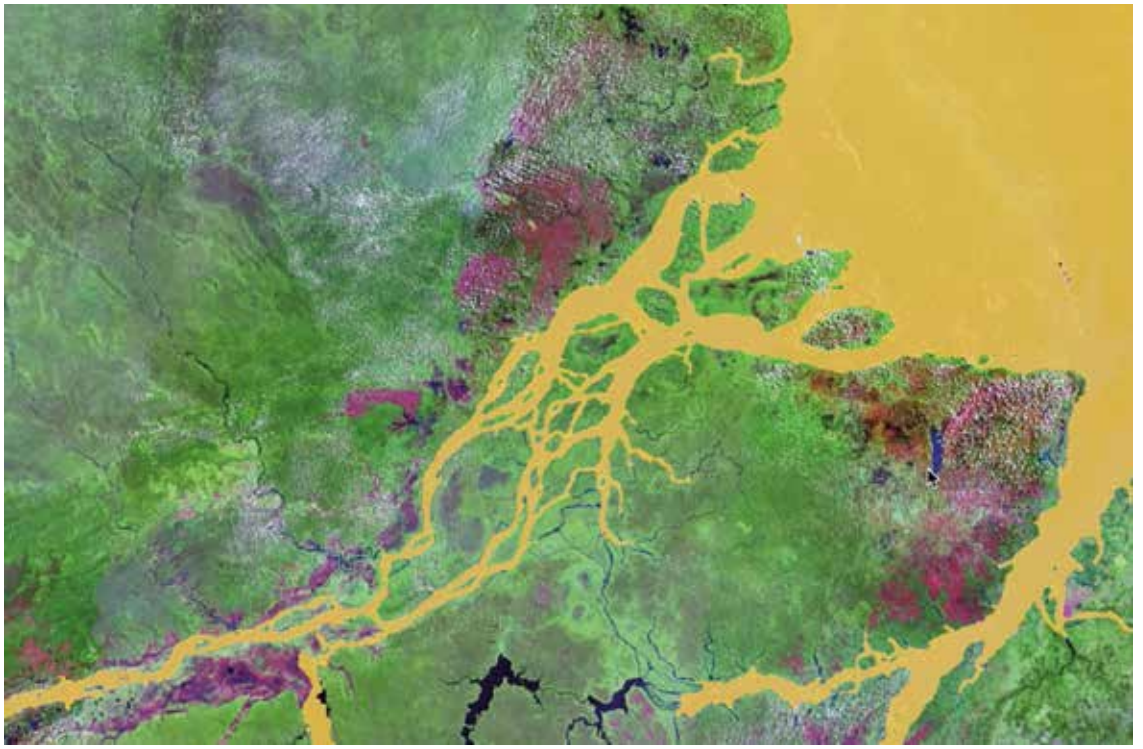

*Figure 11. Image annotation of satellite images in Figure Eight (Appen company, previous Crowdflower).*

Although created for very different purposes, the images have in common a rather poetic mysticism. They are blurry and evasive and what they actually mean is open to interpretation. They describe the world as infinite and unreal, creating a feeling that, despite modern science, there is still so much to be explored: a growing map, the glimpse of some kind of night animal, dried algae shaped like a spiral with a white unidentified object, whales that play in strange light phenomena, some sort of algae that blossoms like red and orange explosions, spiral galaxies and violent cyclones. Everything is up to us to define, categorize, and discuss.

Annotating this data makes it readable by computers and can then be quantified and used for research and machine learning. AI can also often do the initial rough work with annotation and provide suggestions from existing categories. As in Figure 11, the program automatically selects areas based on tone and values, which can then be modified and categorized by humans. Playmate, one of the companies based in Bangalore that uses people in this way, says that they teach machines common sense, but that teaching is labour intensive.

> We've all heard the old adage, "AI is going to take over our jobs!". That's not true. Machines are inherently dumb. For them to ever replace humans in menial tasks, they need to learn how to see, think, act and make decisions like we do - in other words, "teach them common sense". At the core of our solution is that if we show enough possible scenarios, machines will learn to behave like humans. It would take them 1 million images of cats and dogs in order to learn to differentiate them. ("Data Labeling Platform for Computer Vision," n.d.)

