Bachelor Thesis

Behavioural Data in Artificial Intelligence: through the lens of biopower

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Abstract

This paper is a theoretical study that attempts to explain the relation between Michel Foucault's theory of biopower to the phenomenon of Artificial Intelligence and its specific use of behavioural data. It gives a thorough examination of Artificial Intelligence's meaning, its sources of data, and its applications. After elaborating the relationship between the theory and the phenomenon at a base level, this paper enters more detail by focusing on three postcolonial theories. This leads to several examples of how Artificial Intelligence is both a tool that exerts biopower and the influence it has on existing structures of biopower.

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1. Introduction

In the last two decades, Artificial Intelligence (AI) has seen a steep rise in its technological advances, its capacities and its applications. It has led to software for image recognition, text synthesis, translation, and many other subfields of AI, and has created applications that allow for the monitoring of forests through satellite images, clever chatbots and personal assistants such as *Siri* and *Alexa*, recommender systems such as Facebook and Google's personalised advertisements and link recommendations, and many other applications that exceed our imagination. One of the topics that have drawn considerable attention is the use of personal data to achieve different purposes, and more specifically: behavioural data. Behavioural data is information concerning a person's behaviour, from the time one takes to read a webpage, to the number of different people one calls over the phone, the words that are chosen in public and private communication using a computer, to every single step that one lets the smartphone register over its GPS system.

While at the beginning it did not seem too obvious, the last couple of years have been marked by great attention by the media given to debatable applications of such technology: social media bots started spreading misinformation in great numbers, political campaigns collecting enormous amounts of personal data about people's psychology to target them with political ads (Polonski, 2017), Facebook proving that it had the capacity to influence voter turnout in an election (Serfass et al., 2017) and many other examples.

In order to prevent the misuse of these technological advances, governments have started questioning how to regulate the use of data, and the European Union has in recent years created the General Data Protection Regulation, the Digital Services Act, the Ethics Guidelines for Trustworthy AI and other policies for this purpose (European Commission, n.d.).

Other countries might be somewhat interested in exploiting this technology for their own advantage. As has been argued by many and will become apparent during this research, AI as a tool of political power has an enormous capacity to shape the history that is yet to be recorded.

At the Munich Security Conference, former UN Secretary-General Kofi Annan said the following about the use of this new technology in discussion with leaders from *Big-Tech* companies:

> *"Authoritarian governments have decided to restrain the use of these tools, and some have not only blocked it, but used it to control their people."*
>
> (Sanders, 2018, February 16)

Historian and professor at the Hebrew University of Jerusalem Yuval Noah Harari argues in the article "Why Technology Favors Tyranny" (2018) that dictatorships, based on centralised decision-making, stand to improve their relative power through Artificial Intelligence in relation to Democracies. The author writes:

> *"If you disregard all privacy concerns and concentrate all the information relating to a billion people in one database, you'll wind up with much better algorithms than if you respect individual privacy and have in your database only partial information on a million people. "*

While there are a lot of different applications of Artificial Intelligence that can help humans find solutions to many of today's problems, I believe it is essential to take into consideration the threats that this technology might bring to free will. Therefore, I propose a literature review and theoretical work on the use of Artificial Intelligence, focusing on behavioural data and on its uses as a means of power, more specifically, as a means of biopower. Thus, the research question is: **How is the use of behavioural data in Artificial Intelligence a means of exerting biopower?**

By answering this research question, this research paper aims to contribute to critical thinking related to the employment of Artificial Intelligence. By concentrating on the use of behavioural data, the focus is being set on the mechanisms of the technology. By contrast, framing this data as "personal" or "private" only takes into account the ownership of the data, not the method and surplus associated. And by relating the usage of this technology to biopower, I apply existing theories to build my arguments upon, providing a link between the enormous power of AI and the existing critical theory associated with biopolitics.

The subsequent sections of this introductory chapter will explain in more detail how and why I wrote this research paper. First, I will introduce the relevance of this topic, the context of Artificial Intelligence within the European Union, as well as my aims and position regarding this topic. It follows two sections regarding the methodology and the choice of literature.

I have structured this research paper with the intention of maximising the understanding of the effects of Artificial Intelligence. Therefore, I decided first to define and explain the relevant details of AI and then the lengthy introduction to the meaning of Biopower. My main contribution is in the fourth chapter, where I connect the previous two chapters and hence answer the research question. To complement the understanding of how AI acts as a form of biopower, I have chosen the postcolonial perspective. I conclude with a summary and some final remarks concerning the results of this paper and its limitations.

1.1 Relevance

The twenty-first century has come along with a new industrial era called the *digital age*. A reasonable amount of time that we spend alive, we connect to some form of a digital device: we work on our computers, we use mobile phones for almost any task in our daily lives - from talking to people, to surfing the internet, to reading the news and playing games while sitting on the train. Many of us also started adopting devices and home appliances linked to the internet, the so-called Internet of Things (IoT), where the home lights, the stereo system and the vacuum robot are somehow connected together to the internet, along with the air conditioning system. In addition, we go to the doctor, who can access our medical history, to our bank, who gives us wonderful statistics about which stores we go to and pay with a credit card. At the same time, the shops keep a list of the purchases we made to update their inventory, we meet with new people that matched with us on some phone app, and after a long day, we check the number of steps taken, just to make sure we exercised enough along the paths suggested to us on an app with a smart map and a tracking device. The number of interactions with the digital world exceeds the just listed before. So many things we do are associated with a digital device, and this device collects information about what we are doing.

Along have spurred algorithms that analyse the data, correlating and categorising these data, trying to predict future behaviour. These new predictions allow for continuous optimisation and personalisation of every product and service provided to us as customers and organisations. As will be explained throughout this research paper, this field of science - Artificial Intelligence - has managed to learn quite a lot about human behaviour, and companies, governments and individuals alike have noticed its power to influence behaviour. It is not only about serving the individuals with information about themselves: this knowledge informs companies and governments how to behave, how to trigger our willingness to accept their wishes - be they of political or economic nature. AI is only at its advent, but it has already left its mark. But how do we define or describe this invisible power it has over people? Companies explain to us - they are just presenting us with more relevant advertisements; governments assure us, this will help keep us safe and prosper. But how can it be that my behaviour, the life story that I am carving, is suddenly not only a reflection of who I am, but actually being steered by an outside force - like an invisible hand, that guides me through a maze?

This force does not originate in a mythological realm; it is quite human-made. It is made of computer chips and computer code written by people, yet its power is not visible.

Naming the kind of power that affects our daily decisions would allow for a better understanding of it and the opportunity not to be subjugated to it - instead, create frameworks to harvest it and enable individuals to emancipate from and through it.

1.2 AI within the EU

When addressing the topic of Artificial Intelligence, the European Union has come to recognise this technology as a topic of its own, further reinforcing the arguments of the relevance of this scientific field. In its policy design, they observe AI's strategic, societal and economic importance and state the necessity to consider its "socio-economic, legal and ethical impacts".(European Commission, n.d.)

On April 10th 2018, European Member States signed the *Declaration of cooperation on Artificial Intelligence*. In the words of Andrus Ansip, Vice-President for the Digital Single Market, and Mariya Gabriel, Commissioner for Digital Economy and Society, this means that the "Cooperation will focus on reinforcing European AI research centres, creating synergies in [Research, Development and Innovation] funding schemes across Europe, and exchanging views on the impact of AI on society and the economy" (European Commission, 2018). For the period of 2018 to 2020, the investment was raised to EUR 1.5 billion, increasing the annual investment by the commission in Artificial Intelligence by 70%. (European Commission, n.d.)

In 2019, the High-Level Expert Group on Artificial Intelligence announced the document *Policy and Investment Recommendations for Trustworthy AI* during the European AI Alliance Assembly (European Commission, n.d.). In this paper, the group recommended measures that would assist in "Empowering and Protecting Humans and Society", boosting the introduction of AI in the private and public sector, and "Ensuring World-Class Research Capabilities", as well as focusing on attaining the necessary infrastructure, education, regulation and funding. (High-Level Expert Group on Artificial Intelligence, 2019a)

In February 2020, the European Commission presented a White Paper intending to create conditions for "excellence and trust in AI" and a *Report on the safety and liability implications of Artificial Intelligence, the Internet of Things, and robotics.* In this white paper, one of the proposals is "Policy options for a future EU regulatory framework that would determine the types of legal requirements that would apply to relevant actors, with a particular focus on high-risk applications" (European Commission, n.d.). Under "high-risk"*,* the whitepaper explains, are meant AI systems that pose risks to "protection of safety, consumer rights and fundamental rights", being dependent on the sector and the type of risk involved. AI systems affecting employment equality or biometric identification are examples listed (European Commission, 2020a). However, on the public consultation of this White Paper, respondents were not entirely satisfied with the white paper's definition of high risk. They mention other

fields such as "Analysing / manipulating human behaviour", "health", "autonomous weapons/ defense sector", "critical infrastructure", "political communication / disinformation", "predictive policing", "remote biometric identification", "mass surveillance", "human resources and employment" and "security and law enforcement". (European Commission, 2020b)

The seven key guidelines proposed by the AI HLEG are "Human agency and oversight", "Technical robustness and safety", "Privacy and Data Governance", "Transparency", "Diversity, non-discrimination and fairness", "Societal and environmental well-being", and "Accountability". (European Commission, 2019)

The General Data Protection Regulation (GDPR) is the EU regulation focused on personal data processing. The principles guiding it are "lawfulness, fairness, and transparency", "purpose limitation", "data minimisation", "accuracy", "storage limitation", "integrity and confidentiality", and "accountability" (Regulation 2016/679, Art. 5). The GDPR applies to any company globally, as long as the data subject is in the European Union (Regulation 2016/679, Art. 2).

The GDPR is seen by many, including Mark Zuckerberg, CEO and founder of Facebook, as a policy example to be followed by other countries and at the international level. (Zuckerberg, 2019)

This section was an attempt at familiarising with the European Union's policy framework in the matters of Artificial Intelligence and served to demonstrate the relevance given to AI at the European level. However, given the purpose of this paper, I will refrain from commenting on them.

1.3 Aim, Author's Positioning and inclusive Language

My aim is to help advance the understanding of Artificial Intelligence's impact on people's everyday lives, but not by describing the impact: rather, by analysing the force driving the impact. Understanding it, by naming and characterising it, will allow for further research that helps identify the influence of technology in society better. Suppose it becomes possible to find a frame for this phenomenon. In that case, it may become easier to design policies that allow this force to be used for the interest of the subjects of this force, instead of allowing them to become just a pawn in someone else's chess game. It is about freedom *of* choice, not *from* choice.

