THE IMPLICATIONS OF BIG DATA ON SUBJECTIVITY: A CASE STUDY OF CAMBRIDGE ANALYTICA

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ABSTRACT

THE IMPLICATIONS OF BIG DATA ON SUBJECTIVITY: A CASE STUDY OF CAMBRIDGE ANALYTICA

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This thesis analyzes the implications of big data on subjectivity with a genealogical approach through the case of Cambridge Analytica. The changes in the epistemology, episteme, rationalities and the regimes of truth as a result of data pervasion are discussed. The statistics and the cybernetics as the antecedents of data politics are reviewed and data politics as a new mode of power is put forward. The targets, the objectives, the technologies and the rationalities of this new mode of power are analyzed. The mode of subjectivity that data politics create is evaluated with the examples of Cambridge Analytica, mobile health applications, suspect identification and digital biomarkers.

Keywords: Subjectivity, Big Data, Cybernetics, Data Politics

ÖZ

BÜYÜK VERİ VE ÖZNELLİK: CAMBRİDGE ANALYTİCA ÖRNEĞİ

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Bu çalışma büyük veri gruplarının öznellik üzerindeki etkilerini tarihsel bir yaklaşımla incelemiştir. Verinin her alana etkisiyle birlikte bilgi, *episteme*, rasyonalite ve gerçeklik rejimlerindeki değişimler çalışmada tartışılmıştır. İstatistik ve sibernetik, data politiğin öncülü olarak ortaya konmuş ve data politik yeni ve farklı bir iktidar türü olarak incelenmiştir. Bu kapsamda, data politiğin hedefleri, amacı, rasyonalitesi ve metotları çalışılmış, son olarak bu yeni iktidar türünün oluşturduğu öznellik, Cambridge Analytica, mobil sağlık uygulamaları, şüpheli tanımlamaları ve dijital biyogöstergeleri örnekleri ile analiz edilmiştir.

Anahtar Kelimeler: Öznellik, Büyük Veri, Sibernetik, Data Politika

To My Parents, My Wife and My Daughters

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TABLE OF CONTENTS

PLAGIARISM ii
ABSTRACT iv
ÖZ v
ACKNOWLEDGMENTS vii
TABLE OF CONTENTS viii
LIST OF FIGURES x
CHAPTERS
1.INTRODUCTION 1
1.1 Subject, Subjectivity and Big Data 3
1.2 Methodology 4
2. THE PHILOSOPHY OF THE SUBJECT 9
2.1 Philosophy of Consciousness 9
2.2 Foucault and the Subject 15
2.2.1 Subject and Knowledge 18
2.2.2 Power and the Subject 19
2.2.3 The Work of Self on Self 23
2.3 Genealogies of the Subject 25
3. CORRELATION, STATISTICS AND CYBERNETICS 29
3.1 The Birth of the Statistics and Numerization 30
3.2 Statistics and Governance: Security as a Political Technology of Populations 31
3.3 Determinism and Indeterminism 33
3.4 Cybernetics as Antecedent of Data Science 35
3.5 From Technologies of Security to Cybernetics 39
3.6 Data Science 42
4. DATA POLITICS AS A NEW MODE OF POWER AND ACCOMPANYING MODES OF SUBJECTIVITY 44
4.1 Big Data and Knowledge 45
4.1.1 Data Episteme 45
4.1.2 Technical Production of Knowledge in Data Episteme 47
4.2 Power and Rationality 49
4.2.1 Neoliberal Rationalities 49
4.2.2 A new Mode of Power: Data Politics 50

4.3 Governing Subjects: A New Mode of Subjectivity 57
4.3.1 Subjectification Processes and Cambridge Analytica 58
4.3.2 Subjectivation and Mobile Health Applications 65
4.4 Knowledge, Power and Subjectivity 69
4.4.1 Data Episteme, Knowledge and Defining Subjects with Big Data 69
4.4.2 Data Politics and Cambridge Analytica 71
4.4.3 Mode of Subjectivities: Subjectification Processes 73
4.4.4 Mode of Subjectivities: Subjectivation Processes 76
CONCLUSION 78
REFERENCES 82
APPENDICES
A: TURKISH SUMMARY/TÜRKÇE ÖZET 94
B: THESIS PERMISSION FORM/TEZ İZİN FORMU 103

LIST OF FIGURES

Figure 1 - Tailored Messages Based on Personality Types 60
Figure 2 - The Do So Campaign Run by Cambridge Analytica 61
Figure 3 - MyPersonality Application Personality Questions 62
Figure 4 - The Targeted Populations by Cambridge Analytica 63
Figure 5 - The Simple Process of Cambridge Analytica on Political Campaigns 64
Figure 6 - Border Security Ads for the People with High Neuroticism Score 65
Figure 7 - Border Security Ads for the People with High Extroversion Scores 65
Figure 8 - Border Security Ads for the People with High Extroversion Scores 68

CHAPTER 1

INTRODUCTION

During the last decade, one can easily observe the pervasion of data to various fields. The data driven solutions in businesses, data driven analysis in finance, data driven assessment of risk and even data driven science itself, became very popular and gained a significant status. Nowadays, almost all fields of scientific research have a subfield that mainly deals with data analysis and data driven science and Gray defines data driven analytics as the fourth paradigm in science (Grey cited in Hey et al., 2009). This pervasion of data to various fields of life heralds a profound change in the epistemology, and consequently in science and power relations, and ultimately it affects the subject, subjectivation and subjectification processes.

The smart homes filled with smart appliances, smart cities swarmed with networked sensory devices, the inhabitants surrounded by transmitters, led to the unprecedented accumulation of data about the human beings and their interactions with surroundings, and the technologies accompanying this data world enabled the near-real time analysis of agglomerated vast data and produced knowledge on human beings. The networking capacities permit the automated machines to obtain data from various sources and cross-reference them in real time. The advancements in storage capacities render archiving at low costs, therefore making it possible to record every action of individuals. As Gray announced the emergence of the fourth paradigm of the scientific research, the editor of *Wired* Magazine, Chris Anderson heralded the end of theory. He claimed that we were living in a data world, and it was trivial to ask why we do things. Through applied mathematics and data, without further focusing on the causal relations, we simply would always get the right answer (2008). Norbert Wiener, one of the founders of the contemporary computer science, nearly 50 years ago announced the end of the age of exploration. He concluded that there was not anything new to explore, the emphasis should then be on organization, and analysis of knowledge (Wiener, 2018). Furthermore, Heidegger almost a decade later claimed the death of philosophy and announced the cybernetics as the new philosophy (1981). There is a wide consensus on the effectivity of the data. It is the primary tool for the production of knowledge, and it is argued

in this study that correlation, based on the data gathered, has become the principal mode of inquiry in the 21st century. The promise of big tech companies that the online solutions would solve the problems we are facing currently, or Heidegger's end of philosophy, and Wiener's focus on organization, indicate a profound change in science and eventually in society in general. The debates revolving around the use of data by the governments, and the private companies highlighted certain aspects and dangers accompanying this new phenomenon. Starting with the Wikileaks, and later on by the revelations of Edward Snowden, the perceived risks of data driven world reached its peak when the Cambridge Analytica files were revealed. There were already serious debates about the use of private data to affect the political behavior and it was considered to be a grave danger to the democracies around the world (Longford & Patten, 2007; Howard, 2005).

The emergence of data as an unprecedented tool for producing knowledge brings out profound changes to the norms, democratic processes, scientific research, and finally subjectivation and subjectification processes (Bauman et al., 2014). Giorgio Agamben speaks about depoliticized subjects and identify the new emerging power as destituent power, while Hannah Arendt warned about the dangers of the automated subjects (Agamben, 2014; Arendt, 1998). Similarly, Deleuze heralds a new age in power relations with *Societies of Control* and mentions about a world where the data and code enmesh with the individuals and masses in which the principal objective is to control, manage, and modulate (Deleuze, 1992). Scholars like Bauman and Lyon underline the unprecedented capacities of surveillance and their possible effect on human life (Bauman et al., 2014). On the other hand, there are other scholars who defend the advance of new technologies and conceive them of the protector of freedoms (Boyd & Crawford, 2012; Ewald, 2011). The only thing that we may be sure of that we are witnessing and experiencing a profound transformation both in science and epistemology and consequently in practices and discourses. The aim of this thesis is to identify and analyze how the data and the accompanying changes in science, technologies and epistemology, in general discourse affect human beings, more specifically subjectivation, and subjectification processes. Subjectivation, in the study can be described as self-creation of a subject through mainly ethics and subjectification can be described as creation of subjects through power relations (Oberprantacher & Siclodi, 2016).

The main question that is tried to be answered in this work is the same inquiry that Foucault had sought to answer nearly 40 years ago.

> Our civilization has developed the most complex system of knowledge, the most sophisticated structures of power: what has this kind of knowledge, this

> type of power made of us? .... I am sure I'll never get the answer; but that does not mean that we don't have to ask the question (2001, p.311).

Having almost unlimited storage capabilities at very little cost, having wireless technologies enabling data transfer through satellites to storage facilities in real time, and having countless numbers of sensors that gather data about each action of the individuals create an unprecedented accumulation of knowledge. Foucault claims that knowledge induces effects of power and power creates subjects (Foucault, 1980). Hence, the objective of this study is to understand the effects of power relations on the modes of subjectivity. This knowledge is highly dependent on data thus the question can be formulated as the "*implications of agglomerated, vast data or briefly big data on the modes of subjectivities.*"

1.1 Subject, Subjectivity and Big Data

Classical western philosophy sees the subjects as active agents, bearer of universal reason who employ their reason to give meaning to their environments, as the bearer of rights and responsibilities (Taylor, 2011). However, in this study subjects are conceptualized as historical and cultural becomings, who are turned into subjects by an interplay of various relations, mainly power and knowledge (Foucault, 1994).

Subjectivity, as defined by Foucault is the transformation of human beings into subjects (1983). According to Foucault it is a process that results from a complex network of relationships. The relations of knowledge and power categorizes the individuals, marks their identity and imposes a regime of truth that the self and the others should acknowledge, attach them their identity (Foucault, 1983). This process encompasses the transformation by the selves into the selves with various technologies, termed as subjectivation, and the transformation by the power relations, termed as subjectification. Modes of subjectivity refer to the distinctive modes of this process of becoming. For instance, in *Discipline and Punish* Foucault analyzed how the delinquent was identified by a plethora of experts through juridical examination based on norms and laws. Psychological and medical experts produce knowledge on the suspect in courtrooms and based on these examinations, if found guilty, then convicts are divided from others and sent to prison, a specialized loci of production of knowledge on the delinquents. Then they are intervened by technologies of the body and the mind to inscribe them a new identity, that is conformant, rehabilitated so that they can reappear as productive and useful. Meanwhile, the suspects are guided to attach themselves these very identities so that they can be subjectified and subjectivated. This same mode of subjectivity can be located in the schools or in the factories in disciplinary societies. As

argued above, mode of subjectivity refers to the processes of assuming identities, becoming active subjects.

In this study it is argued that big data is the determinant of knowledge and power relations in postmodern societies. Big Data as defined by De Mauro et al., is "the information asset characterized by such a high volume, velocity and variety to require specific technology and analytical methods for its transformation into value" (2016, p.131). Similarly, according to Boyd and Crawford, big data is a cultural, technological, and scholarly phenomenon that results from the interplay of technological capacities that gather, mine, compare and produce large data sets, and encompass algorithms that can identify the patterns to make truth claims (2012).

Data then can be defined as the raw material produced through abstraction of the world by representation of symbols (Kitchin, 2014). Data, derived from the Latin word "dare" meaning to give, implies the information given by the nature. However, Kitchin argues that data in modern sense is much close to the "capere", taking, as data is about harvesting, mining relevant data in a pool of informational bits (2014). However, in contemporary implementations, the significance of data lies in the amount gathered, referring the importance of big data (Aradau & Blanke, 2018).

1.2 Methodology

The questions asked not just lead to an answer, but also predetermine it. Similarly, the methods employed to find an answer also shape the answer itself. The methodology that will be followed here will fall under the umbrella of critical studies. Critical study of thought is as defined by Foucault, comprises of the analysis of objects, including how they are rendered visible, how they are objectified, and the construction of a knowing subject as the holder of knowledge on this object (Foucault, 1994). The subject, object of this work, is objectified through humanities thus science is crucial in understanding the subject. Their mutual relationship and connection result in the creation of the regimes of truth that are the objects of the critical study of thought (Foucault, 1994). Such an effort prescribes the rejection of universal givens, transcendental subjects and highlights the contingencies that condition the subject (Foucault, 1994).

In this study, it is argued that big d*ata and accompanying changes in technology has profoundly altered the episteme and knowledge in postmodernity*. Additionally, it is theoretically assumed that subjects are not irreducible entities but rather formations and becomings. Following Foucauldian analytics of subjectivity, this relation of becoming can

be captured in the relations of power and knowledge that are mutual and simultaneous. Secondly, it is put forward that *big data has brought upon a new mode of power.* Finally, *big data is considered to be the primary relation that shapes the postmodern subjectivity.*

Therefore, this study aims to explore the changes in epistemology, resultingly the changes happening in the power relations to locate the changes in the subjectivities. The framework of this effort will be Foucauldian analytics of subjectivity. The methodology of this work is pure, interpretative, and qualitative social research. Being a desk study, the data of this research is the selected literature on the subject. A sketch of a history of the contemporary subjectivity will be provided with a genealogical approach. To exemplify and materialize the theoretical work undertaken in this thesis, the revelations on the Cambridge Analytica Company will be analyzed as an instrumental case study. The working of Cambridge Analytica is selected on two grounds. The first reason is that the capacities of data analysis are considered to be secret, therefore the processes are mainly unknown. Since the work of the beforementioned company became public and raised serious concerns, there are credible reports available about their activities. Secondly, nature of their work can be juxtaposed with the main arguments of this study.

As argued above, the transformation of human beings into subjects, briefly subjectivities, can be investigated by two distinct but closely interrelated processes, subjectivation and subjectification. This study instrumentally analyzes Cambridge Analytica to exemplify the subjectification processes arising from the relations of power. In order to reify the subjectivation processes, mobile health applications, used to diagnose mental illnesses and cognitive disorders will be reviewed as well. Even though the focus of this study is the analysis of Cambridge Analytica as a case study, these additional applications are selected to demonstrate the contingent nature of subjectivity governance seen in Cambridge Analytica.

Since the focus of this work is the subjectivities, following questions will be sought in the case studies. *How are the subjects ordered, classified and problematized, briefly how is the truth about the subjects produced?* Secondly, *how are the subjects intervened by the relations of power as a result of these classifications?*

This thesis is divided into 5 chapters. In the Chapter 2, the philosophical currents on the subject and subjectivity are reviewed. Subjects in this study are considered as formations, or becomings, to place this analysis in a theoretical framework the change in the conception of subject in various philosophical thoughts is described. Philosophy of consciousness, as termed by Habermas, define the subjects as transcendental agencies and argues the duality of

object and subject. The subject as an irreducible entity, and capable of representing the external world through its consciousness and reason is what Habermas identified as the philosophy of consciousness (Habermas, 1987). However, in the mid-19th century this account was challenged first by Hegel and Freud. Later phenomenologists highlighted and investigated the interaction between the objects and subjects. Heidegger placed the technology at the center of this interaction and highlighted the effects of technology on subjectivity. The interactions between the objects, between the natural, and the cultural and the knowing subject was the principal inquiry that critical theorists sought to analyze. Notably Horkheimer and Adorno analyzed the technology as the mediator of this interaction and pointed out the rationalities embedded in these processes.

Another current in French Philosophy developed to understand this interaction between the objects and the knowing subjects, yet with profound differences. Bachelard, Canguilhem, Cavailles and Foucault proposed another philosophy instead of philosophy of the subject, a philosophy of knowledge, rationality and concept (Foucault, 1989).

Foucault however places this interaction at the center of his studies with a focus on subjectivity. In philosophy of consciousness, the subjects were considered as free beings who employs their reason to know and change their nature. Hence, an analysis of this interaction should cover the reason and accompanying knowledge and truth producing practices. We can move further from this point. Knowledge and truth producing practices on subjects can be located in humanities. This encompasses an analysis of discursive formations, yet as argued by Bachelard and Canguilhem, technologies and concepts through which the knowledge is produced also plays a crucial role. Hence, the practices, the sites and the experts and authorities on truth production should be accounted for. Foucault, unlike his predecessors, additionally analyze the relations of power and domination and how these affect the regimes of truth. Such an effort prescribes an analysis of strategies and rationalities as well. Later in his oeuvre, he concepts all these relations as apparatus (Foucault, 1980). Finally, these apparatuses can be linked to modes of power and the modes of subjectivities. The aim of the critical theory is to highlight the contingencies inherent in givens, universals and transcendentals. This can be achieved by a historical analysis of the continuities and discontinuities in the practices, discourses, institutions, regulations, disciplines, strategies and modes of rationalities (Foucault, 1994).