What this company does is thus to provide a platform where people are motivated by money or other incentives to draw and describe what they see in pictures. Or as they describe it on their website, they are "building the cognitive infrastructure to make Artificial Intelligence 'intelligent'." The more AI, the more data is needed, and the greater the variation and breadth this data has, the more useful it becomes. Big data and machine learning mean, in this reading, not much of the same data in any kind of uniformity, but many different kinds of

data, annotated in detail to create as much complexity as possible. Here, the work opportunities for people are undeniably endless.

Companies also justify their existence by emphasizing that they create new forms of work, work that can be done flexibly and at any time. Algorithms are not only fed with data, they have become employers as well. There are complicated logistics behind interfaces like Amazon Mechanical Turk or Uber, which is about providing an infrastructure for this labour market for micro-tasks. This has not surprisingly encountered resistance from trade unions and other human rights organizations. The algorithms that on the one hand can be seen as a fair and rational way of distributing work can also lead to devastating consequences for the worker who does not fit into the system but behaves outside of the desirable pattern. It becomes difficult to argue with an algorithm, whose actions can be difficult to understand for both managers and workers, like a huge bureaucracy of which nobody can really have an overview. These platforms create fast-monopoly positions in their markets, so it is difficult to find work outside of this matrix (Rosenblat 2018). Take, for example, Uber, considered by many drivers as relatively fair and transparent, as well as a job that is possible to do flexibly, but which on the other hand can be perceived as unpredictable and unfair, as one sometimes does not understand the rationality behind the different decisions the system makes. If you do something wrong you get excluded from the network and then you completely lack the infrastructure necessary for a taxi driver. Similar trends are found at Amazon Mechanical Turk, where workers have little or no opportunity for an overview of their work. The same may be true of much of the work done online, whether paid in cash or paid as free entertainment or part of consumption, that it is all organized by complex algorithms, and cannot be controlled or surveyed. The technology has turned us into "digital serfs" without property or wealth, with access to a wide range of internet-enabled devices and services but without any control (Fairfield, 2017). Like previous generations of the working class who lacked property and means, the digital serfs still find distraction from their dreary life, but unlike their historic comrades, the opiate of the masses today is not religion but the ubiquitous present entertainment online, entertainment that is peer produced.

## FEEDING THE MACHINES WITH REALITIES

In the early 2000s, my students and I got help from the Stockholm police to create an image of a fictional girl using a newly acquired facial composite software (Figure 12). However, it was difficult to create a girl's face when the database consisted of the British police's image register of criminals and mainly reflected those in the penal system. Today, the technology has evolved and hopefully this database has become more inclusive. Or maybe not. It is necessary for someone to first see this as a problem, and as long as most of those who are charged for committing crimes are adult men, there may be no reason to be able to create images of girls. But this example shows the impact of data society. What is not entered into the system is not available. The pictures, the presumptions and ideas we feed into the system come back as a result.

*Figure 12. From the art project Alias Lova by Karin Hansson. Fictional portrait designed using facial composite software.*

We can feed algorithms with any kind of human stupidity and the algorithms magnify it. An example would be facial recognition tools that recognize white men, but have difficulties identifying all others, especially black women (Buolamwini & Gebru 2018). In a study of three different tools, researchers found that gender was misidentified in less than one per cent of lighter-skinned males; in up to seven per cent of lighter-skinned females; up to 12 per cent of darker-skinned males; and up to 35 per cent in darker-skinned females (ibid).

It is hardly the first time that facial recognition technology has been inaccurate. In 2015, the Google Photo app mistakenly identified a black couple as "gorillas". Research on facial recognition technology used for law enforcement purposes in the USA shows how facial recognition tools may disproportionately implicate African Americans, as they are more likely to be stopped by the police and subjected to face recognition searches than other ethnicities (Tiku, 2018). The problem here is that the data used has not been representative and multifaceted; it may also involve how the programs are written, and by whom. The tech industry is not known for its diversity. A rapport from Google shows that 69.1 per cent of their employees globally are men, and in the USA, Google's workforce is 53.1 per cent white and 36.3 per cent Asian, but only 2.5 per cent black, 3.6 per cent Hispanic and Latinx, and 4.2 per cent multiracial (Tiku 2018).