My personal position towards Artificial Intelligence might have an influence on this research paper. Besides being a technology enthusiast, I have a big interest in programming and

computer sciences in general, and especially relating to the field of Artificial Intelligence. This year I have enrolled in the Johann Kepler University in Linz in the Bachelors of Science in Artificial Intelligence; therefore, I look at this issue through two distinct sides of my personal identity: On the one side, as a political science student, I consider the political impact of AI, as in this research. On the other side, as a prospective AI researcher, I have an interest in learning about the capabilities of this technology. In the dark hole, which is the cleavage between these two, lies the fantasies of solving political problems by implementing AI and the fears of it being done by people with different ethical standards than mine.

In addition, my Portuguese and German heritage and school education might have shaped some political perspectives of mine: Portugal's colonial history, which is still often seen as having been a mission to "civilise" other societies, motivates me to try and be aware of possible imperialistic encroachments that oblige some form of servitude through technological hegemony. On the other hand, Portuguese and German's fascist history reminds me that governments might encroach on their own citizens' rights, freedoms and privacies - with little concern for people's lives or capacity for ethical reasoning.

In sum, I look at technological advances in AI with both enthusiasm and fear: I think of its positive implications for society as a whole and the benefits it will bring to my personal everyday life, as well as its threat to subjugate groups of people or even myself. It is due to this perspective and the belief that AI is a more powerful tool than seen before, that I think it is imperative to analyse it further and understand how to allow people to have a choice in how this technology affects them.

Regarding my choice of inclusive language, I try to make use of the fact that the English language rarely distinguishes between genders, and in the cases where such a distinction would be possible, I opt to use neutral words or phrasing. This mostly applies when writing about a singular author, where a gender-specific pronoun could be used to refer to a previously mentioned author. In this case, I avoid using the pronoun and refer to the said author either by the full name, the last name or simply "the author". Pronouns within citations were not changed. Besides this case, I have not identified any other piece of writing that could not be considered inclusive of all genders.

Secondly, this paper aims to make the theory behind a fairly recent technology understood by everybody, regardless of prior knowledge of it. I have made the biggest effort possible to make this paper as understandable as it can be. However, either by my ignorance or out of fear of impoverishing the paper content-wise, some *tech-jargon* will still be used and sometimes not explained to the fullest extent. In case of doubt about a specific word, I invite the reader to pick up a dictionary or encyclopaedia.

1.4 Methodology

To answer whether Artificial Intelligence, with a focus on behavioural data, is a form of exerting biopower, I have chosen a theoretical approach. While there is a necessary part of the work that needs to be exploratory and descriptive, i.e. while part of the research consists of trying to understand better the nature of Artificial Intelligence in its current form, this can not be understood without a frame of reference from the theoretical side of political sciences. And precisely this frame of reference, the underlying theory, is the surplus that needs to be added to make sense of what the technology of Artificial Intelligence entails. In addition, it is the study of a contemporary phenomenon that allows for the theory itself to be expanded and better understood (Kreisky et al., 2012, p.11).

A subfield of Artificial Intelligence that uses behavioural data is called *Big Data*. As its name foreshadows, it is a subfield that requires enormous amounts of resources: computational resources, which translates into monetary resources. Thus, it is not farfetched to assume that this technology is mainly used by a social class with the means to acquire it and use it, putting itself in a dialectical position to the majority of the people who do not.

To analyse this phenomenon, I will include a critical-dialectical analysis: one that tries to understand and explain the power that one group exerts over the other, with the intention of trying to emancipate those subjected to the technology of AI. Using the theoretical approach of biopower, as described in the third chapter, *The Theory of Biopower*, I will use phenomenology to explain the dialectic nature inherent to AI's current use. (See: Westle, 2009, pp.35-39)

To find meaningful literature, I first took a look at previous classes, namely:
- "Introduction to AI" with Prof. Johannes Fürnkranz at the Johannes Kepler University Linz;
- "BAK9: Politische Theorien und Theorienforschung - Digitaler Protest und das Politische" with Rahel Sophia Süß, M.A. and Anna-Verena Nosthoff, BA MA;
- "BAK13: Staatstätigkeit, Policy- und Governanceanalysen - Big data in public health and health policy: comparative perspectives" with Mag. Mag. Dr. Alexander Degelsegger-Márquez; and lastly,
- "BAK14: Geschlecht und Politik - Post-Kolonialität und neue Medien" with Syntia Hasenöhrl, B.A. M.A.,
- "BAK18: Bachelorseminar" with Mag. Dr. Meropi Tzanetakis.

Secondly, I have used the platforms ResearchGate, Google Scholar, Google, Elsevier, and uSearch (University of Vienna) to find additional literature using different combinations of the terms "AI", "Artificial Intelligence" "Big Data" with "politics", "democracy", "behavioural data", "social sciences", "biopolitics" and "surveillance".

Lastly, I complemented my collection of literature for this work by using the *snowball* technique, using the literature suggested in the readings and literature found during the search on the above-mentioned platforms.

In sum, the theoretical work that I intend to do consists of two parts. The first is a qualitative description of the subject field to be studied, i.e. Artificial Intelligence, a clarification of the terminology and the primary theory use: Biopower. For the latter, I will make use of hermeneutical works of the theory while revisiting the fundamental literature by Michel Foucault as well. In the second part, through phenomenology, I will explain the relationship between the theory and the phenomenon, followed by a critical-dialectical approach to the problem at hand.

1.5 Literature

In this section, I will briefly explain the literature that I have used for the research, sorted by the order in which it appears on the paper.

For the first part, explaining the relevance of Artificial Intelligence within the EU, I based my writings on official communications, reports and regulations by the European Union. Namely, I have mentioned the *Policy and Investment Recommendations for Trustworthy AI*, the *White Paper On Artificial Intelligence,* the *Public consultation on the AI White Paper - Final Report,* and the *General Data Protection Regulation* (GDPR), as well as some official communication by the European Commission.

The literature used for the second chapter, on the definitions of Artificial Intelligence, has multiple sources. I have chosen both an official definition by the High-Level Expert Group on Artificial Intelligence of the European Commission and one found in the introductory book *Artificial Intelligence: A Modern Approach* by Stuart J. Russell and Peter Norvig (1995). This book is also the recommended literature for the course "Introduction to AI" at the JK University in Linz. For the further section, I have mostly used details papers published in the *International Conference on Social Computing, Behavioral-Cultural Modeling and Prediction and Behavior Representation in Modeling and Simulation (SBP-BRiMS)* or the *International Conference on Social Informatics*, as well as the book "The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power" by Shoshana Zuboff (2019). The latter describes the process by which unregulated and very powerful companies make use of behavioural data in order not only to sell their products, but also to influence people's

behaviour at different levels. It is not focused on biopower or in describing power itself, rather a new political and socio-economic system that developed from capitalism towards exploiting the surplus gained from surveillance.

To write the chapter on the theory of Biopower and inform me for the discussion in the fourth chapter, I have used both hermeneutical works and Foucault's books, interviews, and lectures. For the first, Lemke, Casper & Moore's book "Biopolitics: An Advanced Introduction'' (2011) was very helpful in learning what I was looking for, as it offers a more concise interpretation of Foucault's Biopower. However, a better understanding was only possible after going through "*Power/Knowledge: Selected interviews and other writings, 1972-1977", "Security, territory, population: Lectures at the College de France, 1977-78",* and *"The Subject and Power" (1982).*

For the chapter on the postcolonial perspective I have used three pieces of literature from the course "BAK14: Geschlecht und Politik - Post-Kolonialität und neue Medien''. These are "Data's empire: postcolonial data politics'', by Isin and Ruppert (2019), "Data Colonialism: Rethinking Big Data's Relation to the Contemporary Subject", by Couldry and Meijas (2019) and "Digital colonialism: US empire and the new imperialism in the Global South'', by Michael Kwet (2019).

Lastly, throughout the paper, I have used a few quotes and concepts by other authors not mentioned above, found either in newspaper articles or other journal articles during the research.

2. What is Artificial Intelligence?

Before taking on the research questions, in this section, I will go through a couple of definitions, namely Artificial Intelligence, Behavioural Data and Big Data. Afterwards, there will be an elaboration on where and how data gets collected and what the purposes of this collection may be.

2.1 Artificial Intelligence

The definition of Artificial Intelligence, also abbreviated as AI, is probably the most important one to understand first. The High-Level Expert Group on Artificial Intelligence of the European Commission (2019a) includes the following as its definition:

> *"Artificial intelligence (AI) systems are software (and possibly also hardware) systems designed by humans that, given a complex goal, act in the physical or digital dimension by perceiving their environment through data acquisition, interpreting the collected structured or unstructured data, reasoning on the knowledge, or processing the information, derived from this data and deciding the best action(s) to take to achieve the given goal. AI systems can either use symbolic rules or learn a numeric model, and they can also adapt their behaviour by analysing how the environment is affected by their previous actions."*

This definition includes several details that need to be broken apart: structured data refers to data that does not require further interpretation to be used: gender, age, measured distances, incomes, GDP, etc. In contrast, unstructured data requires further interpretation for a system to derive meaning: how does a computer know there is a car in an image, or the content of a piece of text, the words spoken in an audio file if a computer mostly understands the manipulation of 0s and 1s? This definition continues into further detail about machine learning and reinforcement learning, etc. However, this definition exceeds the needs for the purpose of this research paper.

According to Russell and Norvig, the field of study of AI "attempts to understand intelligent entities''. However, do "entities" mean "us" - people? Or are we talking about robots or smart computers? The authors, by contrasting AI with Philosophy and Psychology, explain how "AI strives to *build* intelligent entities as well as understand them". Therefore, under the wide umbrella of Artificial Intelligence, we find computer programs that look to understand and mimic human (or animal) thought processes, reasoning and behaviour, as well as "*ideal* concepts of intelligence" based on rationality and problem solving and using these tools to

study human and animal behaviour or complete tasks efficiently. (Russell & Norvig, 1995, pp.3-4).

Using this concept of AI, it becomes possible to see why systems for computer vision (interpretation of images and videos) and facial recognition, text synthesis and translation, voice recognition and music synthesis, logistics, Go and Chess playing, and other forms of reasoning fall under the name of Artificial Intelligence.