To exemplify this framework, his analyses on madness and how sane and mad subjects are created, his analysis on prisons and how docile and useful bodies are created and finally how

sexuality creates the technologies of the self on the self are briefly reviewed in this chapter. Lastly, recent studies done on the data and the subjectivity are provided with a critical view.

In the next chapter, the changes in the knowledge and regimes of truth are analyzed through a genealogical analysis of statistics and cybernetics. It is argued in the study that data politics can be traced back to the birth of statistics and later on cybernetics. The changes in *exact* sciences and episteme, respectively changed the nature of knowledge and the regimes of truth. In particular the acknowledgment of indeterminacy and chance events changed the nature of knowledge and truth production practices. Through quantum physics the chance events and indeterminacy are considered inherent in the nature.

Cyberneticians argued that the sole method of controlling the chance events is probabilistic calculations. The founders of this discipline, Wiener, McCullough and Von Neumann rejected the space and time as a priori of knowledge and claimed that the knowledge is inadequate to the space and indeterminate to the time, rendering the sole production of truth as probabilistic analysis in multiple of universes. The changes in the nature of knowledge and the truth affect the practices of governance and subjectivity as well. In this chapter data politics as a new mode of power is put forward. The differences among the technologies of security, technologies of risk and technologies of data politics are also analyzed. This chapter also aims to put forward the knowledge axis of power and subjectivity.

Chapter 4 analyzes this new mode of power through a Foucauldian grid of analysis. Foucault in his analyses on power claimed a productive mode of power exercised over the daily lives of the individuals, a power that categorizes them, mark them by their own identity, attaches them to these identities and impose on them a regime of truth that neither him nor others can deny (Foucault, 1983). This power is not an agency nor a structure but rather a complex interplay of relations among the layers of society that aim to modify the actions of others. It is not universal but rather localized and plural (1983). These analyses of power always had references to the subjectivity and enable to formulate the modes of subjectivities they create.

Foucault had undertaken his analyses on power through the objectives, the targets, the technologies that encompass the surveillance, dividing and defining practices and the arts of government, and the guiding rationalities. In this chapter, it is argued that data politics doesn't have a singular objective but rather aims to automatically modulate the behaviors and the subjects for various ends. The target of data politics is the subjects through their dividualities and emotions. The technologies of this new mode of power are analyzed through surveillance, dividing practices, and operations that power exerted on them, and they are

exemplified through case studies. Other than Cambridge Analytica, to successfully exemplify the nature of data politics and how it creates new modes of subjectivities, mobile health applications which identify the healthy and sick individuals through big data are analyzed in this chapter. Additionally, arguing a new mode of power requires an output of the differences among the other modes of power such as biopolitics and disciplinary power. The differences among these are also put forward in this chapter. Finally, in conclusion, the results of the study, the new mode of subjectivity that data politics brings into play and the possible contribution to the literature are given.

CHAPTER 2

THE PHILOSOPHY OF THE SUBJECT

In this chapter, the literature on subjects and subjectivity will be reviewed. The theory of the subject is one of the key areas of study in philosophy. There are various accounts and approaches towards subject. In accordance with the questions and methodology, various thinkers formulated the subject heterogeneously. Conceiving subject as a construction and becoming is one of the main hypotheses in this study. Therefore, how the subject is formulated under various currents in philosophy will be provided in a historical framework. The subjects and their becoming, the processes through which they are formed and in which they also form themselves will be presented through existing literature. Foucauldian formulation of subject and methods of analysis will be reviewed, and finally recent studies on data and subjectivity will be analyzed.

2.1 Philosophy of Consciousness

The subject had long been seen as a substance that provided meaning to the world, holder of the universal reason, and autonomous will. Following Descartes, the subject was considered to be the only real entity that one could be sure of. The natural world, the objects are to be grasped by the subject and represented through its inherent faculties. This cartesian understanding posits a separate duality, the subject and the object (Williams, 2001). The subject was the start and the center of the representation. The whole enlightenment was conceived as the liberation of the universal, rational man from the chains imposed on their wills. The free subject, the rational subject was the precondition for the theories that had pervaded the Western World for quite some time. Philosophy of consciousness as named by Habermas, consists of the traditional accounts of subject in philosophy that inheres a distinction between the subject and object.

However, starting from the 19th century, this irreducible, transcendent subject was attacked on various grounds. The linguistic turn in Anglo-American philosophy, phenomenology, and structuralist ideas in Continental Philosophy, later coalesced into postmodern thinking under various forms, challenged this view. Postmodernity according to Lyotard was about attacking

the metanarratives and it was about the incredulity (1984). The traditional theory of the subject was not exempt from this charge.

The notion of irreducible, rational subject was first attacked by Hegel and Freud. The subconscious activities provided another aspect of the subjectivity and profoundly altered the way that philosophers had conceived of the subject. Instead of a rational subject who acts consciously, newly formulated subject was challenged by the sub-conscious behaviors. Similarly, Hegel's "Bad Consciousness", saw the subject as a doubling of their master, hence being a creation of domination (Butler, 1997). Through the notion of negation, Hegel posited a subject that was a historical formation and a product of constant transformation. Rather than seeing a concrete subject that was constant and stable throughout the time, he emphasized the importance of time and space and posited that the subject was in constant transformation (Williams, 2001).

The phenomenology, developed mainly by Husserl and later advanced by Heidegger saw the subject as the center of experiences, uniting the object and subject separation in subject (Smith & Protevi, 2020). To that aim, they provided an ontology of the subject, this understanding still considered the subject as a being but rejected the duality of the subject and object, and the universality of the subject. One of the most prominent and controversial philosophers of the 20th Century, Heidegger, saw the subject as a historical and collective being. In his much-acknowledged book, *Being and Time*, he defined the subject as the "*Dasein",* the being-in-world, while emphasizing the relations among the Cartesian Duality.

Smith and Protevi discern two different understandings of *Dasein.* The first one as being in the world while standing out from its surroundings and also from itself, and being able to reflect upon itself, and secondly being open to Being (2020). Heidegger tried to understand the Being through everyday experiences and aimed to find the a priori, transcendental contingencies that determine the conditions of knowing beings and ultimately the actions of the *Dasein*. To that end, he integrates the being-with as an irreducible part of *Dasein*. Being-with refers to the social and historical conditions, norms that affect the *Dasein*. He differentiates among two types of encounters. While he decides to maintain the subject-object relations in scientific inquiries, he rejected this duality in everyday experiences. The representations of the external world, the concepts, and the technologies, imposed subject on the nature of objects. According to Heidegger, the technologies precede the science itself, and the technologies are the mode of revealing of the *Dasein* and the truth (1977). Placing technology amongst the subject and object represents another current in the philosophy of subjectivity. Similar to Heidegger, Flusser also distinguished the methodology as an

inseparable part of modern work and he also suggested that the contemporary age is the age of methodology (Flusser, 2014). A similar line of thought has also been developed concurrently by Bachelard, Canguilhem and lately Foucault.

Another formulation of the subject, apart from phenomenological and hermeneutic accounts of Heidegger, as a formation of power can be found in Althusser's notion of interpellation. According to Althusser, "individual's ideas are his material actions inserted into material practices governed by material rituals which are themselves defined by the material ideological apparatus from which derive the ideas of the subject" (1971). He points out that ideology and subjects constitute each other since there is no ideology except for the subject and there is no subject except for the creation of ideology (1971). The ideological recognition ensures the subjects' recognition of themselves as the subjects. It is obvious, it doesn't force any individual to be the subject, it is almost a transformation happening on its own (1971). Since the ideologies are ahistorical, the individuals have always been the subjects of ideologies. In his famous example of hailing, Althusser asserts that when a figure of authority, in this case a policeman, hails some individual as "Hey you there", the moment the individual turns back and acknowledges this call, he shows that he is a subject, he knows that he is the addressee of that hailing. However, as stated above, the individual had already been subjectified. Another important remark that should be noted here that according to Althusser, the ideology is implicit in its functioning. It disguises as scientific knowledge, it denies the relations of dominance that it inheres (1971). Hence, Althusser conceives the subject as a creation of ideology, nevertheless, notes the processes of subjects' acknowledgement of this creation and the non-scientific nature of scientific discourses.

With regard to philosophy of subject, German Idealists provided important accounts to subjectivity, the domination, and power relations. The Frankfurt School, or Critical Theorists tried to explain the implicit manipulation and domination of the subject by various sources. According to Horkheimer, Critical Theory is about the emancipation of individuals from all sorts of domination. It is to free individuals from slavery of any kind and should act as a liberating force (Horkheimer, 2002). Consequently, what is important in the theory of subject for Frankfurt School is to show the contingent determinants of modern subjectivity and unlike traditional philosophy, suggest the ways to liberate the society.

The emancipation of the individual through free use of public reason and the scientific emphasis through positivity were the hallmarks of modern thinking since Enlightenment. Then how the views of Critical Theorists differ from traditional accounts of subjectivity? They challenged existing ideas on two grounds, the reason and the subject themselves.

Adorno and Horkheimer in their seminal work, *The Dialectic of Enlightenment*, identify reason as rooted in domination and power relations, and linked it to the self-formation (Dean, 1994). They criticized the instrumental rationality that permeated the Western World after the enlightenment through technology and science. This transcendental, universal reason that supposed to be the liberator of the modern man (Kant, 1879/2013), is criticized by Adorno and Horkheimer, and they claimed that this reason was rooted in the domination that claimed to be scientific, as knowledge being synonymous to power, and it was produced through technologies that were aimed to provide the results that the capitalism had longed for (2002). The rationality that guided the modern man was only about the ends and the methods. The ends were not thought upon, but they were only about the methods that would ensure acquiring desired ends with a utilitarian understanding (2002). These methods, deeply affected by the mentalities of the bourgeois, are about comparability, and the best way to do this is the abstraction of things to calculable forms, mainly numerical. By forming an analogy of myth and enlightenment reason, they concluded that subjectification is a result of domination through reason (2002).

By forming an analogy between myth and enlightenment, they aim to show that even though Enlightenment had aimed to overthrow all the traditional, cultural fears that were not factual, that were mythical, it eventually became a myth as the need to self-preservation and the self-renunciation based on technological advancements culminated in an irrational rationality. The myths are the result of subject's fears with an aim to comfort themselves and explain and control their fears (Horkheimer & Adorno, 2002). The enlightenment aimed to overthrow these irrational subjective fears that were embedded in the myths and pointed the scientific, objective facts, and the universal, objective reason as the liberator. However, the instrumental rationality that pervaded the Western World implied only one end, the self-preservation. Once this self-preservation became the ultimate objective, each understanding of self-preservation on the basis of utilitarian technologies differed and led to the subjective reasoning. Additionally, through the disenchantment of the world, the man became the creator and like myths, the subjective reasoning created the facts and established them as objective truths (Horkheimer & Adorno, 2002). Hence, the truth became the subjective fears.

The emphasis on technology, the changing nature of visibility through abstraction and calculability, the relations of power and knowledge, the formation of truth and reason are the themes that will reoccur in this work. However, the rationality and the subjectivity in Horkheimer and Adorno are totalizing. They do not differ amongst various rationalities, various relations between power and knowledge, as their main emphasis was upon capitalism

and instrumental rationalism (Dean, 1994). Additionally, the first generation of Critical Thinkers were indeed charged with an excessive subjectivity (Heartfield, 2002). The critique of reason was done on the grounds of subjective rationality and how it would eventually create a myth. Habermas criticized this placement of the subject and claimed that there should be a paradigm change from the "philosophy of consciousness" to the "philosophy of communication" (Fritsch, 2019).

According to Habermas, another prominent thinker of Critical Theory, the philosophy of consciousness, with its emphasis on the subject and later on subject-object relations are insufficient for accounting for the process of subjectivation and subjectification (Fritsch, 2019). Starting with Hegel and later Husserl and Heidegger, phenomenology had already considered the subject as the essence of experiences. The subject as an irreducible entity, and capable of representing the external world through its consciousness and reason is what Habermas identified as the philosophy of consciousness (Habermas, 1987). In order to change this paradigm, Habermas in the communicative reason suggests a tripartite phenomenon in which two or more subjects communicate with each other to reach an understanding (Fritsch, 2019). Through these exchanges, subjects see themselves in the eyes of the other and construct themselves. He differentiated the work and the communicative action and claimed that the former was indeed an action of instrumental rationality while the latter was about consensual norms (Bohman & Rehg, 2017). Accordingly, the reason according to him is intersubjective and formed through communicative action (Dean, 1994).

Similar to Adorno and Horkheimer, Habermas also identifies the macro relations, in particular the risks of economic relations upon the subject. The system, that are the repercussions of market relations and administrative bureaucracy also threaten the lifeworld which is comprised of individuals who can interact on the basis of consensual norms. Furthermore, unlike Horkheimer and Adorno, Habermas proposed multiple rationalities, and alike to former theorists of critical theory claimed that critique can't be done without an interplay of social sciences and philosophy (Bohman & Rehg, 2017).

Instead of Cartesian Duality, phenomenologists stressed the importance of the subject and united the subject-object duality with an emphasis on subject and subjective experience. Even though the 20th century was charged with the disappearance of the subject, the first half witnessed an over-subjectification. This can be observed both in phenomenologists, existentialists, and critical thinkers. However, the second half of the century, through structuralism and post-structuralism emphasized the objectification, resultingly the deconstruction of the subject. Subject was conceived as a historical formation, a product of

the contingent relations and linguistic processes (Foucault, 2001). The deconstruction of the external with an emphasis on subject, eventually led to the deconstruction of the subject itself. Similarly Gutting remarks about the existence of two currents in French Philosophy after the World War II. The first line, philosophy of consciousness, as stated above, was represented by phenomenologists and existentialists, the second current, the philosophy of knowledge, rationality and concept was represented mainly by Bachelard, Foucault and Canguilhem (Gutting, 1989). Conceiving of subject as a historical formation, a construction and becoming, they emphasized various aspects of this process. Bachelard, by his notion *phenomenotechnique*, posited that the instruments used to obtain knowledge, define and shape the knowledge itself (Gutting, 1989). Canguilhem, claimed that the concepts through which one obtains scientific knowledge change the very knowledge and the object itself.

Bachelard, analogous to his German counterparts, criticizes the reason of Enlightenment. He claims that in order to reach an understanding of reason, an analysis of applied rationality is called for. Therefore, science is where one can locate reason and science can be analyzed with a historical perspective. Since, there are many rationalities, ruptures, discontinuities in the history of science, it is impossible to locate a single, universal reason inherent in subjects (Gutting, 1989). Instead of a Cartesian subject employing instruments to obtain knowledge on the given objects, Bachelard posits that the very instruments construct the objects of inquiry. These instruments not only construct the scientific object, but also shape the scientific spirit as well, as the holders of this knowledge (Rheinberger, 2005). These instruments, named phenomenotechnique by Bachelard, do not explore the phenomena, rather invent them, and construct them. Consequently, Bachelard defines science as a social process, a result of collective enterprise through discursive processes (Rheinberger, 2005).

Apart from Bachelard's insistence on technological aspects of epistemology and subjectivity, Canguilhem's ideas on concept are also relevant for this study. Even though both philosophers reject the theory/observation duality, the placed emphasis differs among them. Canguilhem, as a historian of science, claimed that the essence of the scientific activity could be grasped through concepts. Canguilhem posited that observations were not exempt from the very concepts they had been based on (Gutting, 1989). As a result of the pervading incredulity towards metanarratives, Canguilhem asserted that the concepts are the contingent and historical determinants of the scientific knowledge (Pena-Guzman, 2018). These discursive, historical formations appear in various disciplines with different meanings. For instance, in his discussions on the pathological and the normal, he identifies the changing definitions of the pathological and how it defines the meaning of the normal (Canguilhem,

1991). Before moving onto Foucault's account of subjectivity, a brief account on Deleuze's perception of subject will also be provided.

Deleuze, through his concept "folding" also provides another account for the subject as a formation, as a becoming. The subject, a production of differences, to be exact passive synthesis, is the result of relational processes. The main thesis that Deleuze develops throughout his oeuvre is that the subject is not the meaning giver but rather is the one that should be explained, and the task of philosophy is to rediscover the various determinants of this construction (Smith & Protevi, 2020). The subject, a product of multiplicities, is a result of art of becoming other. This becoming is not self-contained or isolated rather it is realized by the material world of the outside (Semetsky, 2003). Deleuze, on his book on Foucault, defines the interiority of the subject as a folding of the outside to the inside of the subject. The outside is always moving and changing, so the subject itself, as well. The subjectivation happens through unfolding of these layers embedded in the subject, hence identifying the self-activities on the formation process (Deleuze, 1988).