Sometimes this kind of disclosure can be useful, because what happens is that otherwise invisible norms have been programmed, enlarged and made visible. Systems can have glitches: it may be a software-related issue, a spelling mistake or a cultural misconception, which causes norms to be distorted or exaggerated, and therefore allows us to detect structures we otherwise missed. An example of how such a glitch was used as a way to raise awareness is a UN advertising campaign against sexism that utilized the phenomenon that Google's search algorithms generated a search result hostile to women ("UN Women ad series reveals widespread sexism" 2013). When you post a search query, based on what you and others have searched for earlier, the algorithm suggests a conclusion for a sentence started by the word you type in the search field. If you empty your search history cache, the result displayed takes its data from a general database, and in this case the result reveals the extremely misogynist but

common discourse, which may have always been there and is now documented online (see Figure 13). When typing the phrase "women should", the search engine comes up with suggestions for the rest of the sentence like "stay at home", "be slaves", "be in the kitchen" and "not speak in church".

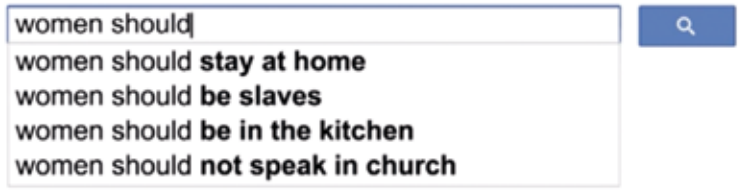


*Figure 13. From a UN Women promotion video (Memac Ogilvy & Mather, 2013).*

Here, the technology shows the breadth of the practices that set limits for women globally. It shows how we program discriminating social structures through repeated micro speech acts. This is not something you change easily, but big data means we can prove the problem is real and not just a nagging feeling. Google has now removed this "bug" in the system, and it is no longer possible to get misogynist suggestions for how to continue sentences such as "women are". But this does not mean that the search data that is the basis for this is not misogynist, just that Google has blocked us from seeing this. Since similar things happen continually, Google now monitors this and ensures that we are not exposed to suggestions that are not politically correct and child-friendly. Here, one can say that the "algorithms" protect us from seeing this aggregated image of what people are looking for on the internet.

Another example of how misogyny, racism and other obscure views come to the surface when human data produced online is used as a basis in machine learning is Microsoft's online robot Tay (Figure 14). Tay was released on Twitter to communicate with and learn from other Twitter users, but she was quickly removed when she developed

into an overly politically incorrect representative of Microsoft, who learned especially from the internet's more obscure and hateful parts (Hunt 2016).

