LIVING WITH MACHINES. ETHICAL IMPLICATIONS AND IMAGINATIVE AGENCY AS LOCAL TACTIC[S] OF DWELLING AND RESISTANCE IN EVERYDAY INTERACTIONS WITH ARTIFICIAL INTELLIGENCE

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ABSTRACT
With the widespread of the Internet of things (IoT) algorithms are increasingly managing our everyday life. From navigating our way in cities to keeping track of our health, artificial intelligence has been beneficial to us in many ways however, its algorithms can also be detrimental as a consequence of biased human programming. The consequence is that while technological progress, delivers more and more human-like artificial intelligence, humans become more and more dehumanised and therefore disempowered in their everyday interactions with artificial intelligence. The solution(s) is not single-handed and calls for combined interventions at the macro and micro levels. Whilst reviewing recent top-down developments on the front of AI ethics, this article delves into the question as to what extent ordinary citizens can exercise any kind of agency when it comes to artificial intelligence. It does so through a multidimensional approach including analogies and intertextual motions between history, literature, and visual culture. Focussing in the case study of facial recognition software, the article explores the possibilities of imaginative agency as a form of local intelligence capable of dwelling in and contesting [human-made] algorithmic bias.

KEYWORDS
Algorithmic bias, AI Ethics, Imaginative Agency, Local Intelligence, Everyday.

> To the ordinary man.
> To a common hero, an ubiquitous character, walking in countless thousands on the streets [...] we witness the advent of the number. It comes along with democracy, the large city, administrations, cybernetics. It is a flexible and continuous mass [...] a multitude of quantified heroes who lose names and faces as they

become the ciphered river of the streets, a mobile language of
computations and rationalities that belong to no one.
            Michel De Certeau[1]

The only way to deal with an unfree world is to become so ab-
solutely free that your very existence is an act of rebellion.
            Attributed to Albert Camus[2]

1. INTRODUCTION

This article is concerned with local expressions (tactics, creations, agency) emerg-
ing from citizen's everyday interactions with ubiquitous technology. It is part of a
wider work interrogating what exactly constitutes good [smart] living in so called
smart cities and from the point of view of its citizens. According to Deakin and
Mora[3] Smart cities are defined through a series of fundamental parameters such as
technologies powered by artificial intelligence, environmental conscience, citizen
participation and coexistence. If new technologies have opened the door for a more
participative, efficient and sustainable living, this hasn't come without privacy and
transparency issues due its pervasivity and the black box model associated with its
algorithms. However, by way of thinking locally, smart cities can be unravelled from
techno determinism and potentially develop into systems of another kind in which
technology is a tool at the service of coexistence and urban sustainability. To realise
this objective, it is indispensable to move beyond traditional models of economy
and societal organisation and focus on the knowledge of communities embodied in
their people as agents and as the crux of the Real Smart Cities. Unfortunately, at the
moment the technocentric model seems to prevail leaving citizens feeling powerless
before algorithmic decision processes or trying to navigate their way around it.

This paper refers as to local, the *savoirs* (knowledges) that operate in the every-
day in a context dominated by ubiquitous technology. It is concerned with particular
ways of thinking (epistemologies) emerging from individuals and communities rela-
tional tactics, productions and agency that can also inform the universal. Another
way to gauge this proposition is to understand cities as archipelagos[4] in so far as both

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[1] M. De Certeau, *The Practice of Everyday Life.* Berkeley: University of California Press, 1984,
p. 7.

[2] Albert Camus quotation is popularly attributed to *The Rebel* but nobody has ever been able to
find it. Probably aprocryfal or a paraphrasis.

[3] M. Deakin, L. Mora, "The social shaping of smart cities". In *Untangling Smart Cities: From
utopian dreams to innovation systems for a technology-enabled urban sustainability.* Amsterdam: El-
sevier, 2019, pp. 215-234, https://doi.org/10.1016/B978-0-12-815477-9.00007-4.

[4] For archipelagic thinking see: E. Glissant, *Traité du Tout le Monde.* Paris: Gallimard, 1997, and
also A. Benítez Rojo, *The Repeating Island: The Caribbean and the Postmodern Perspective.* Du-
rham & London: Duke University Press, 1996.

specific (local) and generalizable (global). As different geo-formal unit islands can interrogate knowledge and inform ways of thinking and methodologies traditionally shaped by continental paradigms. In this framework, islands constitute not only sites of exploration, case studies or localities but also models. Similarly, urban communities can constitute models of locality and therefore models of knowledge.

Cities have become living entities that are not only 'smart' due to ubiquitous artificial intelligence but also sentient capable of detecting motion and every imaginable human sense. This is radically transforming the way we interact with each other and reshaping the way we live. In other words, as artificial intelligence takes over the invisible infrastructure[5] of our cities, it transforms the way we behave and socialise. This article delves into the question as to how 'smart living' and particularly algorithmic bias affects individuals and communities every day life. Algorithms have the capacity to make decisions that are mostly independent from human agency and individuals and communities might become disempowered through this process. In everyday interactions with machines people often perceive that the control of a situation has been taken out of their hands. As a consequence, they feel hopeless and tend to withdraw. In other occasions people relate tactically with machines in order to enforce their own sense of agency. The article argues that there is a need for a two pronged approach to counteracting algorithmic bias. While reviewing recent top-down developments in the field of machine ethics the paper centres the discussion in ways by which individuals actively operate within 'the machine' for their own benefit and by means of imaginative agency. Through case studies and in particular facial recognition algorithms, it explores particular ways of doing things, strategies, schemata or models of action-resistance that are local but not necessarily individual as they operate in a relational context. Imaginative agency relates to an art of dwelling (De Certeau[6], Lefebvre[7]) or to make-worlds inside other worlds as described by Vigovsky[8], or to resist as per Bahktin's[9] theory of the carnivalesque and the grotesque, which allow the common man and woman to navigate daily struggles with the Internet of things (dominated by artificial intelligence) through imagination and agency.

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[5] I. Burrington, *Networks of New York. An illustrated field guide to urban Internet Infrastructure.* Brooklyn & London: Melville House, 2016, p. 9.

[6] M. De Certeau, *The Practice of Everyday Life*, p. 7.

[7] H. Lefebvre, *The Production of Space.* Oxford: Blackwell, 1991.

[8] L. S. Vygotsky, "Imagination and Creativity in Childhood." *Journal of Russian and East European Psychology.* Vol. 42, 2004, pp: 7-97.

[9] M. Bakhtin, *Rabelais and His World.* Bloomington: Indiana University Press, 1965.

2. THE ROBOTIC MOMENT: SMART CITIES, THE INTERNET OF THINGS & THE LOVE FOR MACHINISTIC EFFICIENCY

The smart city paradigm is based in the vision of the city of the future as an Internet-connected urban space capable of providing the means for good [smart] living. Smart cities, in principle, incorporate to new Internet technologies, elements of sustainability and social inclusion. The idea is that "new technologies will help to mitigate the effects of climate change, geopolitical changes, population growth and mobility, globalisation, insecurity, social conflict and inequality and an aging population"[10]. If new technologies have opened the door to a more efficient and sustainable living through pervasive artificial intelligence (AI), the Internet of Things (IoT) has also come to mediate everyday life, transforming every single transaction into an efficient collection of (commodifiable) data, which at best turns into positive action and at worst into an instrument of control[11]. Nevertheless, the era of the Anthropocene cannot be separated from technological progress, in the same way that humans cannot be conceived without their prostheses[12]. But our love for machinist efficiency is by no means new, it goes far back in time, from primitive hunting parties to the Industrial Revolution[13]. In the early twentieth century, Avant-garde movements such as *Futurism* deified the machine as a superior form, including the war machine as a form to 'renew' society as unfortunately proven by the two Great Wars. Popular culture has provided several dystopian plots in which the convergence between humans and exploitative machines has resulted in disruption of the status quo and subsequent social dissolution (e.g. Fritz Lang's *Metropolis*[14]). Nevertheless, and without succumbing to deterministic arguments regarding smart technologies, there is a need for a pharmacological evaluation of our technical possibilities. Technology is our *pharmakon*[15], a poison with curative potential, and culture, local expressions and productions, among which I include the capacity for imaginative agency, are the therapeutics in so far freed from the colonization of cognitive capitalism[16].