The main question that is sought to be answered in this study is the effect of data on modes of subjectivities. Data is mathematical, highly statistical and data analysis requires various prerequisites such as the practices of data gathering, statistical modeling and correlations among the determinants. Therefore, data is an instrument of production of knowledge and truth. Besides, data has become an objective in itself. The need for more data is a spawn of data politics and data brings about new mode of inquiries alongside the practices.

Subjects on the other hand is formulated as becomings and reducible, dynamic beings in this study. The relation of knowledge, the instruments and the methods to form this relation between the object to be known and the subject to know is the main inquiry of critical theory. Through data apparatus and governing rationalities, new modes of subjectivities can be investigated. An analysis of apparatus to find the contingencies in universals necessitates a historical approach to distinguish the conjunctures in the disciplines, practices and rationalities. Foucault's genealogical methodology provides a framework par excellence for this aim. Therefore, Foucauldian analysis of subjectivity will be reviewed in detail next.

2.2 Foucault and the Subject

When writing on subject and power, Foucault noted that the goal of his work was to understand the methods whereby human beings are transformed into subjects (Foucault, 1983). Even though Foucault identifies various objectives of his work throughout his life, the question of "What are we?" appears constantly in his work. Subject, according to Foucault,

has two separate but related meanings. The first one is being subjected to some sort of control or domination and the second one is being tied to his own identity by conscience or self-knowledge (1983). In this work, the former was conceptualized as the subjectification while the latter as subjectivation.

Subject according to Foucault is an invention, an effect of the power relations. The human being is not the source of the history but rather an artifact of history and culture (Rose, 1996). Foucault's methodology bears the traces of this understanding, the reason he refuses to employ solemnly hermeneutics or transcendental existentialism and choose to employ archeology and genealogy, is the objective to capture the real essence of the events, hence, bracketing out all the effects of this contingent subject because human subjects hold a unique position. Modern conception of human subject is both the maker of the history and a product of it. Therefore, to overcome this dead end, Foucault analyzed the discourses and practices as the unit of analysis through archeology and genealogy.

In discipline and punish he defines the soul, as:

> It would be wrong to say that the soul is an illusion, or an ideological effect. On the contrary, it exists, it has a reality, it is produced permanently around, on, within the body by the functioning of a power that is exercised on those punished – and, in a more general way, on those one supervises, trains and corrects, over madmen, children at home and at school, the colonized, over those who are stuck at a machine and supervised for the rest of their lives (Foucault, 1995, p.29).

Unlike Frankfurt School Theorists or Marxists, the relation of power and subject in Foucault is not a relation of negation, of delimiting but a productive relation in which power creates, shapes and utilizes human beings as subjects (Foucault, 1983).

Foucault, analogous to Frankfurt School Theorists, traces the modern man to the Enlightenment. Foucault's assessment of Kant's brief and seminal essay provides the general framework of analysis that Foucault had employed in his work. The answer to the question posed "What is Enlightenment?", according to Kant, is both a process and a task in which human beings mature, emancipate from the chains imposed on his reason, and on his will, imposed by all sorts of authorities through knowledge, and free use of reason. Proceeding on the enlightenment and its effects in modern philosophy, Foucault reformulates the question that forms the basis of his entire work, "*In what is given to us as universal, necessary, obligatory, what place is occupied by whatever is singular, contingent, and the product of arbitrary constraints?"* (Foucault, 1997). This leads us to a historical analysis of events that have led us to constitute ourselves as subjects of what we are doing, thinking, and saying.

Hence, an ontology of selves, even though it has certain, concrete limits, can be done by analyzing the rationalities that are the systems of practices and strategies, by analyzing the axis of knowledge accompanying these rationalities, and by analyzing the axis of power and the axis of ethics (Foucault, 1997).

To clarify, in order to understand what we are, the rationalities that employ various strategies and tactics to ensure desired ends through systems of practices, the bodies of knowledge that accumulate and create knowledge on human beings and on objects, the relations of power that one conducts on others and on oneself, and the ethics through which one relates to himself, how one embodies the values and desires, should be analyzed archeologically and genealogically through discourses, the institutions, and the systems of practices.

In order to clarify this methodology, Foucault unified these processes under analysis of discursive regimes. In *Archeology of Knowledge,* Foucault defined four axes. These are the objects, the enunciative modalities, the concepts, and the strategies (Foucault, 1972). The objects of the discourses could be investigated on the basis of surface of emergence, the authorities of delimitation, and the grids of specification. Secondly, the enunciative modalities designate the authorities who can speak on the objects that discourse specifies. It also comprises the institutional sites where the veridiction and falsification processes occur, and the technologies employed to create these regimes of truth. Thirdly, the analysis of concepts in discursive formations require a temporal analysis of succession, meaning a historical inquiry, and understanding how these concepts differ in various disciplines. Besides, the procedures of intervention designate the methods to intervene in the discourse through writing or representation. Finally, the formation of strategies implies the complex interplay of various strategies on the same concepts and objects and how one differentiates the other or how one has the same characteristics with the other. For instance, an analysis of madmen involves the identification of the common practice of confinement and how madness diverged from the other disciplines that employ the same techniques (Foucault, 1972).

Perhaps, a brief reformulation of Foucault's methodology can be posited as such; the practices and the accompanying discourses create *dispositives, apparatuses*. This also includes the institutions, the technologies and the mode of inquiries. These dispositives are the results of strategies. Hence an analysis of strategies requires an understanding of rationalities and the governing episteme, as well.

After briefly analyzing his methodology, his account of subject can be summarized. To understand the normal, since the normalization is inherent in the deep layers of everyday

lives, Foucault turned to the abnormals; the madmen, the criminal, the onanist and how those abnormals design the normality of regular man and how the same technologies that were employed to cure, to rehabilitate, to sane, pervaded various institutions and became technologies of humans (1994).

In *Madness and Civilization* and *The Birth of the Clinic*, he analyzed how the practices and the bodies of knowledge produced on madmen, created not only the madmen but also the sane subjects. In *Discipline and Punish*, he explained how the power exerted externally on criminals, created the delinquents and the conformant. Finally, in *History of Sexuality*, he analyzed how one relates to themselves and works on themselves, namely through ethics. These various types of modes of subjectivation and subjectification will be briefly reviewed.

2.2.1 Subject and Knowledge

Knowledge is one of the recurrent themes in Foucault's oeuvre. However, his inquiries do not belong to an epistemological field but a field of ontology (Gutting, 2021). Instead of epistemological inquiries, Foucault aimed to understand the conditions of possibility of the bodies of knowledge and the contingencies producing them. Accordingly, borrowing Nietzschean notion, Foucault identified knowledge as a historical invention resulting from various clashes among the fears, desires and wills (1997). Foucault also makes a distinction between the French terms for knowledge, *connaissance* and *savoir*. In *Archeology of Knowledge*, Foucault defines *savoir* as pre-knowledge, a necessity for the creation of knowledge of disciplines and it is this *savoir* that is employed here as the knowledge, a condition of the knowing. Through this knowledge, certain disciplines may create *connaissance*, hence, rendering *savoir* the condition of possibility of *connaissance*. However, unlike *connaissance*, the *savoir* may be found in fiction, reflection, institutional regulations, practices and political decisions, in general discourses (Foucault, 1972). Therefore, through *savoir* Foucault aims to identify the contingent nature of knowledge itself.

As stated above, discursive formations are the epitome of Foucault's analysis. These formations create the veridiction and falsifications processes, thus define the truth. To briefly sum up, an analysis of knowledge involves an analysis of discursive formations and practices that make objects visible in designated institutional sites and an analysis of what can one say on these objects based on what theoretical grounds and to what ends.

In *Madness and Civilization*, Foucault adopted this methodology. He analyzed the madness and the sane through this framework (Foucault, 1994). He discerns the changing concept of madness and the accompanying practices and tries to define the underlying conditions. To

that end, he provides the accounts of madness in renaissance, classical age and in the modern times.

He first starts his analysis of madness with the practice of confinement and when it emerged. He asserts that the free madmen had to be incarcerated starting from the 16th century during the great movement of confinement (Foucault, 1988a). During this period, the madmen were incarcerated with the poor, the idle, and the vagabond and with the sick. The changes in the classical era madness became possible with the advancement of the medical discourse in the field. The body and the soul, a distinction made by Descartes early Classical Age, pervaded until the end of this period. The concept of madness became an illness of the soul. Besides, now the madman was perceived as someone whose reason is affected by the deliriums. This displaces the madness in relation to reason. The concept of cure is also directly linked to the advent of the modern psychiatry. Finally, Tuke and Pinel arrived at the scene and freed the madmen from the horrors. At least this is what is widely believed. On the contrary, Foucault, as a post-structuralist who always refuses the metanarratives, notes a twofold change in the treatment of madness. The madmen were put into exclusive asylums and separated from the criminals, the poor, and the idles, on the grounds of an emerging rationality that is liberal economics. This rationality placed an emphasis on the poor in terms of economics and render them useful in the economic system. Secondly, the examination as the principal method of inquiry required expertise to diagnose the madness, hence enabled the foundation of asylums (Foucault, 1988a).

He also locates the religious practices in Tuke's treatment and the bourgeoise morality in Pinel's. To conclude, the scientific definition of madmen was profoundly shaped by the morality, the rationalities, the modes of inquiries, practices and accompanying discourses, briefly the power relations. Therefore, the sane, who was not mad, was a product of these complex interplays of relations on various levels. The second axis of analysis of subjectivity can be found in Discipline and Punish.

2.2.2 Power and the Subject

Foucault in his study *Discipline and Punish*, analyzed the changing practices of punishment, the pervasion of confinement as the method of punishment and the birth of the prison. The changing concept of criminal, the object of protection in the face of the criminal and the crime, the network of various disciplines in the role of punishment, and how these technologies are adopted in various institutions and disciplines, are some important themes recurred in this work.

How the crime and the criminal are objectified and through what modes of subjectification they are subjectified, through which techniques the safety of populations were ensured are the main objective of this study. During his lectures in 1973, in Brazil, he claimed that in order to understand how social practices gave birth to new types of knowledge and eventually new modes of subjectivity, the juridical processes must be investigated (Foucault, 2001). Most importantly, Foucault analyzed the political powers that invested the body and how those changes occurred in the punitive practices were in relation with the political technology of the body. This political investment of the body was mainly a result of the body being a force in production bearing economic importance, however the body was only useful if it was both productive and subjected. This subjectification that Foucault had aimed to identify in his study, the soul is a direct result of the punitive practices and the technologies that developed in this milieu which pervaded the social institutions in modernity (Foucault, 1995).

Akin to the analysis he had carried out in *Madness and Civilization*, Foucault identified the ruptures in the practices of punishment and focused on the accompanying discourses and the mode of subjectivations those changes brought upon. Through these abrupt changes, the punishment moved from the body to the soul, from the crime to the criminal themselves, from damage to the risk of the criminal to the society. The deviancy concept, developed to explain the crime, problematized the whole life of the criminal, hence opened the punitive mechanisms to the expertise of various disciplines, and the objective of the punishment became the psychological and moral transformation of the criminal to reduce the risks they pose to the society and also to ensure the conformant and productive bodies. The main reason of this transformation was the adjustment of punitive system to the political rationality of the 19th century, a mechanism of oversight and control to the minutiae of human lives (Foucault, 1995).

Foucault then proceeded to study the practices that aimed to rehabilitate the deviant and traced those in other disciplines. Consequently, he identified a general system of oversight and control that could be observed in all layers of society, namely the disciplinary society, from punitive institutions to the military, medical and educational institutions. This disciplinary society, while trying to maintain order, also seeks to maximize the functioning of the governed. The understanding of the human capital, population as an asset par excellence, also required the ways in which the subjects increase their capacities for certain ends. This new transformation, akin to rehabilitation of the deviant, enabled the criminal to transform into a subject whose behaviors were coded in themselves, in particular through training (Foucault, 1995).

This profound change, happened not only in penology but also in various institutions, was created with an interplay amongst the political powers that were the new physics of power that observes and records, put out a whole discipline of time, space, and energies based on the normality produced by the therapeutic and punitive techniques. This new type of power, that aims to produce docile bodies through the control of meticulous control of the body, is defined as discipline (Foucault, 1995).

Disciplinary power, the reigning mode of power in modern times, had three objectives, the economic use, the intensification of the effects of this economic power and lastly pervasion of major institutions programmed in accordance with this new power to produce the desired subject. Foucault links the birth of this power, to the increase in population and the change in the methods of production (1995).

He identifies various ways in which discipline function. The art of distributions is the first one, meaning an enclosed space that is particular to certain masses of people (Foucault, 1995). The factories, the barracks, the boarding schools, they are all examples of this spatial distribution. However, it must be noted that, it is very detailed, the space is partitioned to as many parts as there are bodies to situate. This partitioning was done to know, master and use the bodies, to carefully supervise, so that every action was surveilled and recorded (Foucault, 1995). This partitioning is normative. It assigns them ranks, through these ranks, one can circulate in networks of disciplinary institutions. The space in disciplinary institutions, is architectural, functional and hierarchical. This cellular power, that is individualizing and totalizing at the same time, is the basis of the disciplines. It involves the identification of the individual based on his characteristics, and then the placement of them in the general public.

The second mode of action of disciplines is the control of activity. This meticulous control of activity implies the temporal distribution. Establishing rhythms, imposing occupations and lastly regulating the cycles of repetition are the methods to control activities and through inculcation, the desired actions were repeated so that the body inscribe these in the soul (Foucault, 1995).

The third mode of action was the organization of the time with an evolutionary view. Instead of a single-linear line of training, the disciplinary methods introduced multiple and progressive linear series, each required examinations to proceed (Foucault, 1995). It contains meticulous analysis of subseries, it divides to the minutiae and then proceeds if the subject can prove that he is the subject of the knowledge, hence enables power to intervene directly onto the time, assuring its control and use. This double progress, the progress of society and

the progress of individual was possible through segmentation, seriation, synthesis and totalization (Foucault, 1995).

The main function of disciplinary power is to produce docile and useful bodies, the main technology it employs is the training. It trains not to reduce the effects of power but to maximize it, to levy more and to select all. Instead of creating a uniform mass, it separates, it individualizes, then it forms small cells in which the individual is molded, trained, exercised so that the bodies of individuals create combinatory segments and then form a whole society. Discipline makes individuals (Foucault, 1995). The techniques of this main technology, training, are hierarchical observation, normalizing judgment and a combination of both, the examination.

Hierarchical observation is surveillance, to see but not to be seen. Surveillance is an autonomous machinery that functions from bottom to top through relays of communications. It is not possessed, it creates power, it distributes the individuals in space and field. It renders the individual visible, calculable. It records him in the charts, in the drawings, it represents them in numbers so that they can be assessed and analyzed. Foucault exemplifies the pervading observation in his famous analogy panopticon. However, he underlines the governing mode of inquiry in Panopticon as the examination (Foucault, 2001).

The second technique of training is normalizing judgment. Apart from legal codes, each institution had its codes of conduct and regulations. They are not explicitly coded, not attached to written rules, so rendering a whole domain of non-conformant is punishable (Foucault, 1995). The disciplinary power also leads to good behavior by not only inflicting punishments but also inciting desires for rewards. The rank system itself is a perfect example of those ranks (Foucault, 1995). This practice of disciplinary penalty compares the behavior to the behaviors of the sum, it differentiates, it hierarchizes through quantitative norms, homogenizes through setting standards and lastly excludes by tracing the limit of the accepted and unaccepted behavior, in short it normalizes through these five procedures (1995). However, in his late studies, Foucault differentiated between normation and normalization, while attaining the latter to the biopower (Foucault, 2001). Hence, here what is witnessed is the normation. This judgment makes it possible to assess the individuals, to measure the gaps and to determine their ranks.

The last technic of training is the examination, the combination of the forementioned technics, a normalizing gaze. The examination objectifies the subject, it illuminates them and produce calculable, comparable knowledge on them. The examination is the parade of the

disciplinary power. It shed light to the individual being, their characteristics, they record the results, analyze those and classify them into the archives (Foucault, 1995).

The disciplines, in accordance with the new functions power assumes, targeted both the lower layers, and the upper layers of society, from the most significant to the unimportant ones, from abnormals to the very normal that it aims to produce, and a subtle coercion to produce the useful bodies.