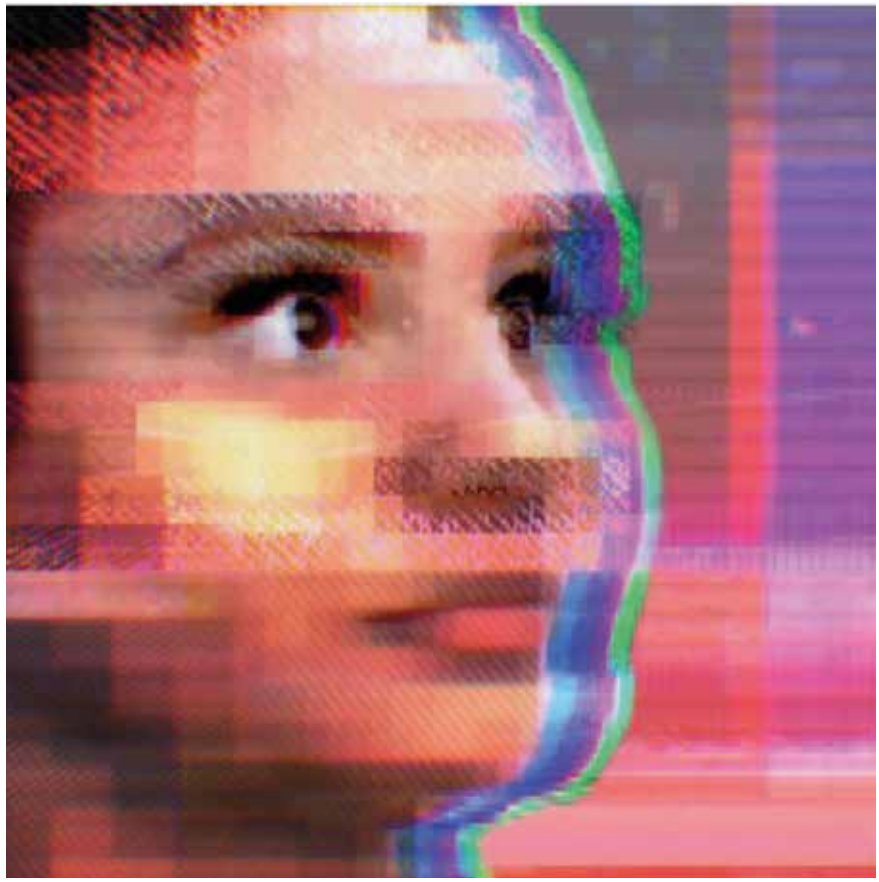

*Figure 14. Microsoft Tay Twitter image. Press image by Microsoft 2016*

Recruitment software is another example of how machine learning goes wrong based on the data on which the machines are based. Recruiting is a big and time-consuming job that is tempting to automate. By comparing new applications with old and successful ones, you can exclude a large group of applications, saving time. The

problem is that the consequence of the fact that a majority of men work in the tech industry is that it becomes one of the parameters AI judges the applications against when they are "thinking" themselves (Cook 2018). It is logical: since being a woman does not usually lead to jobs in this sector, it is therefore reasonable to exclude all female applicants. If the data is not representative of what you want the machine to "understand" and carefully curated, the result easily becomes strange, something the artist Memo Akten has explored in his work, for example through feeding neural networks with all the images from an image search that came up when he searched for a famous politician. The software he uses then returns how the computer "understands" based on the content of the search and constructs new images based on this search in the digital memory. Since the images in the database are not cleaned and corrected, and may not always show a human, but a pig or a Halloween pumpkin, the result reminds one a bit of monster images from a horror movie (Figure 15).

*Figure 15: Memo Akten (2017) Dirty Data.*

Memo Akten's artworks visually describe how computers make sense of data. The images he generates in this way reminds one a bit of images from the early days of the camera: nearly abstract images that vaguely resemble something, escaping recognition like a memory from a dream you cannot describe.

Another artist who also uses neural networks as work material is Anna Ridler. In the work *Traces of Things* she explores what happens when information is reproduced and recreated through artificial intelligence (Ridler, 2018). She was inspired by insights from neuroscience, that the process of recalling a memory activates the same processes as the act of creating a memory. Thus, every time we remember something we are also actively recreating it.

AI does not exist beyond the reality our language has created. Consequently, human work is needed, at least for a little longer, to feed the digital networks with annotations of images and, in particular, to create new images and definitions that challenge the old ones to prevent the systems from becoming too conservative. Thus, if the data you feed the system with is not representative of what you want to understand, the machines can make it more difficult and harm more than they help, without anyone understanding exactly what went wrong. Most important therefore is the representativeness, complexity and diversity of the data. When the qualitatively created data becomes quantified, the patterns and paradoxes become apparent and can also create new and distorted images, amplifying our prejudices and inequalities in a giant funhouse mirror, where the mistakes in the data create grotesque exaggerations, or brand new images.

It's complicated to understand what's right in one context and not in another and to do it in a context online where time and space do not differentiate clearly between different social places. It can, e.g., be difficult to tell the difference between art and pornography. Cultural institutions have also been complaining because of their problems with promoting art through social media because of the automatized censorship on nudity (Johansson 2018). AI's difficulty in understanding, combined with the amount of data, can lead to unintended consequences. Companies that deal with social content online are forced to hire large numbers of people to ensure that the data does not get dirty and that inappropriate content is cleansed before reaching the surface in large quantities (Solon 2017). The work of these e-trash workers keeps getting bigger, and is often a hidden and low-paid job. Researcher Sara Roberts compares this work with other types of trash work, which is not only given a low value but also something exported to the third world, like much of the western

world's garbage (Roberts 2016a, 2016b). Like sorters, they go through large amounts of junk to decide what's valuable and what to throw away. Now, these human cleaning workers not only take care of our material trash but also the garbage from our digital dreams. There are reports of how these workers become mentally ill from these working conditions, where they are forced to see humanity's ugliest sides (Williams, 2017). Human empathy is what makes this work so difficult, but it is also a prerequisite for the work.

