TITLE:

ALGORITHMIC BEHAVIOUR UNDER THE SPELL OF SURVEILLANCE CAPITALISM

"Don't believe everything you read on the internet!" - Socrates[1]

This text accompanies as a raw theoretical repository the exhibition on display at Babel visningsrom for kunst (Babel Art Space) during Meta.Morf 2020 in Trondheim. Reciprocally, the exhibition is a toy model of the ideas and methods presented in this theoretical blueprint.

[1] Unidentifiable source, but circulated on the internet as successful meme

BEHAVIOURAL SURPLUS and MACHINE INTELLIGENCE

The control of the production of wealth is the control of human life itself.[2]

Hilaire Beloc

What do we address when we say AI? Are we talking about algorithms, computational hardware, tech-corporations, omni-sentient beings or just machine learning? AI is surrounded by a lot of categorical confusions and delusions, and the discussions in popular media are no different. Most articles emerging from the mainstream media on AI are often hyperbolic or sensationalist with, on both sides, their sectarian celebrities. But what else can we expect from this prototypical *pharmakon*[3], possessing both disease and cure that expose visions of a future where it has become "the worst or best thing that ever happened to humanity?"[4] And, on the other hand, hype and relentless opportunism is proving a Trojan horse.

During the distractive hype on AI, the industries, predominantly the 'five biggies' – Amazon, Alphabet's Google, Apple, Facebook and Microsoft– have populated the public domain with 'black boxes' and 'crystal balls'.

AI, under the umbrella of 'big-data', has evoked a massive industrial and academic concentration on building products and services to collect personal information and compute collective profiles, but first and foremost we've seen a paradigmatic shift in economic and political operations that has presented itself as the New Age: *surveillance capitalism*.[5]

The vast and extraordinary analysis of the present state of Capitalism presented in her seminal book *The Age of Surveillance Capitalism*, Shoshanna Zuboff outlines which strategies and foundations tech-corporations abide to, and what makes their strategies so successful: *behavioural surplus*.

Behavioural surplus is essentially the 'game-changing asset' that enables tech-corporations to generate profit from raw data that is extracted by every computer-mediated interaction. Extraction, Zuboff explains, "describes the social relations and material infrastructure with which the firm (Google) asserts authority over those raw materials to achieve economies of scale in its raw-material supply

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[2] HAYEK, F. A. 2001, The Road to Serfdom, Routledge & Sons, New York

[3] STIEGLER, B. Automatic Society: The Future of Work, Polity Press, Cambridge (UK)

[4] https://www.theguardian.com/science/2016/oct/19/stephen-hawking-ai-best-or-worst-thing-for-humanity-cambridge

[5] ZOBUFF, S. 2019, In the Age of Surveillance Capitalism, Profile Books, London

operations".

Both in 'classical' and surveillance capitalism, the production of surplus value and behavioural surplus obscures relationships in the process of production. The commodity form, as Marx taught us, is the material manifestation of labour power, but also a shell that obscures the relationship between workers when it is reborn as money in its exchange on the market. The main difference between surplus value and behavioural surplus though, is that the latter is generated with almost a 'zero investment cost', contrary to Marx's surplus value, that can only be generated through the exploitable parameter of labour power.

Users, or more accurately agents, as we will discover later, are neither workers nor consumers: "there's no economic exchange, no price, and no profit."[6] Users are not paid for their labour, nor do they operate the means of production. This phantom type of labour continues to be unacknowledged, has become almost the standard in machine intelligence projects, and should be added to what's already been formulated as 'ghost work'.[7] The imaginative projection in the media that AI is a panacea that runs on magic pixie dust is built upon a false premise, because if we ignore the command "pay no attention to the man behind the curtain" we see an army of workers optimising, correcting, parsing, and labelling data for machine processing.[8] This is not only outsourcing precarious labour but also obscuring that academics spend 25% of their job on this deadening labour.[9] It is often heralded that a company like Facebook only has 80,000 employees for its massive billion-dollar enterprise, but within that we tend to forget the other 1 billion operators in the form of users, whose labour goes unpaid. If we would consider this as substantial it would turn Marx's labour theory of value immediately into a crisis (or if it would be remunerated could form new ideas of welfare). Instead it has become a landmark of post-Fordist society and the propellant of the prosperous expansion of the information economy.