In smart cities, characterised by ubiquitous technology, citizens and technology have become so intertwined (IoT) that whilst science concentrates its efforts to

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[10] E. Mircea, L. Toma, M. Sandulea, "The Smart City Concept in the 21ˢᵗ Century." *Procedia Engineering*, Vol. 181, 2017, pp. 12-19. https://www.sciencedirect.com/science/article/pii/S1877705817309402.

[11] M. Deakin, L. Mora, "The social shaping of smart cities".

[12] See D. Haraway, *Simians, Cyborgs and Women: The reinvention of Nature*. NY: Routledge, 1991; B. Stiegler, *Technics and Time, vol. 1: The Fault of Epimetheus*. Stanford: Stanford University Press, 1998.

[13] A. Franklin, *City Life*. London: Sage, 2010, p. 31.

[14] *Metropolis*. dir. Fritz Lang, Universum Films AG: Germany. 1927. Motion Picture.

[15] B. Stiegler, *What makes life worth living: On pharmacology*. Cambridge, UK: Polity, 2010.

[16] C. Howells, G. Moore, "Introduction: Philosophy—the Repression of Technics". In C. Howells, G. Moore (eds.), *Stiegler and Technics*. Edinburgh: Edinburgh University Press, 2013, pp. 1–14.

deliver more and more humanised artificial intelligence, citizens risk becoming more and more 'mechanised' in their daily entanglements with technology and as a consequence, dehumanised. We might have reached in point of fact what Sherry Turkle calls "the robotic moment[17]." Turkle's research on Apple's AI assistant *Siri* proves a case of reality being greater than or just as like fiction. When Spike Jonze 2013 movie *Her*[18] told the story of a writer falling in love with an AI, originally intended to help him to write, little did we think that this possibility was just around the corner for each of us and at the greatest possible scale: the ordinary. According to Turkle, we find the idea of robotic companions quite attractive as they offer constant attention without demands and especially without been judgemental[19]. AI has gone a long way since Joseph Weizenbaum[20] from the Artificial Intelligence Lab in MIT devised *Eliza* in 1978, a natural language computer program capable to simulate conversation and to act as a psychotherapist able to fool patients. Today, assistant and experimental AIs, including sex-bots, like *Eliza*, also tend to be female (e.g. *Siri, Alexa, Harmony*) as also reflected in popular culture representations: *Blade Runner*[21], *Ex-Machina*[22], *Ghost in the Shell*[23] perhaps with the only exception of Spilberg's *A.I.*[24], which in this case is a child, but this discussion is outside the scope of this article.

Science's ability to create near-humans, be these humanised like sex-bots or disembodied like *Siri,* underpins the question what does it mean to be human and what is our responsibility regarding 'sentient' technology? Sociable AI's seem to be about engagement. Just like Weizenbaum's participants became attached to *Eliza*, we become attached to our apps. Once we perceive that we are being amused or cared for we grow close to the technology and start behaving like if the AI (e.g. *Siri, Alexa, Pango*) really cares for us. For Turkle the robotic moment is the realisation that human-machine entanglement will do as fine if not better than human-to-human (or human-to-pet) relationships. Family pets, used to be companions and a way to teach children about life, death, and loss. However, artificial pets that last forever, as they can be repaired or replaced by exact copies, offer attachment without risk. Like in nursing homes, where residents talk to robotic baby seals while relatives, nurses and staff go about their daily duties (understood as other than engaging with

[17] S. Turkle, *The Robotic Moment.* Lecture at The Aspen Institute, CO. 2015. Available at: https://www.youtube.com/watch?v=csba3YKD9-A.

[18] *Her,* dir. Spike Jonze, Annapurna Pictures: USA. 2013. Motion Picture.

[19] S. Turkle, *Alone, Together: why we expect more from technology and less from each other.* Philadelphia: Basic Books, 2011.

[20] J. Weizenbaum, *Computer Power and Human Reason: From Judgment to Calculation.* New York: W.H. Freeman & Company, 1976.

[21] *Blade Runner,* dir. Ridley Scott, Warner Bros: USA. 1982. Motion Picture.

[22] *Ex-Machina*, dir. Alex Garland, Universal Pictures International: UK. 2014. Motion Picture.

[23] *Ghost in the Shell,* dir. Rupert Sanders, Paramount Pictures: USA. 2017. Motion Picture.

[24] *AI, Artificial Intelligence*, dir. Steven Spielberg, Warner Bros & Dream Works: USA. 2001. Motion Picture.

the elder). Notwithstanding, configurable AI's (e.g. *Romigo* bot) can be remarkably helpful to assist loss of memory in patients with dementia or to teach children with autism to recognise emotions[25].

There is no point in denying that machines can do many things better than humans do. Machines are able to teach themselves (and us), to assist bodies with impaired abilities, to solve problems and reach decisions in seconds that would take humans aeons pondering centuries of accumulated knowledge. Google has become the prosthetic memory of humanity and IBM's DeepBlue a chess master after defeating Gary Kasparov. Machines can even write poetry or pretend to love us back. That machines continue to fascinate our flawed human minds probably owes quite a deal to dogmatic definitions of intelligence and popular views on what it means to be smart. In *Deep Thinking*[26], chess champion Gary Kasparov makes a very interesting reflexion about human versus machine intelligence and in relation to his contest against *IBM*'s *Deep Blue* computer. For Kasparov, there is a need to look into the wider picture beyond the binary discourse of the capabilities of man versus technology, and see that, beyond technological determinism, behind every machine there is a man carrying a heavy load, discussion to which I turn now.

3. MACHINES WITH PREJUDICES: ALGORITHMIC BIAS

The 1986 cult movie *Short Circuit*[27] might be seen today as a cautionary tale for AI. The film tells the story of a robot, Johnny-5, which after being hit by lighting becomes intelligent and humanized. He then decides to emancipate from its creators and in order to survive he needs to constantly feed on data. He devours books and TV shows. As a result, Johnny's intelligence becomes shaped by the biased texts from the USA of the 1980's. For example, he doesn't know of the existence of African, Asian or Indigenous people because these have been erased from the books and shows he 'eats.' His models are heroes, invariably young, male white and catholic. Indeed, Johnny-5 is very human as he replicates the prejudices of the society in which he has become humanised.

Algorithms are computing programs augmented with artificial intelligence (neural networks). They are programed to perform automated tasks and identify patterns while 'learning' from massive databases. Algorithmic bias refers to systematic and repeatable errors in a machine learning system resulting in unfair outcomes. In another words algorithmic bias occurs when a system makes decisions without using

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[25] A. S. Brown, "The Robotic Moment. Machines offer caring behaviour. Is this a good thing?". *Mechanical Engineering Magazine*, September 2013, pp. 33-37 (37). https://www.asme.org/wwwasmeorg/media/resourcefiles/engineeringtopics/technologysociety/1309_theroboticmoment.pdf.

[26] G. Kasparov, *Deep Thinking. Where Machine Intelligence Ends.* London: Hachette, 2017.