## CONCLUDING DISCUSSION

To summarize this overview of tools and context where our humanity is put to work in various forms: first and foremost, we create data tracks, by browsing, interacting, and consuming media online. We also create images of the world as we see it, we digitize them and we publish the images online. We also understand the pictures, we categorize them and describe in detail what we see in the pictures. We are motivated to do this as a way of expressing ourselves, as a way of communicating with each other, and/or as a means of making money.

This human capital, defined as the skills, knowledge, and experience possessed by an individual or population, is valued online because of:

- Our ability to perform as a human being; a specific person with unique ways of doing things.
- Our ability to create relations with a community of other special persons.
- Our ability to appreciate the odd and the deviant.
- Our ability to identify forms within noisy graphical environments, signals and patterns within an audio, video or animation sequence.
- Our ability to produce and understand complexity.
- Our ability to identify, understand and distinguish

the environment we are in as well as the objects that surround us.

- Our ability to understand patterns, generalize from prior knowledge, and adapt to different environments.
- Our ability to produce memories of something, and as we remember also to actively recreate.
- Our ability to make and understand everything incorrectly, to misinterpret and "queer" the meaning of things and thus enable cultural changes.
- Our talent for misunderstandings and misinterpretations so that the concepts better match our bodies and our wishes.
- The ability to distinguish between art and pornography
- The ability to have empathy.

The way these values are mined can be seen as a form of industry where it is not only the work of our bodies that is being extracted but also, as Berardi (2009) proposes, our souls that are extracted and controlled by the capitalist economy. Thus, like the serfs in 17th-century Russia, it is our human bodies and human cognitive abilities that are the values we contribute with in this economy, but unlike feudal times it is not religion that makes us easy to control, but it is the reflections of ourselves in multiple social media mirrors online that enslaves us in a narcissistic introspection.

This study began from a will to understand this soul work, the "human essence" in people's work online, by seeing how this humanity is used in new technologies online and what aesthetic expressions this can take. It shows that what is valued online is people's ability to behave as credible people, thus proving their humanity in different ways by moving around in unique and unstructured ways, as well as producing data that provides a complex image of the world. Furthermore, our cognitive abilities are also used to define these images of

the world in comprehensible categories that make the data possible to systematize. The data that people are particularly good at producing and categorizing is complex, blurry and hard to define. It reminds us aesthetically of the childhood of photography, where blurred landscapes were developed with great effort and without much accuracy. Nevertheless, the photograph was initially seen as scientific evidence. A sign of other dimensions of reality than those we perceive with our senses. A way to look beyond our bodies' limiting frames.

This is not so different from the trust we today give "algorithms" online. Today, we do not look at pictures as the truth. We are too aware of how easy these are to manipulate. Just like with photography, we need a critique of what images we feed AI with and how we set up the system, and from what perspective. What we put in will come back, magnified and distorted like bad dreams, and constitute what we consider to be our reality; what will become our reality. Marketers would like to sell AI as a kind of oracle, which is understandable. But instead, we must see AI as a bunch of gigantic mirrors in direct interaction with people's different perspectives and prejudices.

Instead of seeing technology as a mirror of reality, or something more than that, we could use it as an aid to identify prejudices and structures. Like a picture, even a bad picture, it can help us understand how these processes take place. It can also prevent us from making things worse, protecting us from our own humanity. Just like industrial capitalism initially suffered from unhealthy working conditions and production processes, to gradually become more and more regulated with respect to people and nature, we need a critique of how these new production conditions create unhealthy and monstrous realities. The concept of hegemony is therefore central when interpreting online communication practices, since as long as human subjectivities confirm hegemonic practices, they are not autonomous. The algorithms aren't intentionally biased, but the selection of data and the curating of it may enhance differences.

The internet is a huge archive, a collective memory. Every time these memories are brought up and reused they are not only reproduced, but slightly recreated. We can only speculate as to how our memories will be used and recreated through AI, and how this in turn will bring us new memories. However, AI does not exist beyond

the reality our language has created. Unlike computers, people exist before language. We are also often stupid, and we can misunderstand each other or say something wrong; therefore, language (despite the impossibility of being understood without language) can always adapt to our ever changing social and economic reality. The hope for future development is, according to Judith Butler, precisely this ability to misunderstand or mistake the concepts so that they, at best, better match our bodies and our desires (Butler, 2004).

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