As in classical capitalism and formalized through Fordism, the existential dichotomy of producer and consumer is necessary for the expansion of a market and the expansion of Capitalism, but has now dissolved and become the raw-resource of profit. Your operations within the information economy are not of distinct essence, being productive or consumptive. They instead become homogenous tractable patterns that can be capitalized as corporate significations. The nature of any existential exclamation, and

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[6] Ibid.

[7] GRAY, L.M. SIDDARTH, S. 2019, Ghost Work, Houghton Mifflin Harcourt, Boston

[8] The marked sentence in the scene where the Wizard of Oz is revealed in the 1939 Victor Fleming film

[9] Anonymous, 2017, The Smart, The Stupid and the catastrophically Scary, Logic Issue I

with that also the associated subjectivity, must be reducible to an economic model. The ultimate pinnacle is that the infinite variables of life itself can be defined within a calculable set of corporate parameters, and that it has become the prime resource for economical limitless growth.

The fabrication of this homogenous entity is exemplary of corporate Liberal ideology. It wants to efface the 'old' distinctions and limitations of the previous institutions, the 'all that is solid…' kind of thing, by exclaiming that you can be whoever you want to be: it doesn't matter if you are queer, coloured or even fascist, as long as you can be rendered compatible with the extractive processes of surveillance capitalism.

Essentially, this is the obscured message under the hood of Corporate Liberalism's faux pas existential exclamation: it drives a derogatory devaluation of identity and subjectivity as if existential signification were not absolutely necessary. It desires that every variation or proportion of subjectivity and identity is rendered compatible with corporate directives. The idea of difference is only there to affect the superficial level of keeping up the appearance of diversity but in reality, reductionisms form the key incentives of corporate liberal strategies.

Logically, every binary opposition between subject/object, sentient/intelligible, producer/consumer and human/machine is conflated, and the sets of its elements - affects, organs, flux and functions - should operate on the same level. i.e. in the latter case, the functions, organs, and strengths of a human are connected with certain functions as the organs of the technical machine and together they constitute a new arrangement or a new "machinic assemblage."[10] A machinic assemblage, drawing from Deleuze and Guatarri, is an assemblage of "bodies, of actions, and of passions; an intermingling of bodies reacting to one another" and is comprised of two segments, one of content and the other of expression.[11] But under corporate design the assemblage of human and machine, that is the user, is put into a negative correlation based on the logics of competition, and entangles human and machine in a constrained loop of deterritorialisation of which the territory is already pre-inscribed. Within a 'healthy' degree of deterritorialisation, content and expression are conjugated. They feed into each other, accelerate one another and are non-deterministic in probing the next entanglement for further assembly. In the case of surveillance capitalism, the assemblage is captured through shackling the user via machine entrapment – providing a service or product – in constrained form that has a freedom of choice but is not

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[10] DELEUZE, G. & MASSUMI, B, 2014, A Thousand Plateaus, Continuum Bloomsbury, New York

[11] Ibid.

allowed to constitute its own subjectivity.
Like the labourer who's 'free' – free in a choice for survival, not as a subjective choice – to sell their labour power to the capitalist, users are 'free' to use the services provided, as "no one is obliged to sign up for facebook"[12] or Google, but participation inescapably includes participation in the exploitative factory of data extraction. Of course, the counter argument states: "How can users be exploited when tech firms "offer a service that enables everyone to exercise foundational human rights—to have a voice (freedom of expression) and be able to connect (freedom of association and assembly)?"[13]
This rhetoric is what lures users into an existential quagmire in which they can only participate in "Faustian bargain": to sell our right to privacy for the freedom of expression.[14] A social contract that will deteriorate even more asymmetrically, as Google and Facebook's relentless lobbying attempt to dissolve any restriction imposed on their corporate strategic expansion model.[15] [16]