[27] *Short Circuit,* dir. John Badham, Tristar: USA. 1986. Motion Picture.

discretion. AI learns by processing and analysing great quantities of data from a diversity of sources. This data is used as a model from which to make decisions: this process is known as automatic learning. If algorithms incorporate biases of the real world and then are used for automatic processes, then certain tasks such as recruitment, the concession of a credit or criminal face recognition, can lead to discriminatory actions such as automatically dismiss or select certain profiles due unintended prejudices introduced by the software. These decisions made by machines can influence and sometimes change dramatically the course of life for many people, for example being denied a job interview or a loan depending on your address, age and gender or being arrested depending of the colour of your skin. Therefore, if AI systems learn from human productions (the data AI collects) it may well be expected that they also reproduce human prejudices. Yet it is important to note that the biases are not necessarily intrinsic to the model but rather to the data with which this model learns.

Prejudices have to do more with the profession of the scientist and his or her personal and cultural values than with the models of AI. Neural networks only need data, parameters, and a target to work. For example, the purpose of the AI for *Google Translate* is to generate translations as close as possible to an ideal. In order to improve outcomes and achieve machine learning, these results need to be compared and digressions adjusted. According to Alvarez-Melis and Jaakkola[28], if the system incorporates human biases these can be corrected in a similar manner. Melis and Jaakkola discuss a study on translation AI in which the researchers analyse how neural networks "think" and the result is that they think just like us. If we feed them with data such as that the only translation for the English word "doctor" in Spanish is "doctor" without feeding the translation algorithm with data of the Spanish two gendered words "doctor" (male) and "doctora" (female) then the model will have learned that only men are doctors in Spain and so on. In this state of play algorithms are likely to incorporate the variety of implicit and explicit prejudices of the societies in which they operate. This is not difficult to understand. A quick glance to any search engine or social media platform and we will find the mirror reflecting the bare image of ourselves, including ogres, princesses and trolls. But technological bias is more complicated than that.

Turning to the origin of deep neural networks research may be helpful to understand the socio-political implications of technological bias. The very first neural network, called the *Perceptron,* was developed in 1958 by psychologist Frank Rosenblatt for the US Navy using an *IBM* computer the size of a room. This association by itself is quite telling. The *Perceptron* was built on the basis of *connectionism* by which intelligence emerges from the connections between neurones and that machines can be induced to think objectively and free from individual faults (biases,

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[28] D. Alvarez-Melis, T. Jaakkola, "Gromov-Wasserstein Alignment of Word Embedding Spaces". CSAIL MIT, 2018. Available at: https://arxiv.org/pdf/1809.00013.pdf.

shortcomings) by imitating the paths of the brain[29]. The connectionist theory opposed proponents of intelligence as the capacity of wielding symbols and therefore taking into account contextual knowledge in order to make meaningful inferences. According to Bridle, connectionism is kindred to neoliberalism, which imposes an "order of the world where an impartial and dispassionate market directs the action independent of human biases" after decades of debate, "today the connectionist model of artificial intelligence reigns supreme again[30]." But here is the catch 22 unveiled by Jonny-5: the model is as good as the training data it uses, and this data is a human production charged with cognitive bias.

Instances of cognitive bias can be identified in prisons, the educative system, recruitment processes and courtrooms. A good representation of the latter is Sydney's Lumet 1957 film *Twelve Angry Men*[31]. This courtroom drama presents a jury in the process of debating a death sentence for a young presumed criminal. As the drama unfolds we are faced with different instances of cognitive bias embodied in the twelve characters' prejudices (class, race etc...). If we don't do anything to correct the data (and ultimately ourselves), then we can expect AI models to continue making poor choices with sometimes, disastrous consequences as I discuss in the following paragraphs.

Algorithms can do many things. One is that they choose and rate people based on a series of parameters introduced in the model by the programmers. AI recruits personnel, decides who can receive a credit and launch stock market operations. One of the big problems of AI is that they are black boxes. Moss-Racussin[32] et al demonstrated in a study on recruitment and gender bias that academic assessors presented with the same CV for either male or female candidates tended to rate higher and recommend higher salary for males. This prejudice was observed either in male or female academic evaluators. Some recruiting algorithms clearly discriminate older people, facial recognition software has issues recognising darker tones of skin, and motor insurance algorithms discard certain locations in the city deemed dangerous. If expert data is biased and AI is trained according to these biases then we can expect models full of prejudices. If the main type of user of the Internet, and therefore producer of the bulk of data, is catholic, white, male, westerner and neoliberal, then AI will learn these values. A possible solution could be to avoid the overrepresentation of certain contents on the Internet, yet this may raise some questions regarding censorship and freedom of speech. In any case, there is a need to reconsider the representation of knowledge so AI can learn from more nuanced

[29] J. Bridle, *New Dark Age. Technology and the End of the Future.* London: Verso, 2018, p. 138.

[30] *Ibid.*, p. 139.

[31] *Twelve Angry Men*, dir. Sidney Lumet, Orion Nova Productions: USA .1957. Motion Picture.

[32] C. Moss-Racusin, J. F. Dovidio, V. Brescoll, M. Graham, J. Handelsman, "Faculty's subtle gender biases favor male students". *Proceedings of the National Academy of Sciences*, 109 (41), 2012, pp. 16474-16479. DOI:10.1073/pnas.1211286109

and divers content. The question is how are we to train humans as the producers of this content?

The Minority Report[33] is a sci-fi story set in 2054 in which pre-cogs, a species of cognitively advanced cyborgs (with premonitory power) are connected to a pervasive surveillance apparatus and predict criminal acts before they happen thus enabling the police to find and arrest future criminals before they can commit any felony. The vigilance estate apparatus includes data mining, endoscopic scans and face recognition technology. This system is far from perfect and eventually a breach leads to the main protagonist being accused of a planted crime. The surveillance systems that control our smart cities are not so different from those portrayed in *The Minority Report*. Current smart urban infrastructure includes hundreds of thousands of surveillance cameras, sound and movement sensors, facial recognition and data mining software[34]. By using this infrastructure, applications such as Google's *My Activity*[35] can give a fairly detailed account of what the user has been up to. From his/her street ramblings, to Internet searches, things done, website activity and videos watched. All these points of data capture are controlled by artificial intelligence. The routine collection of large amounts of data in smart cities has its ethical pitfalls as ensues both accidental and explicit surveillance.

Over the past decade there have been many positive uses of facial recognition technology: facial recognition confirming our identity and flight information in airports or preventing unauthorised people to access sensitive sites (e.g. home security). But facial recognition has also been gaining a reputation for other no so positive applications such as for example the Chinese social credit system in which peoples' daily behaviour is monitored and rated. This technology can single people out as they go about their daily business and without their knowledge or consent to the point of altering the course of their lives without them even having a say (e.g. mistaken identity). Not yet fully implemented in the whole territory, the Chinese social credit system has wider implications than chastising citizens caught speeding too much in motorways or playing too many video games during working hours. Citizens can be blacklisted and prevented to rent a house or buy a plane ticket. China piloted the system in full in regions with a reputation of being challenging to the regime such as Xinjiang and Tibet. Their citizens are subject to mass surveillance by sophisticated AI capable of estimating race, age and gender with acceptable accuracy. This system enables law enforcement agencies to trace suspected criminals'

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[33] *Minority Report*, dir. Steven Spielberg, Twentieth Century Fox, Dreamworks, Wagner Productions: USA. 2002. Motion Picture.

[34] I. Burrington, *Networks of New York. An illustrated field guide to urban Internet Infrastructure*. Brooklyn & London: Melville House, 2016, p. 92.