For the purpose of this research, there is another focus of the field of AI that is even more important: the part where "AI strives [...] to understand" intelligent beings - us. In this case, AI is used to create models of human behaviour and reasoning. And while Psychology and Philosophy are also attempting the same, often in collaboration with AI, Artificial Intelligence uses the tools and applications mentioned above to assist and try to outperform other fields of study in doing so, without having the need to create models that are simple enough for humans to understand.

2.2 Behavioural Data

Artificial Intelligence systems for behavioural research, given the fact that they are outside observers of the people they are studying, need to apply behavioural sciences as their epistemological approach. This means that they use behavioural data, i.e. they measure human actions. In other words, for an AI system, "Every action a user performs is considered a signal to be analysed and fed back into the system" (Hal Varian in Zuboff, 2019, chap. 3, "II. A Balance of Power"). Behavioural Data, thus, could be everything: Meta-data can inform about social networks and other patterns (Zuboff, 2019, chap. 4, "IV. Shelter: Surveillance Exceptionalism"), as well as the content of people's connections, communication, mobility, etc. "That book on the bookshelf - along with the records of anyone who may have touched it and when, their location, behavior, networks, and so on - is now the diamond mine ready for excavation and plunder, to be rendered into behavioral data. " (Zuboff, 2019, chap.4, "III. Shelter: The Neoliberal Legacy")

Further sources of behavioural data will be discussed later, in section *2.4 Data Collection*. For now, it is important to understand that every behaviour, as soon as it is possible to measure it, has become a potential source of behavioural data.

2.3 Big Data

Big data is a technology and subfield of Artificial Intelligence. As its name suggests, its focus is in processing *big* amounts of data, and is often described as being dependent on the "big V": *volume*, *velocity*, and *variety*. Volume describes the amount of data that is characteristic

in Big Data applications, which is respective to the amount of entities being studied, as well as the amount of information per entity being collected. An example would be the number of customers of a company or the citizens subscribed to a health service (it can reach the order of the billions of people), and the amount of information they provide - the clicks they do on a webpage, or the medical measurements people do on their health app on the phone, etc. Velocity refers to the speed at which data is collected and processed, where competition drives researchers and data scientists to create knowledge in real-time. Variety describes the different sources of information being collected. Sources may include any different usage of technology by a person, and is only limited by its usefulness. (Pouchard, 2015)

It is therefore reasonable to assume that the use of a technology such as Big Data is mostly useful for entities that have access to enormous numbers of people and their data (volume), the infrastructure to compute such data (velocity), and to different forms of data for each person (variety).

2.4 Data Collection

There are many different ways in which data gets collected, and some of which will be explored in this section. There are too many sources of information and thus it would be superfluous to enumerate them all. However, in order to understand the magnitude of the phenomenon at hand, it is important to get acquainted with some of the pieces of data that we share on a daily basis with AI systems.

The first thing that comes to mind of anyone that has heard of the current debate around Artificial Intelligence is the term *cookies*. Browser cookies are little pieces of computer code stored in a users' computer that allow for the transfer of information between the browser of the user and the server responsible for the website (Zuboff, 2019, chap. 3, "VI. A Human Invention"). While being quite essential in some aspects of today's internet use, for example knowing whether a user is logged in on an account or not, some of them work as personal identifiers - allowing for the identification of users (Regulation 2016/679, para. 30). A study by the Web Privacy Census that analysed the websites generating the most traffic in 2011, 2012, and 2015, asserted "that anyone who simply visited the 100 most popular websites would collect over 6,000 cookies in his or her computer, 83 percent of which were from third parties unrelated to the website that was visited. The census found 'Google tracking infrastructure' on 92 of the top 100 sites and 923 of the top 1,000 sites" (Zuboff, 2019, chap. 5, "II. Cornered"). This means that the recipients of the information derived from these cookies automatically know who visits which websites, and if they want, collect the content of the websites themselves along with how they are interacted with - every click, purchase, etc. Now it makes sense why one finds advertisements of handbags after reading news about the

British Royals, or why the results from searching "wave" on *Google Images* were of the ocean during the time I used to visit surfing websites, and changed to sinusoidal waves once I started having physics classes!

Cookies are not the only source of data on the internet. A *special* corner of the internet when it comes to collecting information are social media websites such as Facebook or Twitter. Here, users post their thoughts, activities, and feelings when writing in their statuses, comments, liking others' pictures, and talking to each other. Useful information is more than just the content of the messaging: it includes the choice of words and other characteristics of the information shared, the list of friends and their interactions. In the case of Twitter, this information is not only accessible to the company itself - there are programming interfaces (APIs) that allow it to conduct research on publicly shared messages allowing for the study of millions of *tweets*. Another such special corner of the internet is Google, which collects the key words used in each search. (Serfass et al. , 2017)

Another source of data are mobile phones. Smartphones contain GPS systems and accelerometer sensors that allow location tracking of phone users, and smartwatches connected to them also collect physiological data. (Serfass et al. 2017) Shoshana Zuboff writes that "In September 2016 the tech newsletter the *Register* revealed that the Google Play app preinstalled in the latest Android phone continuously checks a user's location, sending that information to your third-party apps as well as to Google's own servers"(Zuboff, 2019, chap. 5, "Stage Four: Redirection").

Montjoye et al. (2013) use mobile phone logs in their research, from the amount of messages to the timing of phone calls to derive personality data, and Zuboff explains how "even the most innocent-seeming applications such as weather, flashlights, ride sharing, and dating apps" on the list of tracking software that "collect massive amounts of behavioral surplus" (Zuboff, 2019, chap. 5, "II. Cornered").

Other data sources related to the mentioned above are the number of sensors and appliances that furnish homes and offices and are linked to the *Internet of Things*. (Serfass et al., 2017)

Lastly, there is a complete other level of data that needs to be considered. For example, just considering the data that has a rather medical character, here follows a representative list with some of the data Feldman et al. (2018) includes in the Healthcare Data Spectrum: genomic and metabolomic data, demographic attributes from age and gender to marital status, home address and occupation, clinical attributes of the health provider and the patient, administrative attributes from logistical, financial and administrative nature of the institutions individuals are customers of, and aggregate attributes from the census bureau, the labour bureau, and bureaus concerning health, research and disease control. (Feldman

et al., 2018) I reckon analogous data can be collected regarding education, the economy, the environment, and other aspects of human life. All these areas of our day-to-day are sources of data.

This section served not only to list some of the different sources of data - it's purpose was to demonstrate through the size of the list the enormous amount of sources of data - and still there is much more kinds of data to be mentioned. Every interaction with a digital *thing* - every behaviour that can be measured, whether overtly, wittingly, with consent or neither - is a potential for data collection.

2.5 Knowledge gained and current applications

The knowledge that can be generated through Artificial Intelligence technology expands one's imagination at times. The following list of topics, mostly derived from published research papers, does not even cover a small amount. There are whole international conferences that present even more examples, such as the *International Conference on Social Computing, Behavioral-Cultural Modeling and Prediction and Behavior Representation in Modeling and Simulation (SBP-BRiMS)* or the *International Conference on Social Informatics.*

Predictions of risky behaviours such as drinking and drug consumption, as well as other psychological disorders, can be derived from social media through Instagram accounts (Zhou et al., 2017) as well as friendships and family networks on other platforms allow for correlations with binge drinking (Mundt, 2013).

Measuring emotional states, for example, is possible by exploring Twitter. The choice of words allowed scientists to measure that positive feelings peak in the morning, while negative affect later in the night. This study was corroborated by a similar, comparing data from Google Trends, which aggregates searches on Google - stating that words such as "suicide" and "symptoms" appear mostly at night. (Serfass et al., 2017)

Goldenberg et al. (2020) define the term *collective emotions* to describe a phenomena that emerges at group levels, online and offline, that is distinct from the emotions lived by the individuals of the same group. This concept leads for example to the measuring and management of opinion polarisation in social networks (Schweitzer et al., 2020)

Facebook also experimented with users' exposure "to positive and negative status updates from their friends". According to the study, individuals whose posts contained rather negative feelings correlated with their recent interaction with other negative posts, "thereby demonstrating emotional contagion via large-scale social networks (Kramer et al., 2014)."

At another level, Montjoye et al. (2013) used phone logs, such as messaging and calling data, not its content, with the purpose of predicting personality. This allows scientists to investigate this realm of social sciences with behavioural data instead of traditional techniques such as questionnaires, etc. Another form of attaining psychological metrics such as moral values and identity is by interpreting the choices players make during games (Kim et al., 2013).

In the field of education and labour, Google searches allow for accurate extrapolation of joblessness rates (Serfass et al., 2017), which Sundsøy et al. (2017) also managed to measure through phone usage with an accuracy of 70.4%. Academic performance was correlated by Giunchiglia et at.(2017) with students' use of social media apps during learning periods such as classes and homework, while Stephany & Braesemann (2017) measured a country or regions' education level through Wikipedia usage and editing habits.
At the same time, Jahani et al.(2017) uses phone calling and messaging habits to infer network diversity, which correlates with higher income and education.

Social roles and relevance in a social group seems to attract much attention, with studies by Bracewell & Tomlinson (2013) identifying group leadership through participation within groups, while Saito et al. (2013) look into learning about influence maximisation in social networks, and Chepurna et al. (2015) try to identify which users play the biggest role in social media trends. On the other side of the spectrum, Li et al. (2020) studies how social exclusion in social networks seems to be the norm.

In sum, Pentland (2007) claims that "between 40% and 95% of the variance in human behaviour" can be explained and predicted by phone metadata, "measurements of person-to-person proximity" and voice intonation.

This leaves the question, how much more can be predicted, and how can these predictions be applied?

One of the most relevant kinds of applications that make use of AI systems employing behavioural data are for example recommender systems, such as the news feed on Facebook, the suggested articles in an online shop, the sorting of links when searching on Google or the systems suggesting advertisement on phones. These systems navigate the huge amount of options and present tailored selections of what we might be looking for,

filtering information such as job applications, romantic matches, videos on sharing platforms. (Gravino et al., 2019)

Algorithmic pricing systems also make great use of behavioural data, along with market data and product information in order to maximise profit, influencing consumer behaviour. (Seele et al., 2019)

Artificial Intelligence applications also have caught the attention of the public health sector, with the National Health Service of England describing in the NHS Topol Review the future implementation of different kinds of sensors, smartphones, electronic health records, natural language processing etc. to improve the psychological well being of its patients. (Foley & Woollard, 2019).