But how is it then that the exploitable repository of personal data leads to profit?
For that we have to look at how behavioural surplus is produced. The way conglomerates like Google and Facebook generate revenue is by providing companies access to best-fit consumer profiles for targeted advertising. Google builds, through your computer mediated interactions, a user profile information (UPI) that is fabricated through state-of-the-art machine intelligence.
Your UPI is a data-ecological artefact of a myriad of parameters that represents a model of behaviour and desire but digitally exists as a data point cloud that can be modelled to a function. That function is how likely you are to buy a certain product or to click on an advertisement.
You can imagine that the higher the predictive product of users clicking on advertisements, the higher the price companies are willing to pay for these advertisements. Hence, it leads to the obsessive accumulation of data by providing more and more services – machine entrapment – that facilitate the fabrication of more 'accurate' behavioural models.[17]

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[12] https://www.amnesty.org/download/Documents/POL3014042019ENGLISH.PDF

[13] Ibid.

[14] ZOBUFF, S. 2019, In the Age of Surveillance Capitalism, Profile Books, London

[15] https://www.nytimes.com/2019/06/05/us/politics/amazon-apple-facebook-google-lobbying.html

[16] https://www.cnbc.com/2019/06/09/google-is-techs-top-spender-on-lobbying-but-facebook-amazon-also-up.html

[17] This basically leads to the corporate strategies of tech companies and their monopolist ambition to acquire every adjacent technology and potential competitors endangering their market share and control.

In this 'data maximalism' the conceptual distinction between productive and consumptive patterns dissolve as both are reduced to the same abstract mathematical description, that is your behavioural profile. Producer and consumer are conflated due to a technological deterioration (data-dimensional reduction)[18], from an existential dichotomy into an abstract uniform corporate model. This corporate synthesis moves from qualitative difference to a quantitative unit, and becomes tractable for computational operations. It is essentially driven by the instrumental goal of controlling digital environments to intensify human-machine interaction and increasing click through rate (CTR).

Most logically, technologies are designed to optimise the relation between user profile and predictive product. Within surveillance capitalism, this leads to the imperative that the more data that can be extracted the better the predictive product provided by algorithms. As a result, a game of maximum input and maximum output is created in what Buzoff coined as the *Behavioural Value Reinvestment Cycle* (BVRC).

In the BVRC "all behavioural data are reinvested in the improvement of the product or service".[19] This narrows down to: the more data users provide, the better the algorithms function. Hence, applications and services provided by tech-companies are essentially data harvesters and their strategies focus on intensifying the interaction and use of their apps and services.

Zuboff affirms that the essential drive of machine intelligence projects is oriented towards the processing of bigger data heaps. Machine intelligence is the "ultimate tapeworm" and that the state of efficiency depends on the vastness of its diet.[20]

If we take the BVRC as a prototype for technological innovation, as often promoted in keynotes by CEO's, it appears that what drives the industry of AI or whatever form of machine intelligence, is essentially to increase the optimisation of the accuracy of prediction, accelerating the pipeline between raw material and highly profitable algorithmic products.

The measurement of success – expressed in profit return – is therefore orthogonal to the quality of prediction, and the quality of prediction, again under corporate definition, becomes the status of technological progress.

This means that within surveillance capitalism exploitation of life and technological progress are intrinsically linked. Capital's tendency for limitless growth will increasingly

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[18] This is the great power of machine learning that through algebraic operations it can reduce complex data patterns to more simpler representations.

[19] ZOBUFF, S. 2019, In the Age of Surveillance Capitalism, Profile Books, London

[20] Ibid.

probe for higher degrees of exploitation and the competitive relation between humans and machines in the BVRC is the prototypical example. Moreover, algorithms under capitalist design will only exacerbate this vicious manipulated *zero sum game* [21], where the gain in profit for tech-companies is in negative correlation to the increasing loss (degree of exploitation) for its users.