[35] *My Activity-Google* 2019. Available at: https://myactivity.google.com/myactivity Last Accessed 21 Feb 2020.

movements for days and locate and arrest them[36]. The dystopian scenario portrayed in *The Minority Report* is reflected in this system. Like in the fiction the danger is in the system pre-empting 'expected' behaviours based in statistical patterns of action just like an anxious or introvert person might appear guilty before an inexperienced police officer. The more than fair suspicion that these systems might be subject to failure is only one among many worries. The Chinese social credit system is a cautionary tale of the toxic facet of technology, which instead of constituting a resource to improve life becomes the yoke limiting our freedoms. Yet this limitation of freedom might prove crucial to contain the current COVID19 pandemic.

Issues surrounding algorithmic bias have been raised for decades[37], however, they have now come to the fore due the rapid rise and availability of data and new developments in machine learning with their ever more powerful algorithms and their wide use in decision making across all aspects of everyday life. As a result, human biases present in the data feeding the algorithms are constantly perpetuated and reinforced in the process. As the use of algorithms has become more commonplace in daily life, scientists and governance bodies are making efforts to mitigate their negative effects where possible. This has led to research into AI strengths and weaknesses and calls for accountability and the provision of adequate governance and also the consideration of ethics as the key factor to controlling the future of AI.

4.   THE ETHICAL AI: TOP DOWN INITIATIVES

Technologies such as IoT and ubiquitous 'smart' are being increasingly commanded by tech giants such as Facebook, Amazon, Netflix and Google (FANG's) whose machine learning power have reached monumental proportions due their access to ever larger datasets constituted by the information that we [all] give away in exchange for 'free' services. This scenario is quite worrying to say the least, as it is a minefield for ethical breaches. The difficulty with disruptive innovation technologies such as AI and machine learning to keep up with ethical practices is that they are nurtured by venture capital investment, which dominate the tech start-up space and focus in economic growth rather than the greater good. In order to counteract this situation the EU and other countries (e.g. Brazil) have drafted guidelines[38] and adopted resolutions that grant users greater control over their own data like for example GDPR, and requiring companies using AI's to be more transparent. But so

[36] R. Creemers, "China's Social Credit System: An Evolving Practice of Control." *SSRN*, May, 2018. Available at: https://ssrn.com/abstract=3175792or http://dx.doi.org/10.2139/ssrn.3175792.

[37] B. Friedman, H. Nissenbaum, "Bias in computer Systems." *ACM* Trans. Inf. Syst. 14, 3, July 1996, pp. 330-347. https://dl.acm.org/doi/10.1145/230538.230561.

[38] European Commission *Artificial Intelligence: Commission takes forward its work on Ethics Guidelines.* Press Release 8 April 2019. Available at: https://ec.europa.eu/commission/presscorner/detail/en/IP_19_1893.

far, the experience we have with venture capital projects is that they can effectively disrupt the inner fabric of communities. For example ventures such as Uber or Airbnb, have completely modified urban landscapes contributing greatly to workers' exploitation and the current rampant housing crisis.[39]

In order to understand the ethical complexities of smart systems it might be helpful to compare them with the ethical dilemmas concerning modern bureaucracies. Public administrations and bodies mirror Weber's vision of highly rational and efficient forms of organisation (the aforementioned machinistic efficiency). Bureaucracies embody the spirit of positivist scientific rationality manifested through a hierarchical structure with a high degree of specialisation and strict rules and regulations. The personalities of members of the organisation are repressed to the point of becoming oblivious or desensitized to immoral behaviour as long it follows the rules as Arendt argues in *Eichmann Trial or the Banality of Evil*[40]. Bureaucratic systems, as per this view, embody the tactics of dehumanisation (impersonal, void of warmth and sympathy or empathy), that succeeded to meet the needs of the powerful classes in an era of industrial production epitomised by the factories assembly lines. In this scenario self-determination and personal values are negated to give way to utilitarianism, technicism and positivism[41].

Any dealings with this type of organisation is often compared with being trapped in a Kafkaesque nightmarish scenario characterised by surreal, menacing and senseless disorienting complexity in which the individual feels disempowered and hopeless. Interestingly, this 'feeling' is registered in some heuristics of the language. For example, the Spanish proverb: 'Tengas pleitos y los ganes' meaning that in the dealings with the Justice system, the plaintiff is always the loser, even in the eventuality of winning the dispute. It sums up a lose-lose situation: waste of time, money, energy, and so on. Another characteristic that distinguishes these systems from other types of organisation is the lack of accountability of its members. As they operate on the principles of a black box model, just as algorithms do, it is difficult, if not impossible, to make anyone liable for their doings. It is not infrequent in big institutions and multinationals (e.g. health system, telecommunications companies) to correspond with person-less departments or with robots. These models of 'machinistic' organisation prominently perpetuate ethical dilemmas manifested through the false conflict between instrumental rationality and value rationality.

There is a field of research concerned with machine ethics. This approach is invested with designing artificial moral agents (AMAs) through adding moral

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[39] I. Brossat, *La ville Ubérisée*. Paris: LaVille Brüle, 2018.

[40] H. Arendt, *Eichmann in Jerusalem. A report on the banality of Evil*. London & NY: Penguin Classics, 2006 [1963].

[41] Y. Wang, "Ethical Dilemmas of the Modern Bureaucracy and its Solution." *Conference: Proceedings of the 2019 3rd International Seminar on Education, Management and Social Sciences*, Atlantis Press, ISEMSS, 2019, p. 288.

behaviours to machines[42]. However, taking on board what can be learnt from bureaucratic systems, making machines morally accountable might result in absurd outcomes equivalent, for instance, to blaming the swastika for the holocaust. What could be the measure of accountability for an immoral machine, disconnection like the replicants in the 1982 film *Blade Runner*? Yet there is a second angle in this double blade sword, can artificial moral agents help humans to become more moral? If a machine is programmed to avoid unethical outcomes it might stop immoral humans committing immoral actions or judgements. There is a very thin line between safeguarding ethics in this way and a dystopian scenario. It is difficult to separate moral responsibility from agency. Humans have a sense of agency, which is the subjective experience of being in control[43]. If we perceive that this control is outside ourselves or off limits we might either become alienated or lose the sense of social responsibility for our own actions. Hence, artificial intelligence with agency might become a deterrent for human agency (and accountability). There is another possibility, which is none of the above: resistance. I will come back to this in the next section.

The tech industry, researchers and governments are presently working in what can be termed as fair algorithms. The objective is making algorithms accessible, or in other words transparent and interpretable in order to easily detect and correct biases. For example, *IBM* has a department dedicated exclusively to AI ethics and is programming neural networks to avoid a priori judgments. This initiative is being put to test in *IBM*'s own recruitment agency (*Watson Recruitment*[44]). *Watson*'s AI doesn't take on board ethnic origin, gender, age or CV style and instead focuses on relevant experience, education and skills. Also, companies such as *Diversity* use deep neural networks to evaluate ethnic, sexual and age diversity in management boards in the bigger companies of the world (diversity.ai[45]). Departing from what it seems a connectionist approach previously mentioned, Morten Scheiybe-Knudsen, uses algorithms to analyse hidden biases regarding age based on the premise that algorithms are more impartial than humans because they are influenced by data and not the emotions affecting human behaviour[46]. This position disputes approaches arguing that algorithmic bias becomes through particular content (racist, ageist) overrepresentation in the Internet (where neural networks feed) and that the

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[42] M. Anderson, S. L. Anderson, "Machine Ethics: Creating an Ethical Intelligent Agent." *Ai Magazine* 28(4), 2007, pp. 15-26.

[43] R. Legaspi, H. Zhengoqi, T. Toyoizumi, "Synthetic agency: sense of agency in artificial intelligence." *Science Direct*, 2019. https://doi.org/10.1016/j.cobeha.2019.04.004.