When I come to think of it, it is hard to find an industry that cannot make use of behavioural data, nor industries that already make use of statistics that could not improve their techniques by implementing Artificial Intelligence solutions: from selecting employees to determining insurance prices.

Hopefully this section presented a fairly useful enumeration of forms of knowledge that can be derived through the use of AI systems working with behavioural data, as well as providing more information on the kinds of applications that make use of this data.

In the previous chapters, this research paper presented the necessary knowledge to have a better understanding of the technology and phenomenon this paper is analysing. We looked at the definition of Artificial Intelligence, Behavioural Data and one of the most recurrent subfields: Big Data. We also learned some examples of how data is collected, processed and stored, and in this chapter, the kinds of knowledge that can be created as well as some of its applications. The purpose was to make sure the reader knows the meaning behind the terminology used in subsequent parts, as well as present the necessary framework in order to dwell into the political character of this phenomenon to be discussed in the following chapters.

3. The Theory of Biopower

The previous chapter shed a light on the phenomenon of Artificial Intelligence, explaining the *ins* and *outs* of this technology and field of research, devoid of any political concept or theory. This chapter is an attempt at explaining the theory through which the phenomena of Artificial Intelligence will later be analysed: biopower. Michel Foucualt's concept of biopower is rather complex, not completely straight-forward or concise. It represents a historical shift as well as a form of power. The theory merits entire dissertations or books to fully explain the details at the different levels of depth, therefore I do not claim to having defined biopower in its entirety, rather, my goal is to offer an approximation of my understanding of biopower to the reader as precise as possible within the frame of a bachelor-thesis, establishing a common ground for the latter discussion.

The following sections describe important concepts for the understanding of biopower. I will start by a short description of the meaning of *political power* in general, as well as the concepts of *sovereign power* and *pastoral power* which are important to understand *biopower*. Afterwards, I will explain how people are made *subjects* of biopower and the introduction of *norms.* Since there is a distinction between biopower at the individual and the population level, the next sections concern how individuals are *disciplined* and how biopower relates with the choosing of *actions,* followed by how *populations* are governed. The last two sections before a summary explain the emergence of *resistance* within the regime of biopower and the relation between *power* and *knowledge*.

3.1 Political Power

Biopower is a specific form of political power, thus it is important to define the hypernym, i.e. the umbrella term. Talcott Parson (1963) describes three aspects of political power: first, the author refers to Hobbes description of power "as simply the capacity to attain ends and goals in social relations, independently of the media employed or the status of 'authorization' to make decisions or impose obligations". Secondly, Parson divides between the coercive and the consensual form of employment of power, and thirdly, the author mentions that power is not "a zero-sum phenomenon", where the use of power of one party implies the loss of power by the other party. (Parson, 1936, pp. 232-233)

Michel Foucault takes a deeper approach, which will be understood in the following sections.

3.2 Sovereign Power

Foucault highlights a historical change in how power is understood and exercised, from *sovereign power* to *biopower.* In order to understand the latter, it is first important to get acquainted with the first. (Lemke, Casper & Moore, 2011, p.36)

Sovereign power is related to the study and conception of power of the political theorists from the eighteenth century, such as Locke and Hobbes. Foucault writes that power, in the paradigm of the social contract, is "an original right that is given up in the establishment of sovereignty[...]. A power so constituted risks becoming oppression whenever it over-extends itself, whenever - that is - it goes beyond the terms of the contract" (Foucault & Gordon, 1980, p.91). In the understanding of the Leviathan, for example, power is given to a composition of people who form the state (Foucault & Gordon, 1980, p.98).

In its acting, *Sovereign power* is viewed as a negative form of power, of subtracting the freedoms of people (Lemke, Casper & Moore, 2011, p.36), it concerns forms of repression (Peggs & Smart, 2018). Foucault takes an example from the penal code, where a "prohibition like, say, 'you must not kill, you must not steal,' along with its punishment, hanging, or banishment, or a fine" is made into law by the sovereign, restricting the freedom of individuals to steal through the threat of violence (Foucault, Senellart & Davidson, 2007, p.4). *Sovereign power* is limited to the deprivation of goods, services and in extreme cases, life itself of the subjects of sovereign power (Lemke, Casper & Moore, 2011, p.36).

3.3 Pastoral Power

When talking of Biopower in *The Subjects and Power*, Michel Foucault describes the emergence of a new form of power within modern Western states around the eighteenth century, based on "an old power technique which originated in Christian institutions", a power which, in contrast to previous state power, is focused on the individual: pastoral power. (Foucault, 1982, p.782)

Foucault writes that pastors devoted their own lifes in servitude of a certain group of people, not the other way round, focused on the individual instead of the group, and invariantly communicated with individuals, getting to know their thoughts, desires and their deepest secrets. Most importantly, while sovereign power is characterised as a subtractive power, pastoral power is oriented towards "salvation". (Foucault, 1982, p.783)

Foucault follows to describe the inclusion of pastoral power into the state starting to play a role in improving people's lives, healthcare, security, education, etc. These were supplied by state institutions, working to maintain health and hygiene standards in urban areas - assisted by private ventures, welfare societies, philanthropists, etc.- to assure continuous workflow in the industry and economy: establishing new forms of individualised power in "the family, medicine, psychiatry, education, and employers". (Foucault, 1982, p.784)

3.4 Biopower

The industrial and agricultural changes and the medical and scientific discoveries of the eighteenth century brought about new interest regarding human well-being: the possibility and interest in combating the spread and effects of disease and hunger and the need to have a productive workforce. The shift by the state to include a political strategy that focuses on the aspects of human nature is what Michel Foucault calls *biopower.* (Lemke, Casper & Moore, 2011, pp.33-35)

> *"For the first time in history... biological existence was reflected in political existence... But what might be called a society's 'threshold of modernity' has been reached when the life of the species is wagered on its own political strategies. For millennia, man remained what he was for Aristotle: a living animal with the additional capacity for a political existence; modern man is an animal whose politics places his existence as a living being in question." (*Foucault, 1980, in Lemke, Casper & Moore, 2011, p.34)

Sovereign power was marked by the possibility of violence, it prohibits certain actions, it punishes, it sees citizens merely as legal subjects. Biopower, by contrast, aims to foster life, to offer prosperity and health, to influence behaviour, it sees citizens as human beings, as a biological species:

> *"'Deduction' has tended to be no longer the major form of power but merely one element among others, working to incite, reinforce, control, monitor, optimize, and organize the forces under it: a power bent on generating forces, making them grow, and ordering them, rather than one dedicated to impeding them, making them submit, or destroying them."* (Foucault, 1980, in Lemke, Casper & Moore, 2011, p.34)

From the example of how law works to combat theft, stealing still is considered a crime. However, punishment is not the prime remedy anymore. Focus starts building in preventative measures, in correcting criminals' behaviour, the cost of combating criminal acts is waged against the danger of not doing so. (Foucault, Senellart & Davidson, 2007, p.5)

3.5 Subjects

Michel Foucault's interest is however not simply to describe the aim of power in this way - instead it is to understand "the different modes by which, in our culture, human beings are made subjects" (Foucault, 1982, p.777). Human beings begin to be the objects of study, for example in human language, the economy, labour, health and reproduction. For analysis, the

objects of study need to be categorised, information needs to be grouped and measured. These forms of categorization happen according to a certain rationality, which Foucault points out to not be universal. (Foucault, 1982, pp.777-781)

On this, the author writes:

> *"This form of power applies itself to immediate everyday life which categorizes the individual, marks him by his own individuality, attaches him to his own identity, imposes a law of truth on him which he must recognize and which others have to recognize in him. It is a form of power which makes individuals subjects."* (Foucault, 1982, p.781)

Studying the human being, analysing, quantifying and categorising transforms humans from an object of study to a subject of a particular truth-system. The "production and circulation of elements of meaning can have as their objective or as their consequence certain results in the realm of power" , subjecting people under it, establishing new relations between people. (Foucault, 1982, p.786)

3.6 The Norm

Measuring and classifying becomes relevant once the idea of a "norm", an ideal or an average is set as desirable. Sovereign power is limited to establishing and forcing adherence to the law, however the transformation biopower brings about creates the desire for improvement, the rejection of abnormality (Lemke, Casper & Moore, 2011, pp.38-39). Foucault writes:

> *"It is no longer a matter of bringing death into play in the field of sovereignty, but of distributing the living in the domain of value and utility. Such a power has to qualify, measure, appraise, and hierarchize, rather than display itself in its murderous splendor; it does not have to draw the line that separates the enemy of the sovereign from his loyal subjects. It effects distributions around the norm."* (Foucault, 1980, in Lemke, Casper & Moore, 2011, pp.38-39)

People, as subjects, become classified into "the mad and the sane", the good and the bad, the behaving and the delinquents, the healthy and those who are not. (Foucault, 1982, p.778) In the example of theft, the state becomes questioned about how to maintain the occurrence of this crime around a certain level acceptable for a given group (Foucault, Senellart & Davidson, 2007, p.5), or what is the quantity of wheat production that is required to maintain a growing population (Foucault, Senellart & Davidson, 2007, p.33).