REINFORCED COMPETITION AND CONTROL

Within the BVRC the user and algorithm are positioned in a competitive environment. The more information the users provide, the higher the degree of exploitation but the higher the predictive analysis by the algorithm, the higher the economic pay-off. Thus the algorithm's maximum performance measure minimizes the user's performance measure. The goals of the agents within a competitive environment are in conflict. This may sound very simplistic, but it is a basic imperative in economic rational behaviour. The idea of rational behaviour in economic theory was first formalized in the late 18th century by Leon Walras in the concept of utility, and developed by Frank Ramsey and later by John von Neumann and Oskar Morgenstern in the concept of 'game theory'.[22] Game theory describes the rational behaviour for agents in situations in which multiple agents act simultaneously and wherein competition is a process of strategic decision-making that is performed under uncertainty.
Without delineating too far into game theory, as this is beyond the scope of this text, what is paramount presently is that it has become one of the pillars of AI research. More recently, in the architecture of generative adversarial networks (GAN), where two algorithms – generator and discriminator – compete in adversarial search for better performance. And, in reinforcement learning game theory forms the theoretical scheme for multi-agent interaction. The latter is a type of machine learning where an algorithmic agent is – or multiple agents are – programmed to obtain a specified goal within a closed environment and will use repetitive cycles to improve its own ability (learning from experience) to succeed in its objectives. The basic function is that the environment in which the autonomous agent operates directly influences the choice of the agent by penalizing or rewarding its action and successively generates a next state. This cycle

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[21] A Zero-sum game is a method in game theory and economic theory developed by John von Neumann and is described as a game "in which each participant's gain or loss of utility is exactly balanced by the losses or gains of the utility of the other participants." Source Wikipedia.

[22] NEUMANN VON, J. MORGENSTERN, O. 1944, The Theory of Games and Economic Behaviour, Princeton University Press, Princeton

repeats until the agent, ideally, over time learns how to reach a maximized output with minimal effort.

In the case of the BVRC, the user as agent has entered the loop of competitive exchange with artificial agents. A healthy competitive environment or the basic premise of game theory, entails equal chances in gain for all agents involved. But what occurs in the BVRC is that the user's influence as participant becomes negligible or at worst, does not participate at all. The user has transformed from agent into the algorithm's environment itself. In this architecture, the algorithm's program under corporate design will attempt to extract maximised output for higher profit return: optimisation of prediction, click-through rate or more specifically, in the case of Youtube, watch time.[23]

The rational design of the algorithm's program will attempt to maximize the reward function with minimum investment, ultimately probing solutions to modify the state of its environment to ensure maximum return. It manipulates the user into a modified environment where the user only fulfils the intent of the algorithm, eventually enforcing it in reinforced habituation.

The above is the basic premise of Nick Bostrom's thought experiment of instrumental convergence, in which he portrays a misaligned super intelligent AI in the metaphor of a 'paperclip maximizer.' In essence, it states that any rational entity, which can have myriad final goals, nevertheless will have some instrumental goals. He names them as self-preservation, goal-content integrity, cognitive enhancement, technological perfection, and resource acquisition. And he illustrates this with the following:

> *Suppose we have an AI whose only goal is to make as many paper clips as possible. The AI will realize quickly that it would be much better if there were no humans because humans might decide to switch it off. Because if humans do so, there would be fewer paper clips. Also, human bodies contain a lot of atoms that could be made into paper clips. The future that the AI would be trying to gear towards would be one in which there were a lot of paper clips but no humans.*[24]

Despite the apocalyptic imagination, the example appears trivial and banal, but – without suggesting that a Singularity is in proximity – if we scrutinise the algorithmic

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[23] https://thenextweb.com/google/2019/06/14/youtube-recommendations-toxic-algorithm-google-ai/

[24] *Nick Bostrom, as quoted in Miles, Kathleen (2014-08-22). "Artificial Intelligence May Doom The Human Race Within A Century, Oxford Professor Says". Huffington Post.*

landscape closer, we see similar tendencies present in the objective goals of the infamous YouTube recommendation algorithm. The basic goal of the algorithm is to glue users as long as possible to their website.[25] [26] Thus, it will recommend videos that are more likely to be clicked on and/or watched. If the algorithm's alignment is skewed and void of any neutral program, it will nevertheless and at any cost attempt to incorporate the user as effectively as possible into its loop of capital accumulation, and, like any rational agent, influence its environment – in this case the user's mind – for maximum output.