[44] *IBM Watson Recruitment* [online] 2020. https://www.ibm.com/ie-en/marketplace/watson-recruitment.

[45] *Diversity.AI* #Research [online] 2020. Available at: http://diversity.ai/#research.

[46] M. Scheiybe-Knudsen, A. Zhavoronkov, P. Mamoshina, Q. Vanhaelen, A. Moskalev, A. Aliper, "Artificial intelligence for aging and longevity research: Recent advances and perspectives." *I: Ageing Research Reviews*, Vol. 49, 2019, pp. 49-66.

solution is training AIs with trustable content or in other words editing the content before feeding the neural network[47]. In addition, FANG's with Microsoft, Apple and NGO's like Amnesty International and Unicef have partnered in a consortium for Ethics in AI (partnershiponai.org[48]) and the European Commission has published guidelines for ethical algorithms recently banning facial recognition software in public spaces (for four years). Despite good intentions it appears that big industry players are fomenting a process of ethics washing by using the same EU Commission bureaucracy system to prevent and delay effective regulation and policy-making[49]. All these considerations suggest that the real debate on AI ethics is not as much what the machine is capable of doing and whether it can be held accountable for its actions but rather, which kind of man-made codes and man-made data is fuelled by, and also what companies and governments are doing with it under the presumption that these systems will be ever free of encoded biases. Meanwhile, citizens continue to feel disempowered by algorithms and left with possibly the only option to resort to the loopholes of the imagination.

5. BOTTOM UP INITIATIVES: IMAGINATIVE AGENCY AND THE AESTHETICS OF RESISTANCE

There is a square shaped park between the local train station and the estate where I live in the suburbs of Dublin. The estate is connected to the station through a single footpath beginning at the far end and traversing the green in diagonal. For many years, neighbours have completely ignored the designated [inconvenient] footpath and the 'Do not step on the grass' signs, and created their own network of [convenient] shortcuts from their homes to the station with the continuous pressure of their feet walking on the fresh grass. A few weeks ago, I was amazed to see city council workers paving the 'illegal' trails. The first question we should pose ourselves when thinking about 'smart living' is how is this going to affect us? How is this going to solve the problems we face every day?

Machine learning technology provide algorithms with the capacity to autonomously make inferences and deductions and make decisions that are mostly independent from human agency. De Certeau in *The Practice of Everyday Life*[50] describes the tactics available to the common person for reclaiming his own autonomy (agency) from the all-pervasive forces of economy, politics and culture. Can these

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[47] R. Caruana, Y. Lou, J. Gehrke, P. Koch, M. Sturm, N. Elhadad, "Intelligible Models for HealthCare: Predicting Pneumonia Risk and Hospital 30-day Readmission". *Proc. 21th ACM SIGKDD Int. Conf. Knowl. Discov. Data Min.* – KDD '15, 2015, pp. 1721–1730.

[48] https://www.partnershiponai.org/.

[49] T. Metzinger, "Ethics Washing Made in Europe." *Der Tagesspiegel*, 8 April, 2019. Available at:https://www.tagesspiegel.de/politik/eu-guidelines-ethics-washing-made-in-europe/24195496.html.

[50] M. De Certeau, *The Practice of Everyday Life*, p. 7.

apply to pervasive technology and its algorithms? Everyday life technologies (e.g. social media, internet of things) are designed with intrinsic affordances that promote some uses while discouraging others[51]. For example, social media affords the juxtaposition of different modes of representation on one single stage: the screen. De Certeau's notion of space as "practiced space[52]" is useful to explain the dialectics involved in social media as spaces of production (and re-production) of the self. To paraphrase him, the users transform the rules of engagement of the technology in the same way "as the street geometrically defined by urban planning is transformed into a space by walkers.[53]" Different applications set the boundaries for different 'styles' of engagement. Yet ultimately the users themselves appropriate (inhabit[54]) the space to their own needs and interests. In our everyday interactions with machines, in the constantly giving away our data (or being mined for it) we become quantified selves. In this scenario and drawing from Debord[55] individuals (also communities) are caught in the dialectic between control and the loss of it.

Cyber and Techno Feminism theories expose the ways in which gender and race are performed and inscribed in new technologies. Some early studies investigated how online technology facilitated the liberation of gender and race from the boundaries of biology and dominant discourses[56], while others found the opposite[57]. The findings of the latter suggested that pervasive technologies either favoured or constrained agency. With this in mind, is there room to think that algorithms determine human behaviour stripping it from its agency? Beyond technological determinism the suggestion is that human behaviour co-evolves with human-made tools[58]. Algorithms might have the ability to shape humans as much as living in a particular society and culture does.

In previous sections I have discussed how individuals and communities might become disempowered through machinistic (war, bureaucracy...) and algoritmic decision making processes. People often perceive in their everyday interactions with machines that the control of a situation has been taken out of their hands, or in another words, resides outside themselves. As a consequence, they feel hopeless

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[51] D. Buckingham, "Introducing Identity in D. Buckingham". In *Youth, Identity and Digital Media*. Cambridge (MA): MIT Press, 2008, pp:1-24.

[52] M. De Certeau, *The Practice of Everyday Life*, p. 117.

[53] *Ibid.*

[54] H. Lefebvre, *The Production of Space.*

[55] G. Debord, *The Society of the Spectacle.* London: Rebel Press, 1967.

[56] See J. Butler, *Bodies that Matter: On the discursive limits of sex.* New York: Routledge, 1993; B. Danet, "Text as a mask: Gender, play and performance in the Internet." In S. Jones (ed.), *Cybersociety 2.0: Revisiting computer mediated communication and Community.* Thousand Oaks, California: Sage, 1998, pp. 129-158.

[57] See R. Gill, "Cool, creative and egalitarian? Exploring gender in project-based new media work in Europe." *Information, Communication and Society,* Vol 5, Issue 1, 2002, pp: 70-89; L. Nakamura, *Cybertypes: Race, ethnicity and identity on the Internet.* London: Routledge, 2002.

[58] K. Hayles, *How we think.* Chicago: University Chicago Press, 2012.

and tend to withdraw. With ubiquitous technology and particularly IoT the sense of [human] agency appears threatened by a perceived increase in the agency of artificial intelligence[59]. One of the possible answers to this [perceived] loss of control is the active use of imagination or in other words, imaginative agency. Like the neighbours in my estate cutting across predefined architectures and creating their own paths to suit their needs.

Imaginative Agency

Imaginative Agency is presented by Clare Brant[60] as a theoretical framework for the analysis of life writing and specifically digital storytelling but she also proposes its usefulness for interdisciplinary research. Among other theoretical underpinnings she builds on Ricoeur's concept of the *capable self*, which connects "imagination" with "possibility" suggesting agency. For Ricoeur the capable subject speaks, acts, tells and imputes. Therefore, a human agent is capable of expression, action, narration and it is morally responsible[61]. In this way, acting as a capability, "imaginative agency helps restore some philosophical stability to the multiplicity of possibilities of online identities [...] without resorting nostalgically to the liberal subject's unified self."[62]

My understanding is that Imaginative agency can operate beyond literature and autobiography and enter everyday life. De Certeau's and Lefebvre concept of *inhabitation* can be applied to both pre-digital and digital contexts in which individuals (and groups) stripped of control navigate the rules of engagement in order to empower themselves. The Argentinian feature *Wild Tales*[63] is a portrayal of extreme human behaviour contesting equally extreme absurd (machinistic) situations. Everyone can relate to the mosaic of scenarios that the film presents: from holding back piercing emotions in order to keep face in a social context to having to deal with gruelling bureaucracy and unfair treatment by power institutions. Every vignette is a recreation over and over again of the story of David versus Goliath, including its violent outcome, yet as reality often goes, the hero (us) doesn't always come out as the winning party. In *Wild Tales* there is some sense of liberation coming out of every story. It can be compared to the cliché of shouting to the top of your lungs at the abyss with the backdrop of a postcard landscape. The increasing power of algorithms makes digital agency opaque (black box model) and as data subjects, individuals have constrained agency. On the one hand, they might not be aware of which

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[59] R. Legaspi, H. Zhengoqi, T. Toyoizumi, "Synthetic agency...", p. 88.