3.7 Discipline and the Individual

To enforce certain ideals or normalised characteristics, biopower is employed at the individual level, also called the *anatomo-politics of the human body.* It refers to the *disciplining* of the individual person, through its routines and constructed structures, to maximise its economic value as well as suppressing its will to reject political subordination. *Discipline* is passed on to people through centralised *disciplinary institutions,* such as the army, schools and houses of prayer. Instead of enslaving or forcing servitude, discipline redirects the will, helps becoming more productive and introduces the individual to a system where it is subjugated. (Lemke, Casper & Moore, 2011, p.36)

When discussing the institution of schools, Michel Foucault writes:

> *"The activity which ensures apprenticeship and the acquisition of aptitudes or types of behavior is developed there by means of a whole ensemble of regulated communications (lessons, questions and answers, orders, exhortations, coded signs of obedience, differentiation marks of the "value" of each person and of the levels of knowledge) and by the means of a whole series of power processes (enclosure, surveillance, reward and punishment, the pyramidal hierarchy)."* (Foucault, 1982, p.787)

3.8 Actions

What becomes understood as the exercise of biopower is not simply the violent enforcement of some behaviour, but the action, behaviour or establishment of a person or structure within a relation of power that leads to the changing of action by the subject. In the case of schooling, it's the eventual grading of a class, an exam or a paper by the teacher that influences the action by the student, as the students' behaviours and actions become labelled, classified and therefore gain a meaning within other structures and institutions, such as when seeking employment or recognition. It creates or eliminates possibilities or paths. In the market, it is the price of a product that leads a consumer to buy or not, to work harder. In police and military institutions, subjects are trained, adhere to certain norms, follow orders, get promoted or demoted. (Foucault, 1982, pp.788-779)

> *It is a total structure of actions brought to bear upon possible actions; it incites, it induces, it seduces, it makes easier or more difficult; in the extreme it constrains or forbids absolutely; it is nevertheless always a way of acting upon an acting subject or acting subjects by virtue of their acting or being capable of action. A set of actions upon other actions.* (Foucault, 1982, p.789)

Thus, *to govern* refers not only to the work of the state, but to the work of all different societal institutions, and means to "structure the possible field of action of others" (Foucault, 1982, p.790). Sovereign power, by contrast, is only subtractive: it merely prohibits certain actions. Disciplinary institutions on the other side apply examination, observation, supervision, judgement and correction in order to establish certain behavioural patterns. (Peggs & Smart, 2018, p.63)

3.9 Population and Security

At the macro-level, *regulatory control of the population* is focused on the phenomena at aggregate level that denote characteristics of the population such as death and birth rates, wealth, and other demographic data, allowing to observe the population as a body, regulating its health. *Technologies of security* are tools that allow the maintenance of an equilibrium where the population is protected by internal dangers, and its productivity is maximised. For this, the collection of large amounts of data is required. Under this understanding, governing requires data, analysing it, setting standards to reduce diseases and accidents: society is to become predictable by forecasts to be able to continuously maintain the health of the population body, of the economy. (Lemke, Casper & Moore, 2011, p.36-37)

In contrast, while sovereign power is concerned with the maintenance, protection and conquering of territory, biopower puts the well-being of the population in the front:

> *"No longer the safety (sûreté) of the Prince and his territory, but the security (sécurité) of the population and, consequently, of those who govern it."*
> (*Foucault, Senellart & Davidson, 2007, p.65)*

3.10 Resistance

Resistance is described by Foucault to be the oppositional force enticed by the regulation over life, which leads to discontent over definitions of normal and abnormal: within health, reason, sexuality, the environment, etc. According to Foucault, resistance related to biopower appears due to the subjectivation of people's lives and bodies by regimes of truth by religion, science and other groups that claim universal norms. (Lemke, Casper & Moore, 2011, p.50-51) Forms of resistance do not grow in a specific region, rather against specific forms of subjectivation: in the medical field, resistance is not automatically due to amounts of profits the medical industry makes each year, rather against the power they exert over individual's bodies - hence resistance grows to claim medical authority invalid. The struggle is often directed at bodies of knowledge over them, and not through critically analysing the scientific details that could be wrong, but rather the relative disempowerment of the subjects vis-à-vis the body of knowledge, to which subjects do not have the same privileges and

accesses to. Foucault writes that resistance against this form of subjectivation is a clamour against the definition of who the subject is. (Foucault, 1982, pp.780-781)

3.11 Power-Knowledge

This leads to the last concept to be discussed regarding the meaning of biopower: power-knowledge (French: le savoir-pouvoir). It relates to the link between the exercise of power and knowledge.

Foucault writes that the employment of power creates new forms of knowledge. (Foucault & Gordon, 1980, p.51) For example, philanthropy: seeking to help people with health and nutrition brings the emergence of the study of higiene, social work. It creates institutions that are involved in people's personal lives and seek to understand them (Foucault & Gordon, 1980, p.62) At the same time, power can withhold information circulation and distribution, power establishes control over knowledge and has the advantage of knowledge (Foucault & Gordon, 1980, p.34), as well as the power to decide on the regime of truth that subjugates others (Foucault & Gordon, 1980, p.82)

3.12 Summary

In this chapter the main concepts for the understanding of biopower were explained. In a very brute description, biopower, in contrast to sovereign power's possibly violent, depriving nature, is both a shift in government philosophy as well as form of power relation that looks at both individuals and populations as a biological being and through observation, supervision, judgement and correction influences their choices of actions and possible behavioural outcomes. Relations of power within the understanding of biopower establish subjects through the creation of knowledge based on measurements, analysis, categorization and comparison to desired norms; by deciding the underlying rationality, establishing structures and regimes of truth; and by circulating, withholding or applying the created knowledge.

At this point, both the necessary knowledge about Artificial Intelligence and the underlying theory of this paper have been clarified. In the next chapter, these are going to be juxtaposed to understand the underlying link between them. The relation between AI and biopower will however not remain theoretical, and to make sense of it all, this paper will cover some of the deeper implications of this marriage in chapter *5. A Postcolonial Approach.*

4. Discussion: Biopower and AI

In the previous chapters I have explained both what Artificial Intelligence is as well as how I understood Biopower in Foucault's conception of the theory. In this chapter, I am going to give the first step into trying to answer the research question posed at the beginning of this paper:

How is the use of behavioural data in Artificial Intelligence a means of exerting biopower?

4.1 Artificial Intelligence and Biopower

After considering the theory of Biopower and what has been explained in this paper about Artificial Intelligence and the use of behavioural data, the gap between the two topics has become narrow enough for me to try the first attempt at connecting the two.

At first, looking back at the definition of Artificial Intelligence, Russell and Norvig described it as a technology and field of study that as its aim wants to understand both pure rationality and human (and natural) behaviour, and create intelligent entities that help doing so more efficiently. The core interest is that of understanding the human as a biological species. The same is described in the form that Biopower observes human beings: not as political actors, but rather as natural beings whose behaviour can be studied.

While one is a technology and the other is a form of political power, the thoughts that are going to be developed in the subsequent sections elaborate on how on the one side the use of artificial intelligence entails a form of exertion of power that is parallel to the described so far, while at the same time the AI serves as a tool to enhance the biopolitical forces that already are in place.

4.2 Pastoral Power and AI

When considering the forms of Pastoral Power, in the corresponding section I described two important features of it. First, the focus on the individual, and secondly, the attempt at improving people's lives. These two features can also be observed within many of the applications already described. The ways in which we interact with the media on the internet, with our personal phones and the technologies that connect us with AI systems are deeply at the individual level. In most forms of interaction, the individual is the unit of analysis. Be it through a personal account on social media, the different apps on the phone, or the websites that one visits during the day. Most interactions promise us personalised content and features. The focus is mostly on the individual.

The focus on salvation is also one of the prominent features, although "salvation" in this sense may be interpreted rather freely. The myriad of products that are offered to us

containing AI systems are also focused on giving us what we already wanted: meeting old and new friends, having quick access to any kind of information, giving health advice, discounts and products that we want but did not even know existed. Recommender systems promise salvation from nonsense on the internet and relief from frustration when seeking information as quickly as is relevant to our searches. Both the focus on the individual and the form of contact focus on helping individuals in every aspect of their daily lives paint striking similarities with what is understood as pastoral power, which in turn is a precursor of modern Biopower in Foucault's accounts.

4.3 AI subjects

Persons become subjects of the biopower of AI given that they are the object under observation in the whole process. While individuals navigate the internet, mostly unaware or not caring of the fact that they are being observed neither the magnitude at which it is happening, their tracked behaviour is being analysed, compared and categorised. They fall under categories of certain kinds of users. Taking into account Foucault's argument that people become subjects by the exact same process, it is possible to conclude that, as a user, one becomes the subject of the AI system.

The underlying logic under which one becomes subjected is one entrenched in the system itself. I would argue there is not a single rationality that underpins it, but different ones can be discussed.

Shoshana Zuboff would argue that under the logic of market capitalism, the developed systems work under the frame of surveillance capitalism. In my interpretation of Zuboff's book, it consists of a perverted form of capitalism that has as its driving force the appropriation of private data to feed mechanisms of surveillance, control and modification of behaviour - with the final intent of attaining "concentrations of wealth, knowledge and power unprecedented in human history". Zuboff describes Surveillance Capitalism as "a new instrumentarian power that asserts dominance over society and presents startling challenges to market democracy", focused on enforcing absolute predictability of consumer behaviour and depriving people of "critical human rights". Under this rationale, internet users are subjected to a worldview under which their only intrinsic value is that of a consumer. (Zuboff, 2019, "The Definition")

At the same time, companies, although a sizable driving force of this technology, are not the only ones applying Artificial Intelligence. Different governments and institutions may have different interests and therefore different aims. Given the numerous possibilities and the limited scope of this paper, I will focus on only one perspective in the final chapter, mainly the post colonial perspective.

4.4 AI for disciplining and determining Actions

The next aspect of Biopower that I would like to discuss is the process of disciplining. As described in the chapter on theory, discipline is enforced through the routines and the structures that surround our behavioural possibilities. I would argue the same applies to people's behaviour on the internet.

The liking and not liking of pictures creates a feedback look that informs what is deemed desirable or not. The constant publication and sharing of personal information is a form of testing our own validity as a human being on the internet: we post pictures and hope for approval, while others observe us, judge us, suggest new behaviours and give us a certain number of likes that we observe as being our social value. However, it is not to be forgotten that the recommender systems that underlie the platforms in which this behaviour happens have their own rules and aims, as well as features, that influence the possible behaviours of users. This leads to the adaptation of the behaviour of individuals to maintain relevance within the recommender system, and I would argue might be interpreted as self-censorship.

A key difference is how invisible this form of discipline happens. While in disciplinary institutions such as schools, churches, hospitals, etc., the hierarchy is usually formed by people one may sometimes interact with, when sitting behind a computer or a phone the process is quite individual and with a system, not a person. There is not a person that we can connect to the information that is given us, there is not anyone to blame or be angry with. The recommender system presents itself in an unquestionable way.

Internet services, in the inherent nature of how they are built, allow for a certain amount of limited behaviour. Every action one takes is followed by a limited number of possible actions, certain goals require certain clicks, behaviours etc. Actions are influenced for example through recommender systems, for example in the options that are presented in search engines and news feeds, which are usually tailored for each person.