2.2.3 The Work of Self on Self

The subjectification through knowledge and truth, and power relations, as indicated above, are not distinctive processes from the ethics. It all comprises of a self-work, through which the subject identifies himself, analyzes himself and works on himself. As Horkheimer suggested the objective of the Critical Theory is to free individuals from all their chains. The freeing of the subject also implies the freeing of the subject from themselves as well (Foucault, 1990).

Ethics is the relation of one's to the self. Apart from morality, while morality meant the universal rules that everyone should adhere to, ethics is self-work through which one measure himself about the universal rules. Since it is about the work of the self on the self, it is ostensibly considered as a private matter, however, this self-work is the effort to create a life on the basis of historically given materials (Appiah, 2005). Ethical self is comprised of beliefs, values, tastes and sensibilities that are affected by the identities that are socially shaped, hence opening up a space of political intervention (Appiah, 2005).

After, Discipline and Punish, Foucault proceeded to analyze the macro relations of power through his newly introduced concept governmentality and defined it as a contact point between the technologies of coercion and the technologies of self (Foucault, 2016). Then he started analyzing the modes of ethics and their relation to the political rationalities.

An analysis of ethics, our relations to ourselves, conduct of our conduct, comprises of an analysis of four main aspects. The first question that should be asked is what part of us is the subject of this or that moral code. For instance, in modernity it is the feelings, in Christianity it is the desire that one should govern, control. This is the ethical substance that is the major lieu of intervention. Secondly, the modes of subjectification, on what grounds should one transform themselves? Is it for a divine rule, is it for a scientific truth? The third question to be asked is through which techniques can one transform himself? For instance, to decipher the most inner secrets, confession had already been prescribed by Christianity and later in

psychology. This is the question that Foucault names as asceticism. The last question, at the end, what will one be? Will they be pure, will they be saved, will they be the masters of themselves? This is the telos (Foucault, 1997, p.265). Foucault analyzes the ethics and power through these four axes.

Foucault devoted his last series of courses in *College de France* to the analysis of ethics. Through these studies, he identified the historical relations between ethics and the politics. He asserted that in Ancient Greece, the ethics was about political power, in order to rule others, one should work on themselves first. This self-work was also an exigency for the obtainment of the truth as well. In order to govern, primarily one should care for themselves. Nevertheless, in later periods, Foucault traces the transformation of the care of the self with the detachment from the political life, detachment from the juvenile education and being absorbed in the know yourself through the examination of one's self (Foucault, 2016).

To work on oneself requires certain technologies, the technologies of the self that enable the individual to work on themselves, to transform themselves with the help of others or by themselves to attain certain statuses (Foucault, 2016). For instance, in Plato, a technique of care of the self is dialogue, while in imperial periods, it is silent listening to masters and the self. The examination of one's self in Seneca for instance a trial and not for finding faults, he focuses on positive things. However, in Christianity, it is a trial in which the bad intentions are to be looked for and hence be punished (Foucault, 1997).

As usual, through identifying the discontinuities and ruptures in the ethics, Foucault shows how various systems of power changed the work of selves on selves. To exemplify, he analyzes the effect of Christianity on the formation of a society on solidarity. The telos in Christian ethics was to take care of others as well, hence he notes this as one of the founders of modern society (Foucault, 1997).

Similarly, Rose analyzes the neoliberal ethics and claim that the neoliberal self is a product of power relations. Unlike Christian ethics, neoliberal ethics attenuates the importance of the individual and competition. Therefore, the selves are encouraged to seek therapeutic help to fulfill their potentials, to accomplish more and to be more successful. The enterprising self, self that is always trying to thrive is a result of relations of various networks (Rose, 1996). Or the liberal self, who is a free agent and who has to take the responsibility of their actions, insinuate an ethics shaped by external forces to the self, as well (Rose, 1996).

In all three accounts that Foucault had provided on subjectivity, the recurrent determinants might be noted. Primarily, what is witnessed in asylum, in prison or in therapeutics, the

emergence of a new mode of inquiry, the examination. In *the Order of the Things*, he distinguishes the Modern Episteme from the Classical one on the basis of mathematization of observations (2005). The scientific methods to produce truths were also based on observations starting from Leibniz and Descartes, however the empirical sciences were still based on the representations (Foucault, 2005). The modern episteme crossed this threshold and permeated every field of science. This permeation, the calculable, measurable observation, which Foucault formulated under examination is the principal mode of inquiry to produce knowledge. In all three accounts, one can see a movement towards enclosed spaces so that the individuals can be observed, recorded and analyzed so that they can be cured, be rehabilitated, transformed into better workers or docile bodies. This also implies that the practices are erected on the basis of causality. Through examination, the causes of actions are identified and through predetermined techniques, they were corrected.

Additionally, even though it was omitted in this study, Foucault emphasizes the importance of macro rationalities. Through the introduction of political economy, and liberalism, the ends became measurable as well. In his 1976 series of lectures in College de France, Foucault noted the emergence of the market as a site of production of truth and how it affected the norms and discourses (2003).

2.3 Genealogies of the Subject

There is a growing literature on the analysis of data and its effects on subjectivity. Koopman, in his analysis on infopower, locates the changing practices of information and epistemology and suggests new modes of subjectivities resulting from these practices. He places informational persons at the center of his analysis and suggests a new mode of subjectivity composed of data for behavioral modification (Koopman, 2019). He identifies the data episteme as the mode of rationality governing the exercise of infopower. An episteme that the need for more data is the spawn of data itself (Koopman, 2019). He defines formatting and fastening as the operations of infopower and claims that through predefined forms, one is formatted and based on this format, they are accelerated, channeled, exposed to contents (Koopman, 2019). Koopman states that the target of the infopower is the whole minutiae of life itself (2019). In his analysis, he traces the birth of infopower at the beginning of the 20th century through the practices of social security registrations, city planning and evolving psychometrics. However, data politics is more about the statistics and should be looked for in the 18th century to locate the changing practices through statistics. Besides, the mathematical nature of statistics requires an analysis of the changes in natural sciences, in

particular physics. The change from determinacy to indeterminacy in natural sciences has profoundly altered the epistemology and enabled the birth of probabilistic sciences.

Koopman's views shows some similarity with Zuboff's assessments on instrumentarian power. According to Zuboff, instrumentarian power is also a product of neoliberal rationalities. Instrumentarian power, according to Zuboff, aims to automate human beings, so that they can be automatically modified towards others' ends (2019). Briefly, she describes instrumentarian power as the instrumentation and instrumentalization of the behavior so that it can be modified, predicted, monetized and controlled. This modification also aims to ensure the social confluence as instrumentarian power also aims to shape the society as well (2019). She relates this new mode of power with behaviorism and in some sense blackboxism, and terms it as radical indifference (Zuboff, 2019). The principal technique of instrumentarian power is behavioral engineering through mainly conditioning. Zuboff bases her analysis on a behavioralist understanding of the subjects. However, as it can be seen in next chapters, an analysis of contemporary subjectivity requires an analysis of the existing states of the subjects, hence it calls for a functionalist framework.

Harcourt also provides another account of relations of power in postmodern society and terms these new relations as expository power. According to Harcourt, the objective of this power is to find the perfect data double. He terms this objective as *doppelganger* logic, and he points out the changed nature of surveillance. It doesn't aim to manage or categorize and doesn't have the groups or the populations as its target. It is not looking for ways to optimize the costs (Harcourt, 2015). It is a new mode of power that aims to find the perfect doppelganger to predict the next move of the perfect twin. It constantly tracks and surveilles. Expository power aims for total awareness, total automation. Harcourt argues that expository power is neoliberal yet the technologies it employs are different from the security or actuarial technologies. Like Ewald, Harcourt also emphasizes the attenuation of the individual in this new mode of power and notes this as the key difference among the existing technologies of security and actuary (2015).

Cheney-Lippold suggests soft biopolitics as the contemporary mode of power that is permeating the world (Cheney-Lippold, 2011). He argues that on top of the existing methods to determine the identity of the consumers, behavioral models provide a better understanding of the intent of the target populations (2011). He defines the operation of soft biopolitics as modulation, borrowing Deleuzian concept. The target of the operations is to regulate the individuals. Again, borrowing from Deleuze, the dividuals, the aspects of abstraction of human beings by the data, construct a digital self in the virtual world. He argues that through

dynamic and constant classifications, cybernetic control divides and assigns individuals to certain categories and aim to regulate these categories through a series of interventions (2011). Like Koopman, he argues that the regulatory control in soft biopolitics permits a conditional access to circuits of consumption and civility, an access functions as a gate that dynamically controls the conditions of possibility that users can encounter (Cheney-Lippold, 2011). The dynamical component of this regulation is feedback through recommender algorithms. He places the cybernetic categorization at the center of the functioning of soft biopolitics and argues that it is these groupings but not the individuals through which power operates and regulates (Cheney-Lippold, 2011).

Agamben in his analysis on "What is an apparatus" notes the non-politicized nature of data politics. He argues that through technological advancements, in postmodern societies one can speak of the victory of *desubjectification* (Agamben, 2009). He highlights the nonnormative nature of data and concludes the eclipse of politics. Similar to Zuboff, he stresses the automated nature of subjectivity and claims that through new technologies, one can't talk about subjects anymore (Agamben, 2009). The governing mode of power is the ceaseless replication of governmental practices without producing any subjects (Agamben, 2009). In a way, Agamben concludes that the data politics had succeeded in producing automated subjects. However, it is argued in this study that even though the non-politicized character of data, what is witnessed today is a subjectivation that is probabilistic, statistical in nature and automated. The subjects had been conceived as the agents, free individuals who freely uses their reason to know the objects and the nature. However, starting with Hegel and Freud, this transcendental being was challenged on mainly its relations with the exterior. Heidegger defined Being as being-with the surroundings and critical theorists had sought to understand the contingent and arbitrary nature of this knowing. Another current had developed especially in France in philosophy that analyzes the knowing process, the reason and the scientific to point out the multiplicity, contingency and locality of the truth. For such an aim prescribes a historical, genealogical investigation into the knowledge, production of truth, methods of inquiry and the institutions, the practices, in general said and the unsaid.

Data, being a fourth paradigm in science, deeply altered the nature of knowledge, the production of truth and methods of inquiry. As a result of these, the practices were also affected. Therefore, investigating the data and its effects on subjectivity can best be achieved through Foucauldian methodology. There have been recent, numerous studies for that aim. Zuboff, in her exhaustive study analyzed the surveillance capitalism and instrumentarian power and argued a new mode of subjectivity aiming for the automated subjects. Harcourt

emphasized the data gathering practices under surveillance and claimed a new power, named expository power who targets the best data double. Cheney-Lippold, using Foucauldian terminology described this new mode of power as soft-biopolitics while Koopman analyzed the informational power and informational persons. However, I argue in this study that data politics is distinct from existing modes of powers and should be analyzed through an analysis of statistics and cybernetics with a genealogical approach.

CHAPTER 3

CORRELATION, STATISTICS AND CYBERNETICS

As discussed in Introduction, I argue that a new mode of power had emerged in the Western World and these relations of power can be analyzed through truth regimes. The examination, as the principal method for the production of truth, accompanied by various changes in humanities and the systems of practices, had profound effects on subjectivity as subjectivity is a result of interplay of various relations of power, and disciplinary power was an investigation of these relations. During the same period, another method for the production of truth also emerged in the Western World, namely the correlation. Principally, as a result of economization and mathematization, correlation emerged as the determinant of truth games. It is about predicting the chance events, resulted from the complexities of the world. The antecedent to correlation was the mean curve through statistics, and it became available with the birth of the modern state and bureaucratic capacities to gather information about the population. In the 19th century and even before, the medicine started to define normal through mean curves, the criminology determined the punishment as a result of calculated risks. The problematizations were rendered visible based on their prevalence and intervened accordingly. The changing nature of truth and knowledge gave rise to a change in scientific reason and accompanying practices. Since normality was about the calculated knowledge and its relation to a broader set, enclosed spaces were no longer a necessity. As Deleuze argues, in 20th Century, what is witnessed is the end of disciplinary power and its enclosed institutions (1992).

Deleuze named this new type of power as Control and claimed that we live in the Societies of Control (1992). Foucault, in his lectures at College de France, defined this non-individualizing and massifying type of power as Biopower and its principal technology as security (2003, 2008). Similarly, Stanley Cohen notes the increasing importance of actuarial predictions in crime prevention policies (Cohen, 1991) and Ulrich Beck formulated this calculation-based technology as the risk society (Beck, 1992).

Later, with the advancement on computer technologies and cybernetics, these massifying technologies coalesced into data science and encompassed the individual and affected the subjectivation and subjectification processes, ultimately creating a new mode of power, namely data politics.

3.1 The Birth of the Statistics and Numerization

The technologies that are based on mathematical calculations, pervaded the Western World in the 20th Century. These actuarial, security or risk technologies are combinations of mathematical calculations and probabilities, or simply put, statistics. These technologies have political aspects and aim to govern through methods dissimilar to sovereign or disciplinary power. Emerged with the modern state and its capacities of information gathering, statistics was first conceived as the science of the state.

Hacking notes an avalanche of numbers that occurred at the beginning of the 19th century (1991). One of the founders of the first computational machine, Charles Babbage encouraged the scientists all over Europe to publish the known numbers in the 1820's, and scientists all over the world accepted this invitation and published the known numbers to them. This enthusiasm for the figures was a result of the positivism. Even though Comte himself argued against this enthusiasm, after some brief time, the numerization was considered as the primary method of calculation. The figures were conceived as the abstraction required to calculate and measure the objects, and scientifically and objectively analyze them (Hacking, 1991).

With the advancement of mathematics and attenuation of numbers in science, Adolphe Quetelet, a Belgian astronomer and mathematician, advocated for a new science of the society, statistics. Statistics is an applied science of mathematics. It is based on numerical data and aims to reveal what is hidden or what is unknown to the man. At the beginning, statistics was perceived as the accumulation of the calculable information from the individuals as the substances of the society and through analysis of this information the nature of the society was to be revealed. It was considered to be reflexive and representational (Hacking, 1991). However, soon enough, the categorizations that had been envisaged to ease the collection of information, became constructive.

Hacking, analogous to Canguilhem's concept analysis, notes that in the 19th century Britain, it was impossible to die on an unknown cause that had not been specified in the causes of death by the Office of Statistics. The categories or classifications in the statistics became normative and created both subjects and objects accordingly (Hacking, 2002). The Gaussian

Bell Curve was conceived as the natural distribution and later on Poisson's law of large numbers put forward that as the more information became available to the scientists, the mean distribution would be in accordance with the Gaussian Bell Curve. At the end of the 19th century, Durkheim claimed the determining natural laws, identified through use of the statistics (Hacking, 1991).

The methods and the concepts used to gather information and to produce knowledge are constructive. Statistics was not an exception.

3.2 Statistics and Governance: Security as a Political Technology of Populations

Foucault, in his series of lectures "Security, Territory and Population", analyzes the mode of governance brought by the avalanche of numbers and statistics. Placing population as the objective of his studies, Foucault tried to understand how these mathematical calculations affected the governance practices (2009). According to Foucault, the population was conceived as a very complex entity that was impossible to be known to the full extent. Hence, the causal understanding of the sovereign and disciplinary power would not suffice to govern this complex entity. Hence what was required, a technology that was capable of governing the contingencies, the chance events, borne out of incomplete knowledge of the phenomena. The principal method for the production of this knowledge was statistics (Foucault, 2009).

Foucault notes that population was conceived as a natural given and governed through various interplays of the natural mechanisms encircling it. Unlike discipline and sovereignty, technologies of security employ statistics and based on calculations, identify the mean as the normal and act on abnormals to align them with the average. Unlike discipline, that is normation based on dualities, technologies of security normalize. This implies a break from the complete control of the minutiae that can be observed in disciplines or sovereignty. Here, one can observe an optimal line of disturbance whether it be diseases, scarcity, or architectural designs. It is still normative, the norms are still produced in the social, but they emerge from the naturalness of the population itself (Foucault, 2009).

In the technologies of security, the individual is not the object but rather a relay. As stated above, these technologies are massifying. Governing populations, naturally involve acting on individuals, but the mechanisms in action are different from the discipline. Individual matters here as a component of a bigger mass and the objective is not to transform the individual as it is highly costly and time consuming, but rather modulate them for various ends so that they modify their behaviors on a given occasion (O'Malley, 1996; Deleuze, 1992). However, subject in data politics is not a constant nor a given, it is dynamic. Bauman notes one of the

key traits of data subjects as "forgetting", so that they adapt themselves to new situations, truly render them entrepreneurial selves (Bauman, 2000).