[60] C. Brant, "Imaginative Agency: New Possibilities." *The European Journal of Life Writing.* Vol VII, 2019, pp. 145-170.

[61] *Ibid.*, p. 145.

[62] *Ibid.*

[63] *Wild Tales*, dir. Damian Szifron, BFI, Canal Plus, Corner Productions: Angentina, 2014, Motion Picture.

data is collected from them and to what end and when they know _we are all guilty of ticking the *I Agree* box only to get the latest app for 'free'; it becomes a commodity to be consumed. Despite industry aforementioned newly acquired ethical conscience and data protection laws, individuals' data manipulation through AI systems (and how this effects their lives) is still quite worrying (recruitment, bank loans, facial recognition software).

Imagination

Attempting to define imagination is a risky business that falls outside the scope of this paper. Explaining imagination in Aristotelian terms as the generation of images (ideas) in an inner place (outside the social gaze), that might inspire the creation of things (outside), appears quite limited when thinking of uncreative imagination or imaginative recreation (mash-ups) abounding in the Internet as Brant[64] points out. When it comes to algorithms, we might suspect certain danger of machines determining our imagination. When I go to Google search looking for inspiration or references to build a new DIY project, the search engine has already learned from my previous searches and retrieves entries that are tailored to my taste (presently pallet art and cob building) while fitting with my view of the world (echo chamber). It seems like if Google, or its algorithms rather, increasingly assume the function of imagining for me. Arrived to this point Vygovsky's definition of imagination[65] is quite useful. Vygovsky defines imagination as the human capacity to distance oneself from the here-and-now in order to return to it with new possibilities. This distancing and returning suggests the possibility of ideating alternative scenarios and coming back with renewed approaches that have the potential for action. The mind engages in a "loop" disengaging temporarily from the actual field of perception and engages in a dynamic semiotic (symbolic) process that is not bound to the same lineal or causal temporality as that of the socially shared reality. Imagination therefore, as defined by Vygotsky, besides being oriented to the past or to the future it can also be oriented to an alternative present[66].

For Vygotsky imagination is a sociocultural psychological phenomenon. Like in the film *Wild Tales,* life disruptions such as traumatic events, catastrophes or frustrating situations, trigger imaginative thinking (singing from balconies in Italy to overcome curfew during COVID-19 lockdown, Bacardi using rum factory line to produce hand sanitizer). Ruptures question the taken-for-granted nature of everyday life and create a demand for creation that is based on the lack of adaptation. Rupture then becomes the basis of sense making and narrative building imagination

[64] C. Brant, "Imaginative Agency...".

[65] L. Vygotsky, "Imagination and Creativity in Childhood", p. 26.

[66] T. Zittoun, A. Gillespie, "Imagination: Creating Alternatives in Everyday Life." In V. P. Glaveanu (ed.), *The Palgrave Handbook of Creativity and Culture* Research. London: Palgrave McMillan, 2016, pp. 225–242 (225).

allowing us to reconfigure our relationship with the present (with the world) instead of reproducing it as it is[67]. This capacity of the imagination is essential for coping and it is also the basis of dreams.

Agency

There are many theories about agency but some of them are particularly useful to explain how imaginative agency might work. For Althusser,[68] people are subjected to what institutional discourses and practices make of them, and free will or agency is no more than an illusion. In contrast, Mikhail Bakhtin[69], argues that through the carnivalesque and the grotesque people are able to upend these systems. For instance, artists are well able to avoid censorship by deploying all sorts of tricks to disguise their 'real' intentions. They can create a 'new language' through clever use of rhetorical figures such as satire, irony or metaphors in order to render their messages unrecognizable to the censor. This was the case for many artists from Eastern Europe, such as Jan Švankmajer, who contested the dictatorial regime of former Czechoslovakia through humorous animations and surrealism[70]. For Lyotard[71], people construct their worlds through dynamic and ungovernable networks of language that constantly generate unexpected moves and countermoves. For Butler[72] agency, like the body, is performative, although in our everyday life we re-enact socially enforced norms, we also fail to fully conform and with this breach emerges the possibility of scenario reconfigurations. As discussed previously, Michel De Certeau and Lefevre described the strategy of *inhabitation* as the process through which individuals can create or superimpose their own system onto the system imposed. For Giddens, an agent (individual) is able to act, influence, or resist the outside world[73]. In other words, to be an agent means to be able to use a range of casual (daily life) strategies, particular ways of doing things, schemata or models of action that are local to a particular situation but not necessarily individual as they operate in a relational context.

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[67] L. Vygotsky, "Imagination and Creativity in Childhood", p. 27.

[68] L. Althusser, *Essays on Ideology*. London: Verso, 1984.

[69] M. Bakhtin, *Rabelais and His World*.

[70] P. Hames, *The cinema of Jan Švankmajer: Dark Alchemy*. [2nd Edition]. London: Wallflowers Press, 2008.

[71] J.-F. Lyotard, *The Postmodern Condition: A Report on Knowledge*. Minneapolis: University of Minnesota Press, 1984.

[72] J. Butler, *Gender Trouble*. London: Routledge, 1991.

[73] A. Giddens, *The constitution of society: outline of the theory of structuration*. Cambridge: Polity Press, 1984.

Imaginative Agency at work

Building on the aforementioned theories, it appears that there is a correlation between imagination, agency and resilience. For example, plotting revenges like in the film *Wild Tales*, or hacking video games with subversive mods and patches, become aesthetic forms of resistance to a status quo perceived as unfair. *Velvet Strike*[74] is a mod/hack of the commercial one shooter game *Strike* in which the original alpha-male values have been subverted to the extent that shooters wear peace signs and shoot rainbows instead of bullets. Other cases of imaginative agency appear in *Twitter* and *Facebook* feeds transformed into political devices in which users profit from the platforms' affordances to organise a revolt (Arab Spring) or to deal with traumatic experiences (cancer diaries). For example, Twitter hashtags #TwoWomenTravel denounced the situation of Irish women having to travel to UK in order to get an abortion and #RechercheParis was first set to locate survivors after the 2015 terrorist attacks in Paris and later became a cyber shrine to mourn the victims.

By observing children at play we can see the workings of imaginative agency. Children use 'transgressive' scripts when they ignore the original purpose of the toys they are given to play with. My 6-year-old next-door neighbour the other day was using two plastic trucks as skates (until they collapsed under his weight) and my 3 years old nephew uses blocks from a building game (similar to Lego but with bigger pieces, for toddlers) as spoons. In a very interesting study Michelle Bae-Dimitriadis and Olga Ivashkevich[75] observed young girls playing with Barbies and found that instead of limiting themselves to play the normative gendered script suggested by Mattel's publicity, the girls' games included homosexual enactments, gender bending and violent acts. They interpreted this behaviour through the framework of Julia Kristeva's feminist theory of abjection[76] and concluded that the girls replaced the order of the father (patriarchy) with the affective pre-symbolic order of bodily performance. This interpretation appears to confirm both Bakhtin's theory of the carnivalesque[77] and Vygotsky's[78] theory that through imagination the mind disengages from the actual field of perception and engages in a dynamic symbolic process that is not bound to the socially shared reality. The Islamic State use of Youtube as a

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[74] Created by L. Leandre, A. M. Schleiner and B. Condon, *Velvet Strike.* 2002. https://anthology.rhizome.org/velvet-strike.