Algorithmic pricing also allows nudging people into certain shopping behaviours, as it suggests products by choosing the right timing and price one is willing to pay to lower or raise prices, naturally with the intent of maximising long term profits. (Seele et al., 2019)

Zuboff analyses the behaviour of different companies and powerful actors mainly based in the United States of America, such as Google, Facebook and many others, in their attempt to "extract" behavioural data from users and instrumentalize it. The author mentions practices such as "terms-of-service agreements" with "take-it-or-leave-it conditions" (Zuboff, 2019, chap. 2, "V. A Third Modernity"), influencing user behaviour to assure higher certainty in their behaviour (Zuboff, 2019, chap. 7, "I. The Prediction Imperative"), contracts demanding enormous levels of surveillance in exchange of economic benefits (Zuboff, 2019,

chap. 7, "VI. Executing the Uncontract"), etc. Zuboff writes "Under the regime of surveillance capitalism, individuals do not render their experience out of choice or obligation but rather out of ignorance and the dictatorship of no alternatives."(Zuboff, 2019, chap. 8, "II. Body Rendition") The author describes the pervasiveness with which surveillance technology (i.e. Artificial Intelligence systems) is invading consumer markets, normalising them, and making them almost impossible to escape.

4.5 Technologies of Security

Suddenly, every single behaviour that individuals take can be aggregated into behaviours of the whole society, measured and correlated.

Under the term coined by Foucault *Technologies of Security* are tools that allow for the maintenance of a healthy equilibrium of the population body, and this requires enormous sources of data. Artificial Intelligence, or more precisely, Big Data, plays a crucial role in allowing this. The network of data sources around us allow for the acquisition of information at the most intimate level, in real time, and in areas that were not possible in the past. Looking at the examples in section 2.5 Knowledge Gained and Current Applications, the selected studies focus on the identification of psychological disorders of individuals, the measuring of emotional state of both individuals and groups. It is also possible to study people's academic or educational skills, their personalities, preferences and professional situations. As mentioned in the same section, public health sectors have taken interest in this matter.

Policing and security have also seen big advances with the development of Artificial Intelligence and especially the field of Big Data. As revealed by Edward Snowden, who formerly worked for the CIA, national security organisations in the United States of America have been accumulating enormous amounts of data and developing advanced analytical systems to keep an eye on its citizens. (Bigo, Isin & Ruppert, 2019, p.2)

These are only two examples of how Artificial Intelligence can be implemented, recording people's behaviour, to serve *Technologies of Security* that seek to maintain the stability and health of the population at the cost of processing individuals' behavioural data.

4.6 Power-knowledge

The relation of power and knowledge needs to be taken apart into its different components to make sense of how it relates to Artificial Intelligence systems.

The first aspect is that a position of power invariantly creates a situation in which information is gathered. The creation of internet services such as internet pages, search engines and social media generates big amounts of excess information about the people that use them,

and the same applies to the use of phones and other electronic devices. However, the collection and processing of behavioural data about the users to extract new knowledge about each individual is not a requirement, rather a byproduct that many companies used for their advantage to create new forms of generating profit. In addition, the size of the companies and their interest in improving these systems has led to employing specialists in the scientific field of Artificial Intelligence, which in turn results in the creation of state-of-the-art tools, algorithms and techniques to further enlarge their technological portfolio.

The second aspect of the relation of power and knowledge is the possibility to withhold information, and this applies to the possibility of allowing or disallowing the sharing of certain forms of content, either in absolute or in relative terms. In addition, other forms of knowledge may be chosen not to be shared, such as the scientific discoveries, the algorithms created as well as the impact certain technological products have on society that may have been measured but not been made open. For example, the experimentation by Facebook with its algorithm has resulted in certain publishings recounting the effects of certain changes in their software that had a definite impact on elections. However, due to the backlash received after its publication, they have stopped sharing these kinds of information.(Serfass et al. , 2017)

At the same time, Foucault argues that those who hold knowledge have an advantage over others, resulting in those who already have power to maintain and increase their relative power. The same can be argued regarding the companies and institutions that employ AI. Big companies such as Google, Facebook and Amazon have become some of the biggest companies worldwide, and governments around the world are fighting to stay in the lead in the development of this field. For example, Russia's president Vladimir Putin argues that the country that wins the race of AI will become the leader of the world. (Gigova, 2017)

Lastly, power has the possibility to decide on the regime of knowledge. I identify two variants that apply to this aspect. On the one side something that has attracted much attention in the last couple of years is the amount of fake news and conspiracy theories that have led to different worldviews digging an enormous cleave between different sectors of the society, as well as demands by different governments for social media companies to take responsibility over the content on their platforms, resulting in them having to decide who to ban, to label as possibly false - and in so doing what is considered true or not, or at least what is tolerable. There is the power social media companies and governments have in influencing the content one reads, the power of governments and other powerful entities to decide what aspects of AI are ethical or not.

On the other side, AI systems have hard-coded rationalities that lead to the creation of classifications of users. And even if these are not labelled with names that make sense to human beings, it still has an effect on how the user interacts with the system. For example, if

an algorithm determines that a user is watching more movies than a normal user, should the system recommend further movies of the same genre? Another genre? Classes on cinematography or books on philosophy? Or advertisements for chocolate and popcorn? Maybe the person is deemed a procrastinator and therefore another target of cat videos, maybe the person is considered as having some potential. The system acts, without having to label explicitly.

4.7 Chapter conclusion

In this chapter I have drawn the first connections to answer the research question of how the use of behavioural data in Artificial Intelligence is a means of exerting biopower. To do so, I have linked the aspects highlighted in the chapter Theory to the knowledge already gathered about Artificial Intelligence. More specifically, I have described how Artificial Intelligence is a tool that matches perfectly with Biopower as they both focus on the study of the human being as a biological species. The chapter also explains the parallels between the personalization of useful services to the individual and the Pastoral Power mentioned by Foucault as a precursor of Biopower. In addition, the section "AI subjects" dealt with how people are made subjects of Artificial Intelligence by being the object of study and manipulation, and in the opinion of Shoshana Zuboff, under a rationality regime based on the maximisation of profit with no regards for the user's rights or well-being. Moreover, a section discussed forms in which people are disciplined and their behaviours changed to fit the desires of the system, as well as briefly explained the relevance of AI in the implementation of Technologies of Security. The last section picked on Foucault's relation of power-knowledge in order to give a better understanding of how this aspect of the theory of Biopower equates with the topic at hand.

While this chapter allowed for a relatively theoretical approach to the question at hand, I have chosen for the next and final chapter a perspective that is more in touch with the reality of the applications of Artificial Intelligence in the present. More precisely, the postcolonial school of thought lends a helping hand in the understanding of the historical framework in which this new technology is being created, while at the same time shining a light on the inequality and power imbalance that exists.

5. A Postcolonial Approach

In the postcolonial school of thought attention is given to the inherited political relations within and between colonies, post-colonies and imperial states from the period of historical colonialism. This critical analysis of power relations and political practices at different levels of what is considered political allows either for a better understanding of remaining abuse of power asymmetries from colonial history, or the identification of analogous practices and methods in other settings.

This chapter summarises three postcolonial theories that allow me to discuss some of the associated forms of how Artificial Intelligence is being used as a form of biopower. The first is the development of population statistics regarding the colonial states by the colonialist countries. The second perspective looks at the similarities between the current relations between data-subjects and AI-system employers, and the relations during historical colonialism between colonial states and colonialists. The third perspective takes a look at South Africa as an example of a post-colonial state, and how the current promotion of AI-systems and other digital technologies serve to prolong the asymmetric relation of postcolonial architecture.

5.1 Historical Parallels

Engin Isin and Evelyn Ruppert take a closer look at the historical use of records and data - from maps, census and museums - during the British imperial past to draw the colonial logic of data collection and compare it to today's technological advancements (Isin & Ruppert, 2019, pp. 207-208).

The first argument the authors pose is that the creation of maps and censuses exceeded their descriptive character. For example, maps do not only represent a territory, they allow for performative action, such as the designation of property holders, boundaries, etc. It allows for the imagination to be depicted, communicated and enforced. The authors explain that the collection of data is not only descriptive of an object, it "attains constitutive powers in shaping and forming that object" (Isin & Ruppert, 2019, p.308).

The next aspect mentioned by Isin and Ruppert (2019) is the biopolitical nature of collecting data from the colonial population through the British imperial census. They refer to Michel Foucault's Biopower when describing how the understanding of governance shifted from the governing of land and resources, to the governing of people. They cite Foucault: "one thing clearly emerges through all these meanings, which is that one never governs a state, a territory, or a political structure. Those whom one governs are people, individuals, or groups" (Isin & Ruppert, 2019, p.211). The application of the census allowed the measurement of natality, mortality and fertility, but not in order to improve the measured individuals' lives as

the objective of study, rather seeing the population as an instrument to attain further goals. (Isin & Ruppert, 2019, p.213)

The next consequence of the census described by the authors was the growing need to create categories in order to better describe and quantify the population (Isin & Ruppert, 2019, p.215). This quantification created the need to formulate "standardising enumeration periods, counting indigenous populations differently, establishing a person's name as a unique identifier", different ethnicity and race classifications, as well as age and occupation (Isin & Ruppert, 2019, p.213). The British imperial census included the differentiation between "white, free coloured, and slave categories. After the abolition of slavery in 1833 the categories were simplified into white and coloured" (Isin & Ruppert, 2019, p.213). And categorisation was not simply used for descriptive purposes, but mainly for the goal of instrumentalisation, leading to interpretations on usefulness, danger and whether the people were deserving or not (Isin & Ruppert, 2019, p.215).

Relating to AI and biopower more precisely, the power that Artificial Intelligence plays in the constitution of reality is something that I have already discussed regarding the relation of power and knowledge: the information that is consumed by people is selected by recommender systems, therefore it not only constitutes reality, it informs the individual when trying to conceptualise the reality around them.

Regarding the instrumentalization of the population in the present, Shoshana Zuboff describes the present situation further. The author defines "Instrumentarian Power" as one of the key features of the current rationality of Surveillance Capitalism, the rationality behind the current applications of Artificial Intelligence:

> *"the instrumentation and instrumentalization of behavior for the purposes of modification, prediction, monetization, and control. In this formulation, "instrumentation" refers to the puppet: the ubiquitous connected material architecture of sensate computation that renders, interprets, and actuates human experience. "Instrumentalization" denotes the social relations that orient the puppet masters to human experience as surveillance capital wields the machines to transform us into means to others' market ends. [...]" (Zuboff 2019, chap. 12, "I. A Return to the Unprecedented")*

In other words, what is to be understood by Instrumentarian Power is the form of power that, in its actuating form, works by collecting all possible behavioural data digitally about individuals and populations, analyse it to create predictions of future behaviour and stimulate and influence behaviour for higher accuracy. In its purpose, instrumentarian power has the intent to assure predictable behaviour and attain further monetary and control power.