Governing populations also requires various technologies that differ from the ones in the disciplinary or sovereign power. Since population is a very complex being, acting directly on it causes uncontrollable, unwanted effects. Therefore, one should always abstain from direct interventions, yet this doesn't mean that population is an autonomous, free entity. On the contrary, population can be governed through actions on the milieu, that is the environment in which population takes shape. Through laws, incentives, and acting on the space, populations can be governed for various ends (Foucault, 2008).

Space and temporality differ from the discipline and sovereignty as well. Instead of enclosing the space and dividing the temporalities so that through each step, the final result to be achieved, technologies of security imply an evolutive, linear time (Foucault, 1995). Actuarial technologies treat space as a network and aim to ensure free circulation of ideas, goods, and people. As discussed above, the basis of statistics is to form normality in the sets of information. Thus, the technologies of security necessitate open spaces and networks.

The temporality is circular rather than being linear and focuses on the virtual, virtual as being what is to come. Without given spaces and linear temporalities, rationalities of the technologies of security dramatically differ from the old ones. With the risk calculation on the basis of statistics, probabilities become the point of action. These calculated risks led to emergence of insurance technologies that aim the wellbeing of individuals yet at the same time create a technology for governance. These risk-based insurances connect the individual to the society and in a way create the society itself (Ewald, 2012). These technologies stabilize the state of affairs in societies and provide security for the individuals in the face of potential dangers, catastrophes, illnesses, and crimes.

Even though, the probabilities and probabilistic calculations are mentioned above, it must be noted that the nature of these probabilities differ from the data science. In the technologies of security, these probabilities stem from the complexity of the population, the impossibility to know the details of the processes. Therefore, they were aimed to tame the chance events, to bring order from chaos, to explain the phenomena (Hacking, 2002). However, it is argued that data science is indeterministic in nature. While technologies of security employ statistics and mean curve to explain chance events, data science makes predictions through correlations.

3.3 Determinism and Indeterminism

The change occurred in the 19th century from deterministic technologies towards probabilistic technologies can be explained by the changing paradigms in physics and mathematics. In 17th century Leibniz was pointing out the fact that it is impossible to know and grasp all the details of the universe as it is. But if it were possible, the future would have no aleatory events and could be successfully predicted (Look, 2020). This determinist understanding can also be conceived as the law of causality. Similarly, Newton also concluded that universe is deterministic, and temporality is linear. Present is the result of the past and the cause of the future (Laplace, 1871/2009). From the smallest particles to the macro systems the movement is linear and deterministic. The only place for chance was the lack of information.

At the beginning of the 19th century, Laplace based on this deterministic understanding, claimed that probability or chance is an effect of our ignorance and can only be a result of lack of knowledge (1871/2009). Bearing the marks of Enlightenment, through reason and knowledge, the human beings could overcome the indeterminacies of the life. Nevertheless, since it is impossible to know all the facts, the phenomena in complex systems can only be known through use of statistics. Thus, statistics in the 19th century was mainly about inducing the facts from the analysis of samples (Hacking, 1991). Consequently, statistics and the probabilistic governance accompanied by this discipline is still a deterministic one.

It was Gibbs and Boltzmann who introduced the idea of statistical mechanics that challenged the determinist paradigms. Their idea was similar to Durkheim, through statistics they aimed to find governing statistical laws for the single particles, but not for the macro systems. What they found is that it is impossible to accurately specify the conditions of the particles' starting points, hence it is impossible to put forward precisely accurate predictions (Wiener, 1989). They simply concluded that the incomplete determinism based on the lack of knowledge about the phenomena, can't be overcome. This announced of a new era in which the physics will no longer be deterministic. By the end of the 19th century, it was widely accepted that we were living in a universe of chance (Hacking, 2002).

Later on, with the advance of quantum physics and Heisenberg's uncertainty principle that simply asserted the inability to observe the particles as they were, the universe of chance has been acknowledged again. According to Heisenberg, each observation disturbs the movement of the particles and renders the measurement of a system impossible (Vaidman, 2014). By 1936, the founder of the contemporary computer processor architecture John Von

Neumann claimed that the quantum mechanics was mainly a chance event and cannot be explained on the terms of any deterministic variables (Hacking, 1992). The shift from determinism to indeterminism implies the impossibility of causality.

Another important determinant of cybernetics was to be found in thermodynamics. The second law of thermodynamics state that in the closed systems, as the system grows older, the entropy increases. Entropy is the antonym of order, the ultimate chaos and disappearance of forms and in Gibbs' universe, chaos is the most probable. However, only by intervening to these closed systems, like Laplace's demon, or ensuring the connection of those single systems to outer systems, the tendency to entropy might be diminished. According to Wiener, this is the point of origin of cybernetics (Wiener, 2018). Hence, in cybernetics it is vital to closely observe the particles in the system, create networks and ensure the movement of the particles and, thus, intervene accordingly.

To briefly sum up, in biopower and technologies of security, the main objective was the populations, human beings as a species. The statistics was a mean to overcome the incomplete determinism, that was the lack of information. Hence, finding statistical means was considered an effective method for the explanation of the phenomena. The statistical calculations and their results were considered normative. However, in cybernetics the chance events were conceived as intrinsic to the life itself. Therefore, governing chance events requires heterogenous methods. The future can be predicted based on probabilities, so the chance events as well. Von Neumann argues that the probability can best be calculated through frequentist analysis, making assumptions based on past data sets, however, later on he claimed the need to include existing states of the systems for probabilistic calculations as well (Von Neumann, 1928 in Stacey, 2016). Wiener, moving forward, claims that it is impossible to speak about a real, specific universe, on the contrary the truth can only be found in a large number of similar universes (Wiener, 2018). This is the entry point of correlation. Subjectivity is about knowledge and regimes of truth. The subjects are objectified, and the subjects also detach themselves and objectify their selves so that they can attain the truth about selves. Then, if truth can only be obtained in multiple of universes how it can be attained? Each individual is treated as a system in cybernetics, to obtain truth about them, they ought to be correlated to other similar systems, individuals. Based on the similarities and the dissimilarities, the truth can be obtained through statistical and probabilistic measurements. This correlational focus was Harcourt's analysis of doppelganger logic (Harcourt, 2015).

The birth of the modern computer science can be dated back to the birth of the cybernetics. Therefore, the prominent scholars and their arguments will be presented next.

3.4 Cybernetics as Antecedent of Data Science

Just before the World War II an interdisciplinary field, namely cybernetics had come to the stage. Traced back to the mid-18th centuries, and in particular, starting from the 30's, through war years and 50's, the founders of computational sciences, under the name of cybernetics created another field that was directly related to the mathematics, communication theory, statistics and logic. Scientists such as John Von Neumann, Norbert Wiener, and Warren McCullough created the foundations of computational science during these years. Their main objective was to formulate the working of human mind and logic with mathematical calculations.

Cybernetics, as a word, derived from Kubernetes, a Greek word meaning governor, can then be defined as a technology of control through communication (Wiener, 1989). As an effort to provide advantages to the military during the war years, various scientists grouped to find solutions to the problems they were assigned. This gave a possibility to the emergence of cybernetics as a multidisciplinary field.

In the foundation of cybernetics, three disciplines were given the utmost importance. The first one being McCullough and Rosenbluth's neuroscience, second one being Shannon's communication theory and the last one being Wiener and Von Neumann's mathematics (Heims, 1991). The common point between them is that they all refer to subjects as human beings, as a member of the human species, and try to mathematize the biological aspects of the subject.

The first pillar, the cybernetic neuroscience can be traced back to McCullough and Pitts' article "A Logical Calculus of The Ideas Immanent in Nervous Activity". Here, they try to understand the working of the mind with a view of an engineer and mathematician. Their main argument was that neurons were working on a binary basis, on or off. Hence, they can be successfully abstracted with mathematics and logic (McCullough & Pitts, 1943). This very idea was then employed by Von Neumann's architecture of central processing units that is still being widely used in modern computers.

McCullough and Pitts argued that each firing of neurons is propositional, thus can be abstracted through calculus. Additionally, they argued that it is possible to identify the next neuron based on the stimulus received by a neuron, however it is impossible to trace where

it came from. Hence McCullough and Pitts conclude that our knowledge of the natural world and ourselves are incomplete to the space and indefinite to the time (1943). This conclusion affected the conception of rationality as well. What mattered now is the organization of the system and based on this organization, the identification of what is to come next. This also gave birth to a new basis of social studies of systems in which the subjective interactions are collected, measured and analyzed in terms of the patterns without providing causalities (Halpern, 2014). This functionalism was the danger that Wiener, Russell and Arendt had already warned us about (Wiener, 1989; Arendt, 1998).

Another important work that defined the cybernetics is Shannon's Communication Theory. Similar to Von Neumann and Wiener, Shannon also left unattended the content of the information and solely focused on the transmission and the structure, structure being system in this sense. According to him, communication is a probabilistic process between two discrete units and can be explained with statistical probabilities. Information is a choice among other possibilities and based on probabilistic analysis, the receiver can receive and decode the contents. As the amount of information increases, the risk of entropy increases as well. Among finite number of possibilities that are all equally likely, the information will be sent by the sender, transmitted in the channels and received by the receiver and then decoded (Shannon, 1948).

Similarly, Lyotard, in his analysis of postmodern knowledge, adopted Shannon's framework and claimed that these structural prerequisites of information transmission, profoundly altered the nature of the knowledge itself. He argues that the informational knowledge, scientific knowledge, is about the capacities of the channels that information is sent through and how easy it is to be decoded (Lyotard, 1984). Additionally, he argues that knowledge is separated from the knower, the subject, and treated as a commodity. Endpoint of knowledge was its translatability to the computer language. Additionally, the institutions that play a certain role in circulation of the discourses lost its privileged spaces as information processing machines proliferated and became available for personal use. In terms of subjectivation accompanied by these postmodern technologies, he asserted that self, a relay in various communication channels circulating within the society, changes each time they receive a message. They transform themselves, as the addressee of the message, but also as the sender of the next messages (Lyotard, 1984). Hence, Lyotard renders communication as a crucial part of subjectivity in postmodernity.

The last pillar of the cybernetics was Wiener, Rosenblueth and Bigelow's article entitled "Behavior, Purpose and Teleology". They published the article in 1943 that established

similar concepts that were observed in McCullough and Shannon's work, in the analysis of human beings, in particular their behaviors. They analyzed the behaviors as the outputs of the stimulants and ignored the processes occurred in the organism itself, rendering the subjects blackboxes (1943). According to Rosenblueth et al., the end that one reaches based on their goals, can't be foreseen by the actions of the subjects. It is not possible to know the chain of events that led to the results. Since it is impossible to capture the space, the world as a whole, the only way for a successful analysis is to seek localized information, how they interact with each other, what are the results of these interactions. This teleology is circular, as each action has an effect on the actant yet unlike actuarial sciences, individuals are also treated as complex systems (1943). Another important mechanism they identified is the concept of feedback. Similarly in the first Macy Conference, McCullough and Rosenblueth argued that the behaviors of human beings are teleological, not causal and governed with constant negative feedbacks (Heims, 1991). Feedback can also be found in Shannon's information theory. To effectively accomplish a process of communication, the end is receiving the feedback that the message has been received by the receiver, hence concluding the transmission.

Based on this brief analysis of the founding studies of cybernetics, it is possible to find common themes that shaped the cybernetics, and later on data science.

It can be observed that the efforts of the scientists with various backgrounds were mainly concentrated on defining mathematically the human organism so that it can be analyzed, transferred, abstracted and modeled. This numeration of information profoundly determines the nature of objects in cybernetics. The objects that can be rendered visible, the problematizations that can be theorized in the field of cybernetics can only be the ones who can successfully be translated to the numeric (Arendt, 1998). Additionally, according to Wiener, there is nothing left to explore, to extract from the nature itself. Hence, the knowledge can only be extracted through organization and analysis of already gathered information about the nature, making the data science, and its accompanying capacities for correlation as the sole method of truth (Wiener, 2019). This implies a profound change in epistemology, adjoined to modern aspirations to taxonomy and ontology with an emphasis upon organization, communication and self-referentiality (Halpern, 2014). Other than organization and correlation, all other is omitted for clarity (Heims, 1991).

In cybernetics the causality is dropped, as according to Cyberneticians, it is impossible to know the true causes of actions. As McCullough argued that it is impossible to trace the stimuli in the neurons temporally, as Rosenblueth et al. argued that it is impossible to know

what caused the behavior and as John Von Neumann stated it is very complex and improbable to understand how thought is processed (Von Neumann, 1951). This move from causality to functionality inherent in Cybernetics is defined as blackboxism. This move also implies a different rationality that is purely technological and depoliticized (Agamben, 2014).

Treating human beings as blackboxes brings forward functionalism. Owing to complexity, the inner nature of individuals is ignored to a certain degree. This move leaves only a grid of analysis, the behaviors, the interactions of the individuals. Through "sensing" their actions in their environments, the information on beings rendered calculable and transferable. This also points out a change in the surveillance. Traditional surveillance, panopticism was about classifying and placing people based on the dualities on time and space axes. Related to actuarial technologies, in cybernetics surveillance is about observing the interactions of beings with their environments, recording and finding similarities and dissimilarities in the general public so that they can be correlated. Furthermore, in panoptic surveillance, there was a centralized, hierarchical observation. On the contrary, in data world, each data point, individuals, are the centers of surveillance and instead of a unity, one can see a network of information gathered on individuals, each point is connected to another (Ewald, 2011). This surveillance, or sensing, is done to predict the future and modulate the behaviors and the subjects but not to transform or correct or to train the individuals. The beings act in their environments through feedbacks, that is why sensing aim to capture these interactions in the milieu (Halpern, 2014). Similarly, Ewald argues that mathematician, the modern prophet, claims that if it is possible to provide the rules of the game, and the state of the general system then it can be successfully predicted (Ewald, 2012). Hence, in the analysis of probabilities and the predictions, the state of the systems is crucial. This means understanding the components of systems, whether they be social or physical, their positions and the interactions among them. This can be done through constant surveillance and constant archiving of the changes in the components.

Secondly, the temporality, based on blackboxism, is virtual. Instead of focusing on present as the conjunction of the past and the future, cybernetics is about analyzing the current state of system so that it can predict what is next to come. As McCullough, and Wiener et al., argued with an analogy to functioning of the neurons, the past can't be determined based on present. However, the future can be. Therefore, understanding the system of neurons can successfully predict the future movement of the neurons. To improve the success of predictions, the phenomena should be followed, the interactions with the milieu should be observed, and the general outline of the system should be monitored.

Various scholars have warned against the dangers immanent in functionalism. Russell, like Wiener argues that based on relativity theory, there are simultaneous events happening in the same space-time frame and it is impossible for the mind to capture the essence of the nature without the abstractions of the mathematics or the physics. However, if this habit of manipulation that only encompasses the nature on a basis of functionalism, solely on a basis of its effects on our nature, pervades, this would bring a grave danger. Treating the human beings as black boxes, manipulating them through stimulants without considering the intrinsic features, might cause irritating effects as these ignored processes simply mean as the happiness or the misery of the human beings (Russell, 1926).

Another result of non-causality is the focus on managing the effects. To successfully manage the effects, one should anticipate, analyze and run models and be prepared (Chandler, 2014). The acceptance of indeterminacy brings out a non-linear temporality and therefore a non-causality approach to the events. As Agamben argues, it is hard to understand the causes and govern them, hence managing the effects is the more economic approach (Agamben, 2014).

To sum up, as stated by Bachelard, the changes in the technologies, alter the nature of the phenomena itself. The epistemological and ontological changes brought by this understanding of cybernetics, exist in data science today.

However, it should be noted that the advance of cybernetics and later data sciences doesn't mean that these technologies replaced the actuarial or disciplinary or sovereign technologies. As stated by Foucault, they all exist in a society to various extents. In order to clarify more, the differences between the actuarial technologies and the cybernetics will be considered.

3.5 From Technologies of Security to Cybernetics

According to Vilem Flusser, if a state of the system can be known in full details, if it can be traced back by the data left by the subjects, and if we have tools capable of conflating those with the forms of subjectification, then the separation between present and future disappears and what remains is various modes of subjectification in accordance with various apparatuses (Flusser, 2002). The entrance of the subject to increase the capacity to successfully predict the future is the marking of a new era.