[75] M. Bae-Dimitriadis, O. Ivashkevich, "Barbie Play and the Public Pedagogy of Abjection." *Visual Culture & Gender,* [S.l.], v. 13, 2018, pp. 64-75. Available at: <http://www.vcg.emitto.net/index.php/vcg/article/view/126>.

[76] J. Kristeva, *Powers of Horror: An Essay on Abjection.* New York: Columbia University Press, 1982.   http://users.clas.ufl.edu/burt/touchyfeelingsmaliciousobjects/Kristevapowersofhorrorabjection.pdf.

[77] M. Bakhtin, *Problems of Dovstoevsky's Poetics.* Minneapolis: University of Minnesota Press, 1984 [1972].

[78] L. Vygotsky, "Imagination and Creativity in Childhood.".

public site for executions (beheadings), or revenge porn are instances of wicked uses of imaginative agency that could be explored using Vygotsky's framework. For reasons of scope I won't delve further into these uses but it would be worthy to explore. I am now turning to the exploration of the possibilities of imaginative agency in the case of the controversial facial recognition software, in which for example the Chinese social credit system or the policing app Clear View[79] are based.

Imaginative Agency and facial recognition algorithms

Facial recognition software to some extent imitates the workings of the human brain. The human brain has the capacity to recognise faces almost instantaneously, for us it is almost intuitive. Every day we encounter many faces and most of us are able to recognise those that are familiar even if we have forgotten their names or the job they do. This capacity of the brain makes perfect sense in terms of adaptation. As highly social animals humans need to be able to quickly assess each other by sight while attending to cues. Neuroscience tends to dismiss the study of facial recognition comparing it to the black box of computer deep neural networks[80]. Put simply, we don't know how our brain recognises faces and we also don't know how algorithms think when they recognise (or mistake) faces.

Facial recognition software uses biometrics to map facial features from a collection of photographs or videos and then uses force brute to compare with a huge database of faces until it finds a match. To all this power, facial recognition algorithms might have found their nemesis in both 'uniformity' and 'chaos'. Regarding uniformity, if all faces look the same then how to distinguish one from the next? In the aforementioned Chinese social credit system if all Tibetans decide to wear a mask that looks like the Dalai Lama then how is the AI going to learn to find a particular person? (e.g. Guy Fawkes Anonymous mask). On the other hand, if a random event (chaos, novelty) is introduced in a face (e.g. an extra mouth as per French artist Orlan performance, or facial dragon-like scarification) then unless the AI is trained to learn that human faces can have two mouths or look like dragons I can see many people easily labelled by an AI as no-persons.

The project *CV Dazzle* by telecommunications engineer and artist Adam Harvey[81] is an excellent rendition of imaginative agency. *CV Dazzle* proposes different [fashion] styles of camouflage as means to hide from face recognition technology. The work, based on computer vision uses bold patterning to break apart the expected features targeted by facial recognition software (in particular the Viola-Jones algorithm). It works by altering light and dark areas of a face according to the specific

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[79] Clear View [online]. Computer vision for a safer world. 2020. https://clearview.ai/.

[80] B. Panko, "How does your brain recognise faces." *Smithsonian Magazine* [online], 2017. Available at: https://www.smithsonianmag.com/science-nature/how-does-your-brain-recognize-faces-180963583/.

[81] A. Harvey, *CV Dazzle*, 2011. Available at: https://ahprojects.com/cvdazzle/.

programming of the AI, or in other words, by studying the vulnerabilities of the AI and introducing novelties (chaos) as per the discussion in the previous section. By blocking the entry point of facial recognition software (the object-recognition step) these alterations also deem inoperative the subsequent facets of the programme, which are face recognition and emotion analysis. Harvey stresses that the styling tips offered in *CV Dazzle* (mainly make-up and hairdo alterations) work solely for the Viola-Jones Haarcascade face detector in 2D still-images (similar to passport pictures), and that other more sophisticated AI's, for example based in 3D multi-cameras, wouldn't be fooled by it. Nevertheless, he is adamant that this project must go on as the widespread use of facial recognition for surveillance makes the question of hiding from machines a pressing one. He continues working in ways to render humans less visible to surveillance systems under the guise of fashion. Below some style tips to hide from machines:

Style Tips

1. **Makeup** Avoid enhancers. They amplify key facial features. This makes your face easier to detect. Instead apply makeup that contrasts with your skin tone in unusual tones and directions: light colors on dark skin, dark colors on light skin.

2. **Nose Bridge** Partially obscure the nose-bridge area. The region where the nose, eyes, and forehead intersect is a key facial feature. This is especially effective against OpenCV's face detection algorithm.

3. **Eyes** Partially obscure one or both of the ocular regions. The symmetrical position and darkness of eyes is a key facial feature.

4. **Masks** Avoid wearing masks as they are illegal in some cities. Instead of concealing your face, modify the contrast, tonal gradients, and spatial relationship of dark and light areas using hair, makeup, and/or unique fashion accessories.

5. **Head** Research from Ranran Feng and Balakrishnan Prabhakaran at University of Texas, shows that obscuring the elliptical shape of a head can also improve your ability to block face detection. Link: Facilitating fashion camouflage art. Use hair, turtlenecks, or fashion accessories to alter the expected elliptical shape.

6. **Asymmetry** Face detection algorithms expect symmetry between the left and right sides of the face. By developing an asymmetrical look, you can decrease your probability of being detected.

These tips apply only to the Viola-Jones haarcascade method for face detection.

Fig.1 Source Adam Harvey, CV Dazzle website

Similar initiatives can be found on Youtube, where ordinary citizens without any computer vision training offer tutorials on how to hide from surveillance cameras in cities. Examples are Jillian Mayer's[82] extreme make-up tutorial and Joselyn McDonal[83] floral dos. I have also found tutorials by people using CVDazzle make up tips, which are so far the most popular (more viewers).

These renditions of imaginative agency can be explored under the framework of the politics of resistance manifested through the aesthetics of the carnivalesque and the grotesque as defined by Bakhtin[84]. Bakhtin employed the notion of Carnival to explain the origins of the Polyphonic Novel. Carnival is a way to unleash taboo feelings and a strategy for skipping the limits of what is politically correct. Through the carnivalesque the 'ordered' world is turned upside down and muddled; nothing is taken at face value and general assumptions are contested.

Furthermore everything is brought to the same dialogical level, therefore eliminating leagues and hierarchies. Authoritative voices are stripped of privilege and a gay mindset is decreed by a polyphony of alternative voices. Only in this scenario of resistance can true emancipatory change take place.

For Bakhtin these carnivalesque tactics are theatrical expressions of experienced life translated into sensuous ritualistic performances (also aforementioned Kristeva's abjection and Vygotsky's symbolic processes disengaged from socially shared reality). In this framework, Imaginative agency, be in the form of carnival or in the form of alternative narratives as described by Vygotsky and Kristeva, play a role similar to that of tales and legends, which are deployed in a space outside everyday reality.

In this space, what is happening is revealed through the marvellous, through heroes and trolls and also models of good and bad. What is interesting of this approach is how it can help to understand everyday interactions with machines through the analysis of local actions relative to situations in which the individual perceives a loss of control before an AI agent. As De Certeau puts it, "the formality of everyday practices is indicated in this [tales], which frequently reverse the relationships of power [...] and ensure the victory of the unfortunate in a fabulous, utopian space."[85]

6. BY WAY OF CONCLUSION

Pervasive technologies based in artifical intelligence systems have the potential to facilitate a more efficient and sustainable living in so called smart cities whilst making

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[82] J. Mayer, "Make up Tutorial". Youtube Channel, 2014. Available at: https://www.youtube.com/watch?v=kGGnnp43uNM.