However, not all applications of AI are based on this rationale. The United Nations, in its efforts to assure its Sustainable Development Goals has started a new initiative that makes use of data collection and Artificial Intelligence in order to assist in the analysis of the problems at hand. The Global Pulse initiative in one of these projects, entering into collaboration with data scientists, and partnering with companies such as the french telecommunications corporation *Orange* and *Twitter*, as well as making use of satellite data in order to assist in international development, human rights and public health. It allows for monitoring poverty, consequences of natural disasters, and understanding trends within society such as "HIV-related stigma in Rio [de Janeiro, Brazil]" (Isin and Ruppert, 2019, pp. 217-218). Taking aside the scepticism due to the lack of personal data protection, this is an example where the biopolitical nature of Artificial Intelligence is being implemented to assist post-colonial countries. (Isin and Ruppert, 2019, pp. 217-218)

Lastly, a characteristic that becomes evident in post-colonial thought is the creation of the notion of the *Metropole* as a centre of power, where information gets concentrated, decisions are made and dictated from, in order to be applied in the colonies and peripheries. This designation does not have to be completely geographic, it is more of an analogy - such as the use of "global north" and "global south" describing the power asymmetry. (Isin & Ruppert, 2019, p.210) This notion adds the characteristics of centralised rule to the understanding of post-colonial power relations. The idea of the metropole also fits together with the relation of power and knowledge. The concentration of knowledge, both about the technology itself and the contents that AI systems analyse automatically result in the concentration of power in the hands that hold it. This aspect is going to become more relevant in the next theory.

5.2 Exploitative relations

Nick Couldry and Ulisses A. Mejias (2018) make a proposal on how to understand the relation between employers of Artificial Intelligence systems and the data subjects, whose data is being extracted. They call it *data colonialism*. Given that their theory is very interesting and relevant, I will analyse it in the following paragraphs, however only after taking a second look at the naming of this theory. The authors explicitly state that, on the one side, the name is not metaphorical, on the other side, the "goal is not to make loose analogies to the content or form, let alone the physical violence, of historic colonialism" (Couldry & Mejias, 2018, p. 339). They nevertheless only mention the barbaric genocidal acts and ethnic cleansing that happened during historical colonialism as "physical violence" - I would argue it is quite an euphemism. Reflexively, the theory's name is an overdramatization of the notion the authors describe, and therefore I would argue a more fitting name for the relations they describe is desirable. For that reason, I will provisionally

continue to call the theory *data colonialism,* however always followed by *"global data exploitationism"* in brackets, since it captures the nature of the relation described without diminishing historical colonialism.

Data colonialism (*"Global data exploitationism"*) refers to the kind of relation, in other words the relative social positioning, between data extractors and data subjects. Its comparison to historical colonialism, and its relevance in post-colonial studies, is due to the global level of this relation, the exploitative nature of appropriation of resources (personal data), and the "redefinition of social relations so that dispossession came to seem natural." (Couldry & Mejias, 2018, p.339)

A key difference in narrative to historical colonialism, besides the above-mentioned, are the emergence of two new centres of exploitative power: the United States of America and China, and the notion that the subjects of exploitation are not just countries from what may be called the "global south", but actually their home population as well. (Couldry & Mejias, 2018, p.337)

In their elaboration of the concept, the authors describe the emergence of value associated with the extracted data - thus rendering it a commodity. The sharing of one's own data becomes a form of value creation, thus possibly understood as (unpaid) labour (Couldry & Mejias, 2018, p.338). From this point, it enters the extractivist rationale to make data subjects create value at all times during their life, as data is being extracted concerning every single detail of an individual's life. Thus, if all data is becoming a commodity, and data concerning all aspects of life becomes a source of data extraction, human life itself becomes commodified as well by association. (Couldry & Mejias, 2018, p.343)

For this architecture of exploitation to be possible, all forms of life that are deemed to become captured as data need to be reconfigured, digitised, otherwise proper extraction is not possible. Another aspect parallel to colonialism that Couldry & Mejias mention is the political thinking that sees "society as the natural beneficiary of corporations' extractive efforts, just as humanity was supposed to benefit from historical colonialism as a 'civilizational' project" (2018, p.340).

Summarising, the second theory of this chapter, *data colonialism* (*"Global data exploitationism"*) by Couldry and Mejias, elaborates on the comparison between current AI practices and colonialism. Key features are the global level the practices have reached, its exploitative nature both of foreign countries and home population, the commodification of life and the unpaid creation of value for the companies offering services, and the narratives of civilising the world and the inevitably naturalness of power relations that form between the AI institutions and the data subjects.

While reading this paper I considered it most interesting, and the arguments presented to support the theory I can subscribe as being in tune with what I have written so far on this paper. However, I have failed to understand how it differs significantly from Zuboff's theory of Surveillance Capitalism, with the exception of two aspects. First, it includes China and its practices regarding the use of behavioural data in Artificial Intelligence as one of the key drivers. While due to the scope of this paper I did not refer to the asian country, the Social Credit System employed there and other forms of AI being used in China are worth studying and relating to my research question in later studies. I believe it would provide ample information to discuss other forms in which AI is being used as Biopower.

Secondly, Surveillance Capitalism focuses more on the economic structure that underlies the form of exploitation and focuses on companies as the main actors, while setting the work of academics or state actors more on a rather secondary role.

By subtracting the aspects that form the difference between the theories, it is possible to conclude that the rationale that is the fundament of the criticism in each theory is the principle of exploitation of the subjected people, more specifically based on the extraction of behavioural data. While I do not see an inherent relation between exploitation and biopower, the latter may serve as a form of power to assist in the exercise of further abuse, while Artificial Intelligence has the capacity to act as its catalyst. In the next section I am going to explore a theory that discusses the same question: how the technological advantage has assisted in the maintenance of the post-colonial relationship, and is helping to prolong it.

5.3 Postcolonial perpetuity

E*conomic domination* and *technological hegemony* has allowed for the persistence of post-colonial relations between the "global south" and "global north". And, as will be seen in this section, the proliferation of current digital technology and the *Big Tech* companies' role in it has not helped in combating the fear that the post-colonial relation could become perpetual.

Michael Kwet (2019) analyses the domination of foreign companies such as Google, Amazon, Facebook, Apple and Microsoft (short: GAFAM) in the economic markets in South Africa. The author reminds of the relevance private companies had in establishing economic dominance during historical colonialism when analysing the invasion of the world's wealthiest companies, which lead to the deterioration of local industries, the creation of dependencies towards these companies, and a perpetual resource extraction - nowadays, of data and money. Kwet mentions how small and medium enterprises, such as the tourism industry and the shopping industry become subjected to rent-seeking intermediaries. Another example is

the company *Uber*, which brings low-wage jobs, destroying the taxi market through artificially low prices, and extracting a 25 percent commission per ride. (Kwet, 2019, pp. 4-6)

The domination of international companies in South Africa's market is, in my understanding, the substitution of one of the disciplinary institutions. By controlling the organisations that pay the wages and serve as intermediaries to other companies, these companies put themselves in the position that is able to regulate communications, that values the worth of each person through their salaries, selects and promotes desired characteristics in each worker, etc. This form of establishing a foreign company in a market does not only serve the creation of a new service, it establishes a new position from which power can be wielded.

As a more explicit form of *imperial control,* the author lists the domination of the media and advertising sector, such as Facebook and Google, forcing South African companies to adopt foreign standards regarding content to maintain revenue streams - thus creating a self-censoring effect (Kwet, 2019, p.7). In this example, it becomes clearer how the company dominant of one service attains the power to discipline other companies in its own values.

In general, Kwet argues that the principles guiding this form of development are not to serve the local population, but rather, as did the construction of infrastructure during historical colonialism, current technological proliferation serves to benefit the extracting party, while undermining local development, such as incapacitating the development of an own tech industry. (Kwet, 2019, pp. 7-8)

In a further argument, Kwet explains how technological characteristics only assist in reducing leeway to resist imperial domination: the human readable source code of software, i.e. the set of computational instructions written by developers and designers, is seldomly open for anyone outside the developer company - not allowing others to study or modify computer programs. This means, the rules on how computers and computer software are used is predetermined by companies responsible for the software programs. This same reduction of freedom is also due to the concentration of the hardware components of current technologies, as the tendency to centralise internet services only creates a bigger separation between the companies and everyone else. (Kwet, 2019, pp.8-9)

The restriction of software to its sole use and not its modification is an illustration of what was discussed in the chapter on Theory regarding the governing over the freedoms of actions of each individual. As a recall, Biopower does not concern itself with the violent enforcing of behaviours, rather with the limitation of the actions, in order to induce people to behave in a certain way. While there is the governing over possible choices and actions that each can have while using a software of an internet service, there is a restriction and geographic distancing in order to limit the possibility to have any power over the code itself, resulting in two different forms of constrainments.

This form of limitation, which Kwet describes as characteristic of imperial domination, becomes more evident regarding the principle of Intellectual Property. The concept of copyright protection was introduced in the United States of America at the end of the nineteenth century, only once the content creation sector there established itself. Nowadays, it is being expanded in length and duration, and forced to accept by other countries through international trade agreements. The protection of intellectual property limits the sharing of content, such as music, books, news, movies, software, and especially education material. These are often kept behind paywalls, which due to the economic disparity, favours richer nations and limits the development of poorer countries. (Kwet, 2019, pp.10-12)

In this example, we observe two facets described by Foucault in the relation of power-knowledge. The first is the power to withhold information, to restrict its dissemination. The second is the creation of an advantage for the group that is nearest to that which holds the information. By limiting its distributions and setting a regime that favours one group over the other, the protection of intellectual property maintains the already existing hierarchies of power.

The most spectacular part of Kwet's accounts, for the purpose of this paper, is the story of the Facebook Free Basic service. The company provides free access to a limited version of the internet and has been expanded to over 100 million users in more than sixty countries: the access is free of charge, however Facebook selects which websites can be accessed - which naturally includes its own social media platform (Kwet, 2019, p.12). It becomes fairly evident how Facebook, through this project, enlists millions of new users in its social media platform, establishes itself as a monopoly power and positions itself at the front of the row when it comes to data collection.