According to Ewald, the capacity of data politics to treat the individuals, singularities as an object of analysis is the difference between data politics and the previous technologies of security (Ewald, 2012, p10). Instead of conceiving the individual as a relay, data politics enables the objectification of the individual in terms of probabilistic technologies (Ewald,

2012; Heims, 1991). It can be asserted that the risk calculations are also individualizing. However, these calculations are done for a connection of individual to the mass, to the population in general. In that view, risk is totalizing, treats individual as a relay to control the population. However, the subjects in data politics, aim to be individualized. Data politics stresses the discrepancies and aim to understand and successfully double the individual in the virtual world. (Ewald, 2012). Besides, it correlates these differences into a general mass and groups and regroups under this light (Ewald, 2011).

In technologies of security normality is produced through mean value of the populations, however in the world of big data, the mean is to be looked through in a universe of similar systems. The risks are calculated not based on the distance of the individuals to the mean, to the curve, but rather based on the individuals, their similarities and differences with regard to the public (Ewald, 2012). For instance, in medicine, the doctors were encouraged to pursue the procedures in accordance with the assigned category of the patient. Nevertheless, what is required now is an individualistic approach to ensure that the individual, depending on his unique profile gets the tailored treatment (Ewald, 2012).

The method to produce knowledge about each subject is patterns. Algorithms are methods to seek patterns in large data sets and produce knowledge at the end of these processes. The algorithms produced to analyze the data and produce knowledge mainly act on the individual differences among the samples. It compares and creates simulations and then tests the proposed models. The value of the model lies in its predictive capacities. The difference between actuarial technologies, mainly statistics is that the statistics tries to erase the irregularities, tries to find the normal distribution. However, in data politics, it is not about eliminating irregularities but rather finding the extreme cases and include it in the models and tests cases (Ewald, 2012). Eventually, data politics places the individuals on virtual groups based on the similarities and dissimilarities, creating multiple universes to test and predict better. Besides, in big data, data is heterogenous, extracted from various sources. In big data world, data is the king while in traditional statistics, it is about the models (Aradau & Blanke, 2018).

Other than the treatment of the individual, actuarial technologies are deterministic in nature. It moves from the lack of knowledge and aims to understand the phenomena based on the past data sets and find normative, governing laws. However, cybernetics claims that it impossible to know all as indeterminacy, chance is intrinsic to the nature. Hence, the questions can be answered truly in multiple universes but not a single one, hence requiring the simulations and correlations, and also rejecting totalizing normative laws (Wiener, 1989).

Additionally, this understanding leads to a focus on subject to predict the future better, formulated under Bayesian Probability.

Perhaps, following Foucault's footsteps, a final difference can be located in macro rationalities. An analogy can be drawn with the welfare state and neoliberalism to technologies of security and cybernetics. Welfare state was programmed in the face of dangers that the liberalism had created. The undesired consequences of the classical liberalism in society and on wellbeing of the individuals, led to the formulation of a more social liberalism that entirely acknowledge the contributions of experts, and for the society. The programs implemented in this period were totalizing, aimed to ensure the safety of individuals through acting on the broader public. Unlike classical liberal individual, who is free and autonomous, welfare state individual was someone of needs and dependencies, and to be embraced by web of collective networks (Rose, 1996).

However, after the World War II, or even starting before that, this social liberalism was started to be criticized by ordoliberals in Germany and by the Chicago School in the US. The problem that the Ordoliberals like Rustow and Lippmann in Germany had tried to undertake, was a question of how to form a state based on economic principles but not how to limit state to intervene free actions of individuals and the market (Foucault, 2008). Market was conceived as the founder of the governance. A whole apparatus was programmed on the basis of utilitarian economic calculations. The individual and the labor were also reviewed under this perspective. The labor and the abstract features of the individuals were considered as capitals to be measured, to be calculated. The concepts such as social capital and human capital were formulated under the neoliberal age. The competition was conceived as the essence of economic success and the individuals, their traits, their experiences, not the populations emerged as the basic units of analysis (Foucault, 2008). The advent of cybernetics also aligns with the necessities of neoliberalism. As discussed above, the individuals, their interactions whether they be social, abstract or tangible, were recorded as calculable, transferrable and measurable sets of information (Dhar, 2013). Nowadays, data redefines the social. The social is to be tracked, to be sensed, to be numericized and extracted as the data (Couldry & Mejias, 2019). The targeted surveillance, the targeted advertisements, the targeted manipulation efforts are done through algorithms that seek patterns in billions of data points gathered through sensors or through any other way about every aspect of experience, and the life itself (Aradau & Blanke, 2015). After these discussions, now the data science can be defined.

3.6 Data Science

In 2008, the editor of the Wired journal, Chris Anderson claimed that the era of taxonomy, ontology and psychology had ended. From linguistics to sociology, theories of humanity have been replaced and will be replaced by mathematical instruments, specifically data. (Anderson, 2008). Similarly, Jim Gray argues that data science is the fourth paradigm after empirical, theoretical, and computational (simulations) paradigms, and he draws an analogy to the invention of printing (Gray, 2009). Gregory Bateson claimed that it was the biggest bite that man had eaten after Adam, and Heidegger heralded the cybernetics as the new philosophy (Heidegger, 1981; Pias, 2016). One thing is for sure that many academics highlight the profound changes happening in various fields as a result of the data.

Data can be defined as the raw material produced through abstraction of the world by representation of symbols (Kitchin, 2014). Data, derived from the Latin word "dare" to give, implies the information given by the nature. However, Kitchin argues that data in modern sense is much close to the "capere", taking, as data is about harvesting, mining relevant data in a pool of informational bits (2014). However, in contemporary implementations, the significance of data lies in the amount gathered (Aradau & Blanke, 2015). Hence, a brief discussion on the large amounts of data, namely big data, should also be provided.

According to Boyd and Crawford, big data is a cultural, technological, and scholarly phenomenon that is resulted from the interplay of technological capacities that gather, mine, compare and produce large data sets, and encompass algorithms that can identify the patterns to make truth claims (2012). According to Kitchin, big data is the huge datasets, comprised of petabytes, produced nearly in real time and diverse in variety in terms of space and time (2014). Data science mainly consists of four distinct procedures; capture, curation, analysis, and the visualization (Gray, 2009). Capturing is done by sensors or through running simulations as a sort of surveillance but also as sousveillance, curation is done by data scientists and analyses are done through the algorithms created by the computer scientists (Gray, 2009). Visualizations is the method to describe findings, visualizations in that sense are discourses.

Data science, considered earlier as a branch of statistics, gained an independent status at the end of the 20th century. In 2001, Cleveland argued for a new discipline that is more focused on the technical aspects of statistics and the objective was to enable the analyst to learn from data (2001). Unlike statistics, data science is considered as an interdisciplinary field that borrows from computer science, statistics, mathematics, and informatics. Even some data

scientists now argue that statistics is the least important component of data sciences (Gelman, 2013).

Briefly data science is a multidisciplinary field that encompasses mathematics, statistics, computer science and informatics. As specified by Cleveland, what distinguishes data science from statistics is mainly the technical aspects that data science brings. This also brings out the questions of various technological aspects such as distributed systems, data storage capacities, data processing capacities and computer powers but these technical aspects will not be reviewed in this study.

CHAPTER 4

DATA POLITICS AS A NEW MODE OF POWER AND ACCOMPANYING MODES OF SUBJECTIVITY

When analyzing subjectivation and subjectification, Foucault used genealogy and archeology as the principal methodology to historically locate the contingencies and singularities. As reviewed in detail in the preceding chapters, to understand the modern man, Foucault inspected the humanities and how the scientific discourses on the individuals are formed. Furthermore, he inspected how the power created certain type of practices that shaped the individual beings and lastly, how human beings related to themselves and created their selves (Foucault, 1983). To embody these theoretical arguments in episteme, he analyzed the madness and the medicine, and to locate the changes in power relations he analyzed the prison and criminal justice system. These three different analyses should be seen as analytical frameworks investigating the same phenomenon with different focuses. The truth on individuals is produced by the disciplines, individuals are divided within themselves and from others through power relations and work on themselves based on the produced truth.

Briefly, in this study it is argued that data has altered the knowledge and episteme. These changes in knowledge are accompanied by new relations of power specific to big data. Finally, it is argued that these relations of knowledge and power produced distinct modes of subjectivities that can be studied through various instruments. During these processes human beings assume certain identities and are turned into active subjects. In the next sections, the changes in the knowledge and resulting relations of power will be reviewed. These theoretical arguments will be sought in Cambridge Analytica with a focus on subjectification processes and will be sought in mobile health applications that diagnose the mental health issues and cognitive disorders with a focus on subjectivation. These additional case studies, mobile health applications, will also serve the purpose of highlighting various distinct processes between subjectivation and subjectification processes that can be observed in data politics.

4.1 Big Data and Knowledge

The relation between the subject to know and object to be known is the primary locus of analysis of critical theory, according to Foucault (Foucault, 1994). He defined this relation as the regimes of truth and argued that there are many determinants of this relation such as modes of inquiries, the institutions, the practices and the disciplines that produce knowledge. Based on this knowledge produced by complex relations among the abovementioned determinants, subjects are divided either inside their selves or from others (Foucault, 1983). The truth produced about them is integrated into the technologies of self and the relations of power and led to the various interventions on the human beings to give or assume certain identities. The mad and sane subjects are objectified by psychology and medicine, the truth about them is produced by the interplay of various relations between these actors, and both the subjects' own actions and therapeutic practices are shaped by this regime of truth finally leading to the attachment of the mad and sane identity by the human beings.

It is argued in this study that data profoundly altered the nature of knowledge. In the preceding chapters, it is put forward that indeterminism gave birth to a probabilistic production of truth. The cyberneticians also claimed that the a priori conditions of knowledge that are space and time can't be provided naturally, rendering knowledge dynamic and boundless (McCullough & Pitts, 1943). The acceptance of indeterminism led to a search of truth in a number of multiple, similar universes through probabilistic analysis. In the context of subjectivity, the worlds are the subjects and as Harcourt suggested, the similar subjects should be found so that they can be governed probabilistically (Harcourt, 2015). Resultingly, correlation emerged as the principal method of inquiry in contemporary world. The changes in knowledge are sought in episteme and technologies of the digital subjects in the next part.

4.1.1 Data Episteme

Foucault, in *the Order of Things* analyzes the epistemes that are the governing rules for the formation of knowledge in various epochs. To do that, he analyzes the methods of classifying and ordering phenomena, sign systems, language and finally the predecessors of modern humanities. Foucault claims that in modern episteme, the order is to be done on the basis of functional analogies (Foucault, 2005). He also asserts that in the modern episteme, the knowledge can be assessed in three separate domains. The first one is mathematics and physics and the second one is the social empirical sciences, and the last one is philosophy (Foucault, 2005). Foucault concludes in *the Order of Things* that humanities, having been a product of empirico-transcendentalism, can't be accounted for by mathesis. Mathesis, as

defined by Foucault, is not an algebraic model for ordering the things, yet it is about the ordering through both mathematics and signs (Foucault, 2005).

Modern conception of knowledge, according to Kant had space and time as the a priori conditions (Janiak, 2020). Therefore, an analysis of subjectivity through knowledge required an analysis of milieux and an analysis of temporality. Resultingly, Foucault, in his analyses on medicine and madness, and consequently on subjectivity, studied the forms of knowledge with a focus on the milieu and temporal succession of concepts, norms, practices and institutions. The birth of hospital, asylum and prison were investigated in this regard as this complex knowledge on subjects was produced in specialized places by the experts.

The examination was the principal mode of truth production in modern times (Foucault, 1995). The criminal was examined in the courtrooms by a plethora of experts through an analysis of temporal events and the illnesses was examined by the specialized doctors in hospitals. Prisons were exclusive spaces of knowledge produced on the criminals. Examination in order to produce knowledge and truth on subjects employed Panoptic surveillance and normalizing judgment. The centered Panoptic surveillance was done to order the subjects based on the norms. The deviant was defined through criminal examination in accordance with the legal dichotomies and the madness and sanity were defined through examination in accordance with the medical expertise (Foucault, 1985). Examination done to order and define subjects was not solemnly mathematical as it was highly dependent on the experts' authority.

McCullough and Pitts while trying to mathematically model the functioning of neurons concluded that our knowledge is incomplete to the space and indeterminate to the time (McCullough & Pitts, 1943). Knowledge, not being attached to specific milieux, is one of the characteristics of data episteme. Deleuze in his analysis on Societies of Control also highlighted the end of traditional institutions (Deleuze, 1992) and I argue that the change in episteme is one of the main contributors of this decline.

As argued in the preceding chapter, towards the end of the 19th century, statistical mechanics and quantum physicists argued that it was not possible to precisely observe the state of the phenomena and they defined the universe as indeterministic in nature. Wiener hence concluded that probabilistic analysis based on the similar systems is the sole method of truth production (Wiener, 1989). Similars are sought because through their past actions, the action of the object can probabilistically be predicted. Probabilistic analysis had already been employed in statistics to describe phenomena but with a subtle difference. In statistics,

probabilistic analysis was done on the grounds of incomplete determinism. In postmodern episteme, probabilistic analysis is done to describe phenomena that is probabilistic in nature. Probabilistic analysis in a number of similar universes requires statistical correlation to be formed among these universes making correlation as the principal mode of inquiry in postmodern episteme. Unlike modern examination, correlation in postmodern episteme implies a different type of surveillance. The politics of visibility is to be based on gathering data to form correlations. This data is gathered not only focusing on the objects but also the general state of the system that is comprised of multiple objects. The differences in data episteme, unlike in statistics, were of utmost importance as based on these differentiations similar systems were defined in postmodern episteme. Without temporal and spatial boundaries, knowledge and ordering of phenomena in postmodern episteme are dynamic in nature. It is not about constructing concrete and durable classifications. Besides, without temporality it is not possible to form causal relations. Rosenblueth, Wiener and Bigelow pointed out the impossibility of formation of causal relations in cybernetic knowledge, therefore the phenomena to be ordered is considered as blackboxes and this process of ordering is descriptive (Rosenblueth et al. 1943).

Consequently, it can be argued that in the 20th century, the mathematics through statistics took hold over the remaining two forms of knowledge, social empirical sciences and philosophy. The empirical sciences became more and more mathematized, and Heidegger announced the death of philosophy in the name of cybernetics (Heidegger 1981). Hence it can be argued that the ordering and classifying in contemporary age are based on mathematics.

Simultaneously, Arendt argues a reversal of interest in the science from the means to the processes itself. Once, the scientist endeavored to know more in the sake of knowing and the ends were just the products of this effort to know. Yet, this interest is reversed and the questions of "how" gained importance (Arendt, 1998). Similarly, Forman asserts that the modernity differs from the postmodernity on the basis of its attenuation of technic over knowledge. According to him, the utilitarian use of knowledge, the underlining of processes and importance of ends were the hallmarks of postmodernity (Forman, 2007). Therefore, it is argued that in postmodern episteme ordering is to be done technically.

4.1.2 Technical Production of Knowledge in Data Episteme

It can be asserted that postmodern epistemology is about technical production of knowledge. Technical can then be traced in the work of Heidegger and Foucault. Heidegger first identifies

technic as a means to an end, as a human activity and then he elaborates his definition. He suggests that the technic is a revealing, a mode of production of truth (1977). He argues that the objective of science is the ordering of the phenomenon and the man, as the taxonomer, is not exempt from this revealing, hence technic *enframes* the man themselves. The epitome of modern taxonomy is physics as an exact science. The reason of this is that the nature also should enframe itself, hence it should report itself, reveal itself in a calculable and orderable fashion (1977). Therefore, the *enframed* man should also reveal itself in a calculable and abstracted fashion.

The modern technic defines everything on a utilitarian basis. Therefore, it doesn't reveal what isness, it leaves ontology. It only reveals with a functionalist view, it only reveals on the basis of standing reserve (1977). Hence, technic also implies the utilitarian revealing of the man himself so that they can also be ordered.

Foucault similarly uses technique, as a matter of production of truth (Foucault, 1988b). Additionally, he refers the technology as a means of domination. In *Discipline and Punish* he identifies the political technology of the body as the combination of knowledge on human beings heterogenous from the discourse on its functioning, and a mastery of its forces (Foucault, 1995). However, unlike Heidegger, he treats the technology, the technical with a structuralist view and an objective focus (Behrent, 2013).

Thus, technical implies a mode of production of truth, a revelation and a process for certain ends. Postmodern ordering of subjects is a technical process. Being technical means being calculable, being measurable and statistically analyzable. Subjects are technical, so they should also reveal themselves, they are encouraged to reveal themselves so that they can also be related, be ordered. They are rendered visible only to the extent that they can be transferred into statistical models.