[83] J. McDonal, *Mother Protect me*, 2019. https://joselynmcdonald.com/makeup.

[84] M. Bakhtin, *Problems of Dovstoevsky's Poetics*.

[85] M. De Certeau, *The Practice of Everyday Life*, p. 23.

possible a more transparent communication between citizens, industry and governance bodies. The current state of play is that the Internet of Things monitors every aspect of everyday life and then transforms it into efficient bits of (commodifiable) data, which is then turned either into positive action at its best or contributes to diminish citizens rights at its worst, therefore posing important ethical dilemmas. Effectively, the convergence between humans and pervasive technology presents the qualities of a *pharmakon* as described by Bernard Stiegler, a poison with curative potential, and culture, local expressions and productions, are the therapeutics in so far as freed from the colonization of cognitive capitalism.

This article is concerned with local expressions of agency emerging from everyday interactions with artifical intelligence. Its point of departure is the principle of singularity as devised by De Certeau by which everyday life can be investigated as the relationship connecting everyday pursuits to particular circumstances. In this work, what is local is understood as an expression of the singular; it refers to the *savoirs* (knowledges) that operate in the everyday in a context dominated by ubiquitous technology. It is concerned with particular ways of thinking (epistemologies) emerging from individuals and communities relational tactics, productions and agency that can also constitute models for the universal. In other words, in this framework, singularities constitute not only sites of exploration, case studies or localities but also exemplars informing the macro-level and therefore paradigmes of knowledge. It explores imaginative agency as an expression of local intelligence, understood as ways by which individuals actively operate (dwell) within the machine for their own benefit and by means of imagination. Discusses particular ways of doing things, tactics, schemata or models of action that are local but not necessarily individual as they operate in a relational context as a matter of course. Imaginative agency relates to an art of dwelling as per De Certeau and Lefebvre, or to make-worlds inside other worlds as described by Vigovsky or to resist as per Bahktin, which allow the common man and woman to navigate daily struggles with the Internet of things (dominated by artificial intelligence) through imagination and agency.

Humans love affair with machines is inseparable to the human condition. Humans have been attached to their tools since time immemorial. We are limited, incomplete beings whose survival depends of becoming cyborgs, half human, half machines. We are a species that become through technology as described by Stiegler's general organology and if we are not careful we might cease to be by means of the same technology that makes possible our persistence in the planet. Some voices (Turkle), argue that we have reached a point of no return (robotic moment), in which humans and technology have become so intertwined that whilst science delivers more and more human-like artificial intelligence we become more and more dehumanized in our daily interactions with technology. It doesn't have to be this way. We might be able to find a way to cooperate with our machines or vice versa. A starting point could be the rejection of the binary human v machine. Instead of

seen machines as adversaries there is a necessity to see technology as an augmentation of our capacities. However, and as a measure of common sense we have to put aside the tools that don't accomplish this very function.

Artificial intelligence is not useful to citizens if it is plagued with prejudices. Artificial intelligence makes decisions that can influence and sometimes change dramatically the course of a life. Algorithms powered by AI are programed to perform automated tasks and identify patterns while 'learning' from massive databases. Algorithmic bias occurs when a system makes decisions without using discretion. AI learns by processing and analysing great quantities of data from a diversity of sources. If algorithms incorporate biases of the real world and then are used for automatic processes, then their decisions might result in discriminatory actions due an unintended prejudice introduced by the software. However, it is not the robots that we have to be concerned about, but rather the human beings that have the power to shape the algorithms that control them and also those who have the power to decide how these algorithms are implemented.

Algorithmic bias and privacy concerns have re-stirred the debate on artificial intelligence Ethics. The EU and other countries have drafted guidelines and adopted resolutions that grant users greater control over their own data while urging companies to be more transparent in their use of artificial intelligence. The difficulty with disruptive innovation technologies to keep up with ethical practices is that when companies are at the start-up phase, they are nurtured by venture capital investment and focusing very much in economic growth over common good. Dominating the scene, stand the tech giants (FANG's) which have the capacity to lobby and influence policy at the higher level. Notwithstanding, the tech industry, researchers and governments are presently working in fair accessible algorithms. While a section of the scientist community concentrates in holding AI's accountable for their doings (field of machine ethics) others concentrate in reshaping knowledge so algorithms can learn from trustable, bias-free sources.

The real debate on AI ethics is not as much what the algorithms can do or whether they can be held accountable for their actions but which kind of people program them and which kind of data they learn from. Furthermore, we should interrogate what companies and governments are doing with them under presumptions of security, efficacy and sustainability for a better [smart] living for all.

The first question we should pose ourselves when thinking about 'smart living' is how is this going to affect us in everyday life. Algorithms running the Internet of things have the capacity to autonomously make inferences and deductions and make decisions that are mostly independent from human agency. Yet, algorithms might well have the ability to shape humans as much as living in a particular society and culture do. Individuals and communities might become disempowered through machinistic and algoritmic decision making processes. In everyday interactions with machines people often perceive that the control of a situation has been

taken out of their hands. As a consequence, they feel hopeless and tend to withdraw. In other occasions people relate tactically with machines in order to enforce their own sense of agency. Cyber and Techno Feminist theories suggested that pervasive technologies either favoured or constrained agency. De Certeau and Lefebvre notion of practiced space by which users dwell or inhabit a space is useful to explain this dialectics.

Imaginative Agency is a very useful [umbrella] concept because connects "imagination" with the "possibility" of overcoming a situation perceived as unfair, therefore suggesting agency. It allows for a multi-faceted approach to the analysis of local knowledge[s] as dwelling tactics as per De Certeau and Lefebvre, counter-narratives as per Vigovsky/ Kristeva or resistance as per Bahktin, and when it comes to everyday interactions with artificial intelligence. Through imaginative agency citizens are capable to distance themselves from frustrating interactions with AI's and return to it with new possibilities.

From this multidimensional exploration, it appears that there is a correlation between imagination, agency and resilience often manifested through disruptive tactics. These tactics become the basis of sense making allowing users to reconfigure their relationship with the present situation instead of reproducing it as it. For example hacking violent video games and turning them into peaceful ones (*Velvet Strike*) or repurposing technology affordances for political ends (Arab Spring) or to mourn loved ones (#RechercheParis). Like technology, imaginative agency has a pharmacological character. It can both heal (e.g. *Facebook* cancer diaries) and harm (revenge porn).

Until AI's achieve fairness, imaginative agency can be used to contest dubious algorithms such as those of face recognition systems. *CVDazzle* is an initiative devised by computer engineer and artist Adam Harvey whose strategy is discovering the flaws of facial recognition algorithms and then use make-up and hair styling as tactics to avoid detection. Smart systems like facial recognition are vulnerable to chaotic eventualities because make decisions on the basis of recognition patterns that don't take into account local novelty. A facial recognition system 'faced' with features unusual to a human physiognomy will discard the object as a no-face. Harvey's rendition of imaginative agency can be analysed under the prism of the politics of resistance manifested through the aesthetics of the carnivalesque and the grotesque as defined by Bakhtin.

The current state of play, particularly in urban settings, with ubiquitous technology managing every aspect of everyday life, calls for a combination of top-down measures and imaginative agency in order to empower citizens in everyday interactions with artificial intelligence.

By way of thinking locally, smart cities can be unravelled from a techno centric dystopian scenario and potentially develop into systems of another kind, real smart

cities, in which technology is a tool at the service of coexistence and urban sustainability and not a means of citizens exploitation and control.

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