You can imagine that engagement with the algorithm, or more concretely, the recommendation it puts on top of the list for you to click on, accelerates and proliferates in an automated unconscious loop in order to maximize click-through. The user becomes an extension of the technical ensemble, or machinic assemblage, and is entangled in what Guatarri refers to as *machinic enslavement,* where it only sets, as Lazzarato compliments Guatarri, "things in motion by connecting directly to the nervous system, the brain, memory, etc."[27] Machinic enslavement is the engagement with a system that does not generate any discourse. Lazzarato elaborates, "machinic enslavement consists in mobilizing and modulating pre-individual, pre-cognitive and pre-verbal components of subjectivity, causing affects, perceptions, and sensations as yet unindividuated or unassigned to a subject, etc. to function like the cogs and components in a machine."[28] The recommendation algorithm is essentially cultivating machinic enslavement and attempts to bring the whole human apparatus under a "machinic unconscious."[29] First within modern industrialisation, the body of the worker, and presently in the AI revolution under surveillance capitalism, our cognitive capacity is subordinated to a capitalistic subjectification for basic pragmatic operators to function most effectively in its extractive processes. The *black box* ideologies that surround the nebula of AI only intensify this 'dummy' relationship to machines.
That's why the *black box* critique should not only be directed at technological re-enunciation but, more importantly, should incorporate a redefinition and critical re-engineering of human-machine relations (machinic phylum) that must become the blueprint for epistemological and socio-political infrastructures. It should be even more

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[25] https://www.theguardian.com/technology/2018/feb/02/how-youtubes-algorithm-distorts-truth

[26] https://www.theatlantic.com/technology/archive/2018/11/how-youtubes-algorithm-really-works/575212/

[27] LAZZARATO M., 2006, "'Semiotic pluralism' and the New Government of Signs. Homage to Félix Guattari"

[28] https://eipcp.net/transversal/1106/lazzarato/en.html

[29] GUATTARI, F. & ADKINS, T. 2011. *The Machinic Unconscious: Essays in Schizoanalysis*, Semiotexte/Smart Art.

imperative within the present tendencies of 'the disappearance of the internet', as Google's former CEO Eric Schmidt has put it, that the internet "will be part of your presence all the time" with connected devices "that you won't even sense it."[30] Traits of its disappearance become obvious when computation itself is monetised in cloud platforms. All the technical parameters are obscured in 'computational harvest farms' with a real-time connection to our network of devices that render our behaviour extractable and susceptible to economic analysis. This application of economic analysis has extended from what we call *market*, throughout the whole social infrastructure on individuals as well as on collective commons. But "who is this individual who is always susceptible to economic analysis?" Foucault asks and answers in The Birth of Biopolitics: *Homo oeconomicus.* The latter is an individual "who responds systematically to modifications in the variables of the environment, appears precisely as someone manageable, someone who responds systematically to systematic modifications artificially introduced into the environment. Homo oeconomicus is someone who is eminently governable. From being the intangible partner of laissez-faire [unrestrained capitalism], homo oeconomicus now becomes the correlate of a governmentality which will act on the environment and systematically modify its variables."[31]
Doesn't this sound as an alternative description of the reinforced loop between subjects (environment) and agents (algorithms) under the spell of the rationalization of surveillance capitalism?
This has proven to be the most disappointing aspect of the AI 'revolution' and its connected research. The teleological focus of industries and institutions has cleared the way for relentless experimentation in probing new methods and resources for capital extraction and under the apologetic argument of 'epistemological' and 'instrumental' rationality, it has created a hype that machines will soon take over, but, in fact, corporations conservative attitudes regarding the innovation of economies are the more immediate danger of rational instrumentality.