Heidegger also claims a new mode of causality in technic. In this study it is argued that this new causality can best be explained by functionalism. Functionalism, according to Levin, is a doctrine that analyzes the mental states based on the functions and roles they play (Levin, 2018). Putnam elaborates this doctrine and includes the inner states of the organisms through the concept of states of the system. According to him, the inputs and outputs can't be determined deterministically but probabilistically. Hence, if a system is known to be in a state of S1 (System1), based on the inputs, the outputs can probabilistically be listed (Putnam, 1967). The description of S1 is not to causally explain the state but rather to describe the existing state of the system. Hence, contemporary man in data politics is functional as well.

The changes in episteme and knowledge affect the relations of power. In the next section, resulting relations of power will be analyzed through Foucauldian framework.

4.2 Power and Rationality

Power refers to the multiplicity of self-organizing force relations, strategies born out of confrontations and resistances, relations embedded in rationalities and knowledge (Foucault, 1978). Power, unlike traditional accounts, is not oppressive, rather productive (1978). This form of power, evident in everyday existence and mundane activities, divides the individual from the group, categorizes and order them, imposes truths on them that both the human beings and others should acknowledge. Power in this sense transforms human beings into subjects (Foucault, 1983). Foucault while analyzing power relations, investigated the economy of power relations, referring to the rationalization accompanying these phenomena (1983). However, he doesn't single out a rationality like Frankfurt School, yet he traces a multiplicity of rationalities in apparatuses such as school, prison and madness. Rabinow also defines the work of Foucault as the analysis of subject, power and the political rationality that bounds them together (1984). Political rationality, or rationalities are epistemic formations that guide and shape the apparatuses and accompanying practices. Dean defines political rationality as the condition of possibility of a certain type of knowledge (1994). It can be argued that partly for disciplinary power and biopower, liberalism was the political rationality that was rendering the practices and knowledge intelligible.

In this study it is argued that the political rationality that is the condition of possibility of data politics should be sought in neoliberalism and the technologies of data politics have characteristics of neoliberal arts of government. Therefore, before proceeding to an analysis of data politics, accompanying rationality will be briefly reviewed.

4.2.1 Neoliberal Rationalities

Neoliberalism in the briefest sense can be described as an economic doctrine consisting of the faith in the free-market economy, individual economic freedom and self-government (Dean, 2018). Foucault in the series of lecture *Birth of Biopolitics* define liberalism and neoliberalism as arts of government and ties these economical understanding to the practices of governance (Foucault, 2008). He locates the key difference between liberalism and neoliberalism in the governance as liberalism's key concern was to limit the state's intervention into the functioning of the market (2008). However, in neoliberalism the raison d'état is to construct a state based on the principles of the market and to extend the market into the whole social existence (Dean, 2018).

Unlike liberal arts of government that are partially seen in disciplinary power and biopower that seek to create a standardized, utilitarian society; neoliberal governance seeks to create a society that is entrepreneurial, places competition at the center and has multiplicities of communities (Foucault, 2008). Unlike liberalism that considers the labor and human activity as commodities, neoliberalism conceptualizes the aspects of human beings and social life as capitals. Genetic heritage, family, education and social relations are termed as capitals and acquired an active sense. Human beings, just like societies, identified as entrepreneurs who are active in the economical construction of their selves (Foucault, 2008). Conceiving human beings as entrepreneurial beings demonstrate that the individuals should see themselves as businesses whose aspects such as mental, physical and social should be worked upon, rendering themselves as projects to their selves (Scharf, 2015).

In terms of neoliberal arts of government three important distinctions can be offered. In neoliberal governance, the interventions are to be made into the milieu, subjects are considered as the respondents of these changes in their environment so that their behaviors can be modified (Foucault, 2008). Similar to technologies of security that target the populations, in neoliberalism the individuals are targeted in the same manner. Secondly, unlike claims of Ewald and Dean, but like liberal governance, neoliberal arts of governance aim to govern through freedoms, desire and emotions (Lorenzini, 2018). It is not coercive but productive. Lastly, neoliberal subjects are entrepreneurial selves who are constantly active and transforming (Lorenzini, 2018). The subjects should always look to maximize this capital of their selves to be able to compete in the global market. However *human capital* is never a constant, but rather precarious entity, rendering each subject vigilante to look for potential opportunities as staying still is already losing (Lorenzini, 2018). Even though various thinkers formulate neoliberal subjectivity as de-subjectification (Dean, 2017; Agamben, 2009; Ewald, 2011), in this study neoliberal subjectivity is considered as a mode of subjectivity that is dynamic or liquid (Lorenzini, 2018; Bauman, 2000) closely related with big data and data politics.

4.2.2 A new Mode of Power: Data Politics

Foucault argues a mutual relationship between knowledge and power. In the preceding part, I argued that big data changed the episteme and the nature of knowledge. Therefore, this new mode of episteme should be accompanied by a new mode of power, that is termed as data politics. It is argued that like sovereign power, disciplinary power, and biopolitics, data politics is a distinctive mode of power emerged in the second half of the 20th century. It refers to the relations of power, that are highly statistical in nature, probabilistic, future oriented,

noncausal and are dependent on data with a multiplicity of objectives. The political rationality of data politics bears the mark of neoliberal rationalities.

Following Foucauldian methodology, to argue that data politics is a new mode of power, the objective, the target, the technologies and the mode of rationalities of this new mode of power should be put forward. Nevertheless, it must be noted that I argue that data politics is noncausal and doesn't have a predefined end. Therefore, employing Foucauldian grid of analysis will produce different results, such as in data politics one can't speak about a precise objective and a single rationality. However, this analytical framework would locate better the differences among the modes of power, such as disciplinary power and biopower. Dean also provides a different framework for the analysis of power relations, and he argues that it is possible to distinguish four domains. The characteristics of visibility, ways of seeing and perceiving; distinctive ways of questioning; the modes of operations, acting and intervening and finally the characteristic ways of subjectivation and subjectification (Dean, 2010). Since Foucauldian analysis of power encompasses these grids specified by Dean as well, in the following parts of this chapter, I will analyze data politics with this analytical framework. The case of Cambridge Analytica and mobile health applications will be analyzed as instrumental case studies to illustrate the functioning of data politics.

The most profound technologies in human experiences are the ones that are invisible to the plain sight, that we don't even notice the existence of (Weiser, 1991). Somewhat similar to Foucault, Weiser argues that only the technologies that weave themselves to the fabrics of everyday existence are the ones that mark the age. If one is to investigate the technologies that are experienced in the most mundane and banal activities, use of data should be highlighted.

As described above, various scholars have defined this new mode of power in various terms, soft-biopower, instrumentarian power, expository power, infopower and algorithmic power are several examples. It also should be noted that claiming a new mode of power emerging in our age is not to claim that all previous modes of power such as sovereign, disciplinary or biopower has magically disappeared. On the contrary as Koopman suggests, it is a new layer of power in harmony with the existing modes of power (2019).

Koopman analyzes infopower on four grids of analysis; techniques that comprise of formatting and voluntarily submission to preformatted forms; operations that are fastening procedures, being treated in accordance with the preformatted forms hence reinforcing the assumed identities; targets that are informational persons, and finally a governing mode of

rationality that is data episteme (Koopman, 2019). Similarly, Zuboff argues that the behavioral modification techniques such as conditioning, tuning and herding are the techniques of instrumentarian power (Zuboff, 2019). The operation to be done is automated modification of behavior for the ends of others' will (Zuboff, 2019). The target is the human beings as objects from whom the target raw materials, behavioral surpluses are extracted. And lastly, she defines surveillance capitalism, a mode of rationality closely connected to neoliberal policies that envisage an economic order in all aspects of life including social and interpersonal relations, as the rationality for the functioning of instrumentarian power (2019).

The investigations of Koopman and Zuboff provide great insights, yet I argue that data politics is distinct from the aforementioned conceptions. It is argued that the objective of data politics is modulation of behaviors and subjects. Modulation, a term coined by Deleuze means a self-deforming cast that is constantly transforming and adapting to each individual captures the objective of data politics (Deleuze, 1994). Like Deleuze and Zuboff, it is argued that after disciplinary society and biopower, what is witnessed today is modulation and control for data politics enable the objectification of each individual with various aims. The target of data politics is the emotions. The third domain that should be investigated is the operations. Operations are the instruments for intervention and action, simply the modes of interventions. These modes of interventions are behavioral engineering with emotional stimuli. The last domain is the rationalities, and it is argued in the study that neoliberal rationalities and the data episteme are the rationalities guiding data politics.

4.2.2.1 The Objective and the Target of the Data Politics

In disciplinary power, the objective was to produce docile and useful bodies and in biopower, the objective was the health of populations. The objective of data politics is to modulate the behaviors and the dividualities for various ends. However, unlike disciplinary power or biopolitics, data politics doesn't have a predefined end.

It is argued that this objective is best captured by Deleuzian modulation. Modulation defined by Deleuze as "*self-deforming cast that will change continuously from one moment to the other, or like a sieve whose mesh will transmute from point to point*" refer to the individualized approach seen in data politics (1992). The service providers had long been providing *personalized* and *optimized* content for their users so that they can increase the time spent on the platforms. The appeal of the services offered was the label *personalized* (Zuboff, 2019).

Zuboff, claiming a behavioralist view, posits that instrumentarian power's objective is behavioral modification (Zuboff, 2019). Unlike Zuboff, in this study it is posited that functionalist theories provide a better understanding for the governance seen in data politics as they also encompass the states of the subjects, the dividualities (Deleuze, 1992).

The target of the data politics is the subjects, human beings as technico-functional beings. The various objectives in data politics are targeted trough emotional stimulation. Individuals and their biological, social and cultural traits are considered as capitals in neoliberalism hence shouldn't be worked upon directly therefore data politics through big data intervenes to the individuals in the digital milieu to induce emotional stimulation.

4.2.2.2 The Modes of Interventions and Technologies of Data Politics

The technologies, as described by Dean, involves the ways of rendering visible the targets, and the various modes of interventions towards the objectives (Dean, 2010). To that end, the surveillance practices of data politics will be briefly reviewed and the technologies of power that inscribe certain identities to the individuals will be analyzed.

4.2.2.2.1 The Surveillance and Sousveillance Practices: Rendering the Subjects Visible

Subjects in data politics are made up of dividualities and it was argued in this chapter that the subjects are technical and functional beings, hence they should be rendered visible in a measurable and relatable way, but they also should render themselves visible in the same manner. Thus, in technologies of visibility the existence of two distinct but interrelated techniques, surveillance and sousveillance can be put forward. In terms of the politics of visibility, again two distinct objectives can be suggested. Total surveillance that aims to capture the whole scope of interactions with the environment, and detailed surveillance that aims to capture the subjects in detail. Big data is about the models and algorithms that seek patterns in millions, billions of data points. The bigger the data sets get, the better analysis can be made (Ewald, 2012). The data episteme, identified by Koopman, captures this essence. Koopman argues that in the face of an influx of data that is gathered by the multiple sources, the solution to the problem of irrelevant and meaningless bits of information is suggested as the drive for more data (Koopman, 2019). In terms of detailed surveillance, the target individuals are governed in data sets through correlations in data politics. In order to divide and classify them, the similarities as well as the dissimilarities among the general data sets should be put forward. Ewald argues that if Foucault to live today, he would not characterize Panopticon as the model for contemporary surveillance (Ewald, 2011). In data world, the politics of visibility is done without a hierarchical surveillance based on the norms. Inverting

these relations of visibility, data surveillance is from bottom to top and functions in hubs in networks.

Harcourt in his analysis of expository power, places the sousveillance practices at the center of contemporary technologies of visibility. Sousveillance practices are identified as the voluntary practices of giving away information about the selves (Ewald, 2012). For various ends such as personal health, financial regulation or just a simple sense of belonging or popularity, the individuals willingly give away information about themselves (Kitchin, 2014). Harcourt argues that in data politics, people expose themselves. In dating apps, individuals list down their traits, on Facebook, they share their thoughts, their days, their experiences. In Twitter, they explain their thoughts on political matters, actualities, they interact with their friends by writing on their walls, by mentioning them in their twits (Harcourt, 2015).

On the other hand, in data politics, the surveillance practices are comprised of sensing and abstracting the subjects through their interactions with their environments so that they can be abstracted in data and analyzed, and ultimately correlated. The behaviors are the units of analysis par excellence, defined as behavioral surplus by Zuboff, behavior should be understood in a broad sense. American Psychological Association defines behaviors as "*an organism's activities in response to external or internal stimuli, including objectively observable activities, introspectively observable activities, and nonconscious processes"* (APA, 2021). Hence, these behaviors encompass any activity of outputs by the subjects including the textual outputs, the analysis of gestures, any activity that is sensed through remote sensing, the analysis of emotions through various methods as well (Zuboff, 2019). The functionalism and behaviorism underlined in cybernetics, omits the causality and assess the individuals solemnly based on their interactions with their environments with a very limited reference to the subjects.

Contemporary human beings are surrounded by a plethora of sensing devices who also can communicate between them, creating autonomous surveillance environments. These sensing devices enable the objectification of all fields of human experience. How much sleep did one have, when are they excited, when are they calm, when are they happy, these emotions as well can be mathematically measured and modeled. A perfect example of the surveillance and sousveillance in data politics is the creation of online profiles. Profiles are individualized, differentiated and singled out masses of information about the individuals (Ewald, 2011). The profiling is not a new discovery. The criminals in disciplinary power were also profiled to determine their probability of recidivism. Nevertheless, the online profiling in digital

world differs from the traditional profiling. Traditional profiling, exemplified in disciplinary science, divides the individuals in accordance with their conformance of the norms and through dichotomies, conformant/non-conformant, deviant/obeyed and so on. The individual is examined, surveilled, recorded and then classified. The surveillance in discipline is to determine if the individual is deviant from economic norms, from educational norms or from carceral norms, or any other normative rules. Then through normalizing judgment, the individuals are placed in their relative groupings. A perfect example of this technology is examination. Besides, individuals are considered as entities tied to certain, enclosed spaces and temporalities (Foucault, 1995). However, online profiles are not created based on dichotomies, but on their similarities and dissimilarities with regard to a mass. Therefore, it is not normative, it is dynamic and constantly being archived.

Online profiling functions based on the data gathered. It analyzes the data holistically, seeks patterns, forms clusters, and assigns the individuals in accordance with the similarities or dissimilarities to a group (Ewald, 2012). Profiling is virtual and aims to predict what will be done, what will be the reaction and what will be thought (Zuboff, 2019). The body is broken down to the various parts, to dividualities, through its interactions to the outer environment, sensed, transformed into data and then transmitted to someplace else, and then analyzed. This knowledge on individuals is not tied to a space or a specific time hence rendering it free from space and temporality (Haggerty & Ericson, 2000).

Assigning profiles to individuals is an automated process realized by algorithms, leading to descriptions of the contemporary man as an algorithmic identity (Cheney-Lippold, 2011). Bharat et al, in 2003 created an algorithm to identify the user profiles that were also employed by the Google as well. According to the writers, user profiles can be formed based on three processes. The first is the actions of the users. The activities on the online world are to be tracked, recorded and archived under each profile, agglomerating enough data to create an identity for the user (2003). The second process is about inferring the user profile. Mainly, through forming correlations with other users who also viewed the same content online, the profiles can be inferred. The last process is the synthesis of these two processes (Bharat et al., 2003, p.1). This correlational focus is what Hacking highlights and also what Aradau and Blanke identifies as between-ness (Aradau & Blanke, 2016). These profiles are not stable, they are dynamic, with the help of feedbacks sent by the sensors, they are constantly reevaluated, analyzed and reassigned to various groupings (Cheney-Lippold, 2011).

4.2.2.2.2 The Techniques of Intervention

In the discussions on power and subjectivity, it was argued that power relations mark the individuals, divide them and inscribe and attach their identity that is seen by the self and the others as well. The isolated individual is worked upon by various technologies and expected to assume certain identities consequently. The technologies of data politics bear the mark of neoliberal arts of government. They govern through freedoms and emotions and require the subjects to act freely. For that end, it is argued that the techniques of intervention are the behavioral modification and emotional stimulation in the digital milieu. These techniques are individualized, personalized methods aiming to automatically modify the behaviors and dividualities through emotional stimulation. The targets are the subjects and technological capacities allow individualized governance for each targeted subject.

4.2.2.2.3 The Rationalities of Data Politics: The Data Episteme and Neoliberalism

One can see striking similarities with the theoretical understandings and practices of neoliberalism and the contemporary practices in data politics. As argued above, neoliberal arts of governance aim to modify the behaviors through interventions into the milieu and subjects are considered as respondents to these changes. Neoliberalism capitalizes the subject as a whole and argues a constant transformation of subjects to maximize their human, biological and social capital. Placing competition at the center of governance neoliberalism proposes free subjects who are governed by their desires and emotions.