This last example summarises the thoughts of this last section: the economic domination and the technological hegemony of *Big Tech* companies serve the expansion of imperialistic power, making themselves indispensable and dominant, determining how post-colonial societies develop themselves and limit their freedoms of speech, knowledge and enterprise. The results are the perpetuity of the existing power relations between post-colonial states and imperial nations.

5.4 Chapter Conclusion

This chapter visited three postcolonial theories regarding the use of data in Artificial Intelligence.

The first theory, by Isin and Ruppert (2019), was an analysis of historical colonialism and its use of data through censuses and maps. This theory allows for the identification of key features of colonial logic: it seeks knowledge in order to constitute reality, and leads to the identification of categories and classifications according to a specific rationality. From the perspective of biopolitics, this reflects some of the aspects regarding the relation of power-knowledge, namely that power defines the regime of knowledge and controls the flow of it - while at the same time speaks to Foucault's explanation of how people become subjected. Moreover, the accumulation of biopower leads to instrumentalization of the population, which Shoshana Zuboff (2019) associates to the main features of Surveillance Capitalism. Lastly, Isin and Ruppert mention that the collection of information in the metropole leads to the concentration of power.

The second theory, *data colonialism* ("*Global data exploitationism")* by Couldry and Mejias (2018) elaborates on the comparison between current AI practices and colonialism. Key features are the global level the practices have reached, its exploitative nature both of foreign countries and home population, the commodification of life through the unpaid creation of value for the companies offering services, and the narratives of civilising the world and the inevitably naturalness of power relations that form between the AI institutions and the data subjects. By comparing this theory to Zuboff's theory of Surveillance Capitalism, I came to the conclusion that Biopower, although value free by itself, if concentrated in the hands of few, may help in the exploitation of others.

The third section, focusing on the work of Michael Kwet (YEAR) took a dive into the invasion of *Big Tech* companies into postcolonial South Africa, and how the proliferation of digital technologies may only be extending the postcolonial power relations: forcing local industry to become dependent on intermediaries while deteriorating local economies, dominating the media - and thus leading to the concentration of biopower. This is exacerbated by the lack of transparency and editability of software, the monopolisation of the hardware and the intensification of intellectual property law. Lastly, the theory emphasises some predatory methods of proliferation.

6. Summary and Conclusion

In this research paper, I have tried to provide insight into the gears driving this *fourth industrial revolution*, i.e. the mechanisms and technological advancements being created, and how they interplay with the everyday politics of people's lives and their freedom to choose how to live. More precisely, in this theoretical work, I have tried to understand how Artificial Intelligence, especially through the use of behavioural data, may be used as a form of Biopower. In this closing chapter, I will try to summarise the most important theoretical notions and the most interesting findings that occurred in the previous chapters, and finish with some concluding remarks.

The phenomenon that is being considered in this paper is Artificial Intelligence. This is a field of study which focuses on learning about and emulating both natural human behaviour and thought processes, as well as ideal forms of rationality. AI systems may be designed to process digital or physical information in order to create further knowledge, deciding on potential actions or achieving desired goals. A subfield of AI is Big Data, which concerns itself with the processing of large amounts of data (volume), at almost instant speeds (velocity) and with a high number of different sources (variety). This paper focused mainly on the use of behavioural data, which comprises information regarding every single possible action a human may take: This may be either every single click on a phone or computer; it includes the use of any kind of internet service, both in the way one uses it, the content of what is written or read, or even the words that are chosen; also included are GPS location, a myriad of sensors and much more. Although only in its infancy, this technology has led to significant psychological and sociological discoveries and forms of measurement, as it has become the state-of-the-art technology for predicting human behaviour, and is therefore employed in recommender systems such as online advertisement and content selection in social media platforms, to public health, insurance and human resources.

In order to understand the relevance of Artificial Intelligence within political sciences I have used the theory of Biopower, by Michel Foucault. In a general sense, political power is the ability, within social settings, to obtain a desired outcome. Sovereign power is a subtractive form of power, i.e. where its subjects are prohibited from certain freedoms, goods or services, and its enforcement is based on the threat or the execution of violence. In contrast, Biopower is both a historical change in government philosophy and a form of power relations that analyses and exerts power over individuals and populations by observing them as natural entities. Instead of an outright punishment, biopower observes the complex social structures and institutions that control and optimise people's behaviour in order to influence certain outcomes. More precisely, biopower takes into consideration the emergence of

healthcare, security, education and the general well being of the people as a priority of the governing power, with the purpose of generating a healthy and industrious working population. Foucault argues that people become subjects of a form of biopower as they become the objects of study, and therefore subjects of categorizations, measurements, and desired norms to be maintained that are based on other people's rationales and regimes of truth, claimed to be objective.

The mechanisms of biopower are based on the disciplining of individuals in *disciplinary institutions* such as schools, the army and any other institution that is based on the observation, classification and evaluation of its behaviour, therefore structuring the individual's possible field of actions, and motivating or constraining certain behavioural patterns. At the aggregate level there is also the concept of *Technologies of Security*, which are institutions that concern themselves with the acquisition of large quantities of data in order to predict outcomes at the level of the population, and design mechanisms in order to achieve goals concerned with its well being.

Lastly, Foucault also focuses on the relation power-knowledge within Biopower, explaining how the existence of power leads to the creation of knowledge, while at the same time it has the power to withhold the sharing of knowledge, it has the advantage of knowledge over others, and the possibility to decide over the regime of knowledge that subjects the people under it.

As explained in chapter 4, where I first discuss the research question, there is an intimate connection between Artificial Intelligence and Biopower, and the primary reason is its concern with the observation, study and general direction towards human beings, both as individuals and as populations, and their behaviour. The capacity of AI systems to collect information at an increasing detail about individuals and the ability to process enormous amounts of data equates to an enormous amount of biopower in a concentrated form.

Analogously to how it was explained in the chapter on the theory of biopower, people become subjected to the biopower of AI systems as they categorise the individuals based on a given regime of truth, and later services such as recommender systems and advertisement platforms act upon these. Shoshana Zuboff argues that the underlying rationality in many of the systems we encounter on a daily basis function under the logic of Surveillance Capitalism, that only have as their objective the attainment of wealth and power. In the same chapter I have also explained how the services and applications based on Artificial Intelligence discipline our behaviour, by feeding into our needs and desires, and made use of Zuboffs argument about how these systems are designed to further subject oneself to them. At the same time, this technology has led to large-scale implementations at the population level, for reasons such as security and surveillance, health, etc.

Regarding the relation of power-knowledge, I have argued that companies and institutions that have the capacity to implement Artificial Intelligence systems have gathered enormous amounts of information and knowledge, both about individuals and scientific discoveries in the field. This has led to an increased accumulation of biopower - be it at the level of dictating the regime of knowledge or its proliferation, reaching an influence over what is deemed true, and what aspects of reality one is exposed to. This is drawn to the point that the political world has made the creation of Artificial Intelligence a priority in order to maintain and attain further power in the world stage.

In the last chapter I have made use of three postcolonial theories in order to understand more intricately the meaning of Artificial Intelligence as a form of Biopower. The first theory, by Isin and Ruppert (2019) elaborates on the historical parallels of data collection during colonial times with the present. In this theory I highlight the constitutive power that knowledge has in the understanding of real aspects such as the owning of land to the value given to certain people based on their categorisation. In addition, the theory reflects on the colonial rationale of instrumentalizing the population and the concentration of power in a *metropole.*

The second theory, by Couldry and Mejias (2018), describes today's exploitation of foreign and local populations by Artificial Intelligence systems at a global level. The theory also explains how the creation of value in the collection of behavioural data, which is possible in every aspect of people's day-to-day lives, leads to the commodification of life itself.

Lastly, the third work, by Micheal Kwet (2019), is a case analysis of postcolonial South Africa and the influence that companies employing Artificial Intelligence have had in the country. On the one hand, the author draws parallels to colonial history and the establishment of companies from the imperial powers, causing dependency on these companies while undermining local economies. On the other hand, Kwet also focuses on the formal attributes of the systems employed, such as the impossibility to edit or read the software, the concentration of hardware and the restrictions regarding intellectual property.

Both these sides have as a consequence a further concentration of power in former imperial states and the deterioration of power in postcolonial countries, which results in the fear that the postcolonial relation might become perpetual.

As some concluding remarks, I would like to highlight that the relation of biopower and Artificial Intelligence does not intrinsically mean that there is a dialectical positioning between the technology and the individual. I believe there are forms of implementing such systems such that the forms of biopower that emerge are not stripped off from the subjects themselves and concentrated in actors that tend to monopolise it. Nevertheless, I chose a

focus on the postcolonial approach as it speaks to the nature of some of the current applications and practices of organisations that implement AI systems, plus it offers a historical frame through which the development of such a technology needs to be considered.

For this reason I would like to address the topic of *resistance* once more, which was introduced in the chapter on theory, however purposely left out in the discussion.

Foucault argues that resistance is a force that emerges due to discontent over how certain bodies of knowledge and regulations, i.e. bodies of biopower, subject individuals to what they believe to be universal truths. It is the lack of understanding of this rationale, or the lack of identification with it that leads to such resistance. I would argue that until the present time, most institutions that have created bodies of biopower that spread over a population have, in a certain way, have not become completely powerful over individuals. It is still possible to evade governments, sometimes create revolutions against them or to vote a party out of it. Processes to escape these institutions are present. On the other hand, the process to resist the encroaching institutions of Artificial Intelligence are not yet proliferated to the same level, at least for me. It leads to a certain daunting thought: even worse than finding oneself in a place resisting an institution - it is not knowing how to resist it, or whether it is possible to reach a point where it is not possible at all. With this in mind, I would suggest further discussion and research on how to maintain a balance of power between AI and its subjects.

In an evaluatory note, I believe that this paper has demonstrated that there is a very strong relation between Artificial Intelligence and Foucault's conception of Biopower, and that the explanation of how this relation is realised, at least in the limited realm of behavioural data, has been clarifying. At the same time, I realise that this topic of research is broad enough to write several books, and that capturing a full image of it is not possible in the scope of this paper. I therefore hope that it raises the interest for further research into this field of scientific inquiry and raises important topics that need to be discussed in the public sphere. I would recommend further analysis on the forms that Artificial Intelligence is used in the exertion of Biopower, and potentially a systematic mapping of the current practices.

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