WHEN THINGS GO TOO FAR (RIGHT)

Over the past years YouTube has endured substantial criticism over incentives and bias(es) present in the recommendation algorithms that have obvious tendencies to

[30] https://www.fastcompany.com/3041343/googles-eric-schmidt-predicts-the-disappearance-of-the-internet

[31] FOUCAULT, M. 2008 The Birth of Biopolitics, Palgrave Macmillan, New York

prosper pay-off by borderline content. The latter is defined by Google as "coming close to — but doesn't quite cross the line of — violating our Community Guidelines."[32]
There hasn't been much disclosed about the inner workings behind the recommendation algorithms besides an out-dated paper.[33] Google has activated a resurgence over the past months by publishing a series of blog posts on how the recommendations have improved, but alternative methods of research on the behaviour of the algorithms' operations profusely show that the probability of sensationalist and divisive content promoted after trivial search queries is significantly higher than more modest content.[34]
The simple explanation is that as people have the tendency — through media cultivation — to be curious toward more sensationalist content, they are more likely to click on divisive content. Reciprocally, the algorithm's maximization function as instructed will suggest more polarised content, as it retains a higher reward.[35]
This is a basic reinforced strategy that unless instructed otherwise, will continue to intensify and accelerate its pay off. The algorithm will discover that the reward reaches higher levels when it habituates the user to meet its conditions for maximum payoff. The algorithm promotes maximizing content to the user, and in more extreme cases, will cultivate users into an extremist environment. It is obvious that this exacerbating loop will be attracted towards superlative forms, away from attention normalisation, putting the subjectification process in a dis-continuous negative state of deterritorialisation.
Without a doubt, the algorithm's reward will be maximised when the complexity of the environment is between optimal thresholds - minimum parameters to operate appropriately and maximum parameters where the algorithm rewards what is most profitable.
What started off as seemingly guileless as a recommendation system becomes a psychological operation that transforms the information ecosystem into a quagmire of extremist content and where "recommendation becomes command."[36] The more polarised the environment the easier it is to measure the amplitude of the algorithm's reward.
Similar to the BVRC's objective, that is the optimisation of algorithms by demanding more data, the recommendation algorithm becomes more lucrative when it pushes media more likely to be clicked on or watched. Within such a 'simplistic' utility, this

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[32] https://youtube.googleblog.com/2019/01/continuing-our-work-to-improve.html

[33] https://static.googleusercontent.com/media/research.google.com/nl//pubs/archive/45530.pdf

[34] https://www.wsj.com/articles/how-youtube-drives-viewers-to-the-internets-darkest-corners-1518020478

[35] https://www.theguardian.com/technology/2018/feb/02/how-youtubes-algorithm-distorts-truth
https://www.wsj.com/articles/how-youtube-drives-viewers-to-the-internets-darkest-corners-1518020478

[36] Adorno and Horkheimer on the National Socialist propaganda methods through radio broadcasting in: ADORNO, T.W. HORHEIMER, M. 2002, Dialectic of Enlightenment, Stanford University Press

leads to a system in which more clicks on extremist content lead to a higher reward but its design neglects to consider that the content it pushes fosters extremist ideologies. Eventually this leads to an exacerbated recursion or what is called in cybernetic terms, a *positive feedback loop*. Positive, which does not mean good, is an amplification of disturbances that lead to an increasing instability of a system, in our case, disrupting socio-spatio-temporal systems with the intensification of extremisms.

The comparison becomes more pertinent and the problem more acute given the globalized network with every user's personally curated and idiosyncratic ideologies, exponentially gravitating towards information that reinforces their existing belief system of the world.[37] And moreover, where every fool's opinion can take on mythological proportions.

The difference between the 'old days' of media cultivation by television and the omni-presence of social media, is that "television was crafted as a machinery of regulation, subjection, and supervision by its 'destructive capture of attention and desire".[38] What we see now are blatant coercions that exert extreme behavioural manipulations on its users. It is as Deleuze anticipates, that 'control societies' are hyper-industrialised societies and would give birth to an 'art of control'. This form of holistic social engineering can only lead to a totalitarian system of traits we already see rising above the horizon.

We should ask ourselves, if the printing press propelled the Reformation, the radio Fascist ideologies and television American Imperialism, what kind of regime will emerge from this generation of (badly designed) technologies?

My warmest gratitude goes toward Mishi Foltyn for her meticulous scrutiny in the editing of this text, and towards Alexander König for his always bold, but constructive criticism.

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[37] https://medium.com/mother-jones/the-science-of-why-we-dont-believe-science-adfa0d026a7e

[38] STIEGLER, B. Automatic Society: The Future of Work, Polity Press, Cambridge(UK)