I argue that the objective of data politics is the automated modulation of behaviors but also dividualities for various ends. Unlike various thinkers who formulate postmodern governance as a freer political space in which de-subjectification instead of subjectification occurs, it is put forward that through desires and freedoms data politics enable a new mode of subjectivity distinct from the earlier modes. The interventions done in Cambridge Analytica have neoliberal characteristics. Subjects are targeted through their online milieu, through the contents, through the advertisements they are exposed. These interventions are not just made to modify the behaviors but also modify the dividualities. The emotions, the ethical substance of postmodern man, were targeted through tailored and continuously modulating contents.

Entrepreneurial selves in neoliberalism are the selves who constantly work on themselves to maximize the human capital they have. This understanding implies a new mode of subjectivity that is dynamic and fluid. Bauman notes forgetting as a key trait of postmodern subject, rendering the subjects in postmodernity dynamic and constant transformations (Bauman, 2000). He notes that the objective in postmodernity is not making identity stand

but avoidance of being fixed (Bauman, 1997). In subjectivation processes postmodern subject should always be open to change to perform better, to maximize their human capital. In subjectification processes postmodern subjects are considered as dynamic, creating the conditions of possibility for data governance. The lack of objectives necessitates being open to changes.

Another link can be formed between neoliberalism and data politics in the politics of visibility. The sousveillance practices are at the center of politics of visibility of data politics. Individuals willingly give away their most inner secrets sometimes without even noticing but mostly without caring in exchange of personalized services. The social institutions developed because of the insecurities caused by liberalism is eradicated in neoliberalism, exposing the individuals to a sense of insecurity. Zuboff argues that as a result of the insecurities created by neoliberal policies, in exchange of information, connection and a sense of security, the behavioral data is submitted willingly by the individuals to the service providers (2019).

In this chapter, the changes in episteme and knowledge are put forward. Following Foucauldian analytical framework, the profound changes happened in episteme should have been accompanied by new relations of power. Therefore, these changes are tracked, and data politics is argued as a new mode of power. The subjectivity, main theme of this study, is analyzed by Foucault with an analysis of rationality as well. Therefore, a brief analysis of neoliberalism is put forward. These theoretical arguments will be tested in the case studies in the succeeding part.

4.3 Governing Subjects: A New Mode of Subjectivity

This study aims to put forward a new mode of subjectivity, processes of how human beings are transformed into subjects, as a result of big data that has profoundly altered the episteme and relations of power. Through Foucauldian analytics, bodies of knowledge and relations of power are considered to produce truths about human beings that both they and others should acknowledge and guide the technologies of self and power. In the previous parts of this chapter, these changes are put forward both in episteme and data politics. In the following parts these theoretical arguments will be sought in Cambridge Analytica to analyze the processes seen in relations of power, subjectification, and in mobile health applications to analyze the subjectivation processes.

4.3.1 Subjectification Processes and Cambridge Analytica

In March 2018, Christian Wylie, an employee of the Cambridge Analytica, a subsidiary of the Strategic Communication Laboratories based in the UK, revealed that the company had harvested the personal data of nearly 90 million people and used it for the modification of political behavior on various instances including the elections and referendums (Wylie, 2018). Even though these methods were not new and had been employed by the marketing agencies and other tech companies for the last decades for advertisement purposes, the capabilities acquired by the analysis of big data, the modes of interventions and the methods to harvest created a huge controversy.

As a military contractor, Strategic Communication Laboratories (SCL) had already worked on various projects to influence the political behaviors in Asia, in Africa and in Latin America. The founder of the company, Alexander Nix stated in a leaked document that they had been approached by various parties around the world, and they had been working on an average of ten political campaigns each year (Nix in Amer & Noujaim, 2019). The controversial project in question was the US elections, held in 2016. Nevertheless, as the witnesses came along, the depth of the work of the company had been revealed in full detail.

According to Wylie, in 2013 the SCL was approached by certain funders about the possibility to change the culture, in particular in the US (2018). As Foucault also suggested the major political parties have been trying to create subjects in accordance with their policies, so this was not a new endeavor (Foucault, 1997). Since the work demanded would be conducted in the US, to overcome the legal issues, they decided to found a new company named Cambridge Analytica. The company took on certain political campaigns but to Wylie, the core of the project was about culture change, creating a more conservative identity and a change of culture and eventually a change in society as a whole (2018). The company had already undertaken several campaigns for the Senate and the House in the US before. In 2015, they signed a contract to take part in the presidential elections that would be held in 2016.

After the signing of the contract, Cambridge Analytica started to work for the campaign as a partner under the guidance of the campaign managers. In a public speech, Nix, defined the pillars of their work as behavioral science, data science and addressable ad technology (2017). The most important part of the work that Cambridge Analytica had undertaken was to collect the relevant and high-quality data. The company had several sources for data acquisition. There were and still are companies who gather and sell the data of a target population. Nevertheless, the most controversial source was obtained through Cambridge

Psychometrics Center. The researchers of this center had developed an app on Facebook that surveys the personality types of the users. It simply claimed to be a personality test and the users voluntarily filled out the survey to learn their personality traits and types. Yet, the app also gathered information about the friends of the users. This enabled the researchers of the Psychometrics Center to successfully harvest the data of millions of people and create models. They already have the personality traits of certain users; these traits were measured based on the questionnaire they had filled out. With this data set, the researchers in Cambridge Psychometrics Center were able to create a model and test this model with the other users who hadn't taken the survey (Wylie, 2018). These devised models are predictive and self-adjusting through continuous feedback and adjustments (Schmidt & Cohen, 2014). The correlation in digital profiling is geometrical calculation of closeness based on selected data points. Individuals, based on their data points are spread on a virtual field and based on their geometrical proximities in virtual plane, they are classified and grouped (Aradau & Blanke, 2016).

Through the model they had developed, they were able to determine the personality traits of millions of people. Even though only several hundred thousand of people actively took the survey, through modelling they were able to infer the personality types of millions of users. (Wylie, 2018). Defined as the trait approach to personality, or psychometric approach, psychometric personality theory aims to measure and mathematically assign the level of each trait of personality to individuals based on various types of inputs (McLeod, 2017). In 1936 Gordon Allport, created a list of traits that included 17,953 trait items for the definition of personality (Koopman, 2019). Later on, these traits were grouped to form personality types and these types were reduced to five and named as the big five and individuals are scored based on their scores in each trait. The Big Five, openness, conscientiousness, extroversion, agreeableness and neuroticism (OCEAN), were the key personality types under which the individuals are to be categorized (Nix, 2017). In compliance with the categories, each individual would be subjected to tailored messages to arouse emotions and change behaviors (Turnbull, 2018).



Figure 1- Tailored Messages Based on the Personality Traits (Cambridge Analytica, 2015)

Cambridge Analytica analysts grouped each base of voters under three categories by using turnout and issues models. These categories were core voters, questionable, and alienated voters. The strategy was to deter the opponent's questionable voter base through tailored messages (Nix, 2017). Then each category was subdivided into more groups based on their personality types and online profiles. Lastly, they were subjected to tailored messages. For the neurotics, the fear and anxiety were fueled. The migrants and Islamist terrorists were the common themes upon which the discourse was built. At the end, the most effective messages were the ones that address the emotions, in particular incite fear and anxiety (Nix, 2017).

Cambridge Analytica had run a similar campaign in 2010 Elections in Trinidad and Tobago (Nix, 2019). Their initial analysis concluded that the young, first-time voters might be manipulatable, therefore the strategy was to increase apathy among the black voters, who constituted almost half of the population. Since the Indian population who constituted the other half, had more close familial bonds, it was envisaged that they would go out and vote with the guidance and pressure of their parents. For that aim, they created a campaign named "Do So" and advertised this on various social media channels. The message was be young, ignore the politics and enjoy your life, do not vote, do not be a part of corrupted politics. Not later, this campaign became a movement and achieved popularity. The black youth, who identified themselves as a part of this movement, largely abstained from voting. The difference of turnout among the black youth and the Indian youth was 40% in favor of the Indians (Amer & Noujaim, 2019). Even though it can't be conclusively said that that was the main reason, the campaign became very popular and considered by many to be very successful.

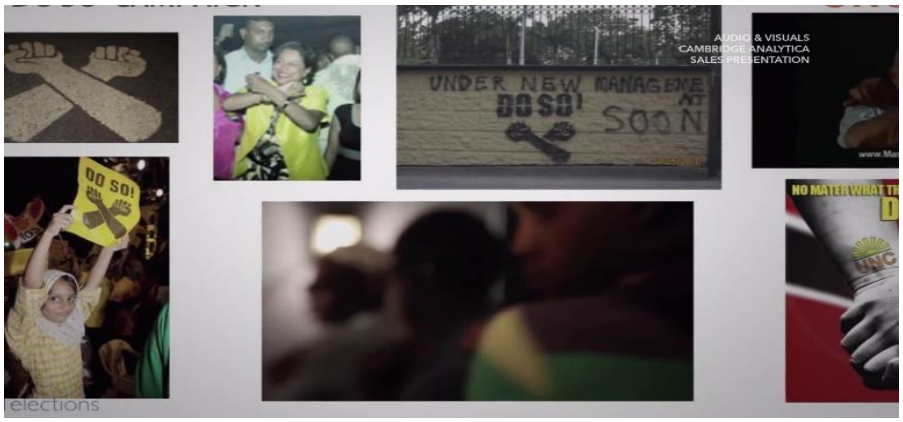


Figure 2- The Do So Campaign Run by Cambridge Analytica (Amer & Noujaim, 2019)

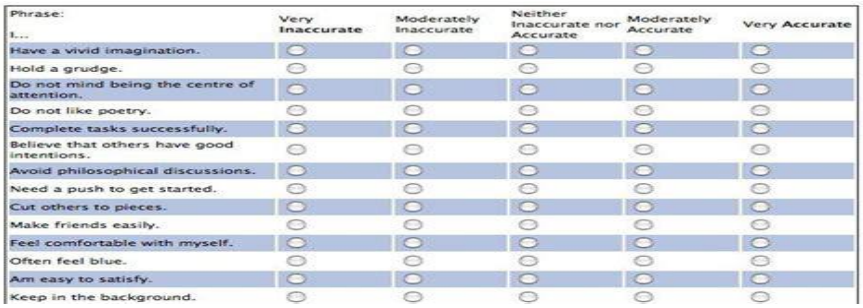
Even though it is not possible to successfully measure the effectiveness of the campaign run by Cambridge Analytica on behalf of various customers, the possibility and the success of discovering the personality types and traits, and creating online profiles, abstracting human beings with high precision led to the questioning of the effect of the big data and the potential hazards it carries. Additionally, the customer base of the company grew day by day. After this brief introduction, how Cambridge Analytica defines and classifies human beings and how it intervenes to them will be analyzed.

4.3.1.1 Dividing Subjects from Others: How Cambridge Analytica Classified and Ordered Subjects

The subjects in Cambridge Analytica are digital entities, online profiles representing the psychological profiles of target users supported by various sources of data. Even though Cambridge Analytica had acquired data from vendor companies, their principal model created by the data harvested through personality app developed in Facebook.

The idea of psychological profiling through Facebook activities had first been envisioned by the researchers in the Cambridge Psychometrics Center. Michal Kosinski, a psychologist with an interest in computational science and big data, and David Stilwell, a psychologist with an expertise on psychometrics research, had created *MyPersonality* application that was accessible in Facebook. Both academics had research interest in identifying the psychological profiles through big data and had published many articles on this issue. The users, to find out their personality types, had filled out a survey that was comprised of 100 items from International Personality Item Pool questionnaire and they had an option to give permission to researchers to access their Facebook activities (Kosinski & Stilwell, 2012). The total number of the participants that gave this permission was 153.000 (Kosinski et al., 2013).

They had argued the predictive power of the modeling based on this data set in various studies (Youyou et al., 2015; Matz et al., 2017).



Phrase: I...	Very Inaccurate	Moderately Inaccurate	Neither Inaccurate nor Accurate	Moderately Accurate	Very Accurate
Have a vivid imagination.	○	○	○	○	○
Hold a grudge.	○	○	○	○	○
Do not mind being the centre of attention.	○	○	○	○	○
Do not like poetry.	○	○	○	○	○
Complete tasks successfully.	○	○	○	○	○
Believe that others have good intentions.	○	○	○	○	○
Avoid philosophical discussions.	○	○	○	○	○
Need a push to get started.	○	○	○	○	○
Cut others to pieces.	○	○	○	○	○
Make friends easily.	○	○	○	○	○
Feel comfortable with myself.	○	○	○	○	○
Often feel blue.	○	○	○	○	○
Am easy to satisfy.	○	○	○	○	○
Keep in the background.	○	○	○	○	○

Figure 3- MyPersonality App Personality Questions (Kosinski & Stillwell, 2012)

Once Cambridge Analytica was founded and started working on US Elections, their major problem was the lack of data that they could scale (Wylie, 2019). Cambridge Analytica owners have already been working with Alexander Kogan, another academic at the Cambridge Psychometrics Center, who suggested to use already existing database acquired by *MyPersonality* app. After some disagreements with the Cambridge Analytica and Dr. Kosinski and Stilwell, Alexander Kogan had proposed to create another application that would imitate the same work. To that aim, he created *This is your personal life* application to harvest the data of both the users and the friends of the users about their Facebook activities (Wylie, 2019).

This data set was combined with the other data sets provided by private companies such as Experian, Axiom, and Magellan (Kaiser, 2019). At some point, Wylie argues that the researchers in Harvard Medical School offered them to use the genetic database they had garnered which had millions of individuals gene map. Wylie notes the sheer excitement of this possibility in terms of behavioral change (2019). Even though they were not able to capture this data set, Cambridge Analytica had managed to create a model to represent the subjects in virtual planes through big data. Wylie argued that the total number of individuals in these various datasets was more than 84 million (Wylie, 2019).

This representation was thought to grasp the real identity of the subjects. The strategists in Cambridge Analytica believed that as a result of exterior constraints, individuals refrain from exhibiting their real identities. Their research on racism concluded that both the democrats and republicans had similar sentiments towards racism, yet the democrats were abstaining from demonstrating this because of their fears of social shunning (Wylie, 2019).

The scientists in CA created neural network learning algorithms to find out patterns between the personality types of the users who had already filled out the surveys and Facebook Data of the friends who hadn't taken out the survey. The patterns were sought based on the 2000-4000 data points that CA scientists had selected (Wylie, 2019). To do that, they created matrices and analyzed these data to find correlations. For instance, people who liked Hello Kitty, Barack Obama and the Colbert Report had a high percentage of openness (Kosinski et al., 2013). People who liked Mitt Romney, camping and Nicki Minaj had a high percentage of conscientiousness. Similarly, Hello Kitty likes were indicators on instability. People who liked Mojo-Jojo, Biology and Dollar General had a high tendency to have more friends than others (Kosinski et al., 2013). This was the main dataset that was created by the help of Kogan in Cambridge Analytica.

When they are tasked with the US Presidential Election in 2016, the first thing they wanted to do is to create databases and models. To that end, they used Republican National Convention Database and CA Database that Kogan had helped to build. On top of that, they managed to purchase various datasets, rendering it highly populated and effective.

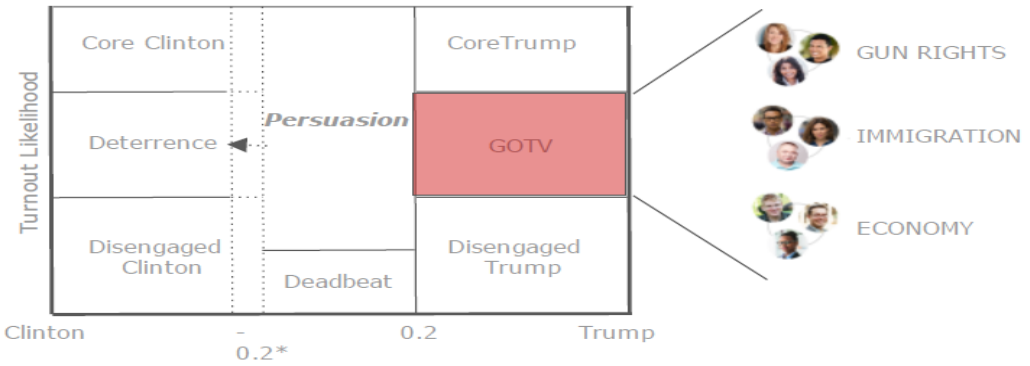


Figure 4- The Targeted Populations by Cambridge Analytica (Trump Campaign After Work Report, 2017)

This dataset was divided into two main parts, Trump and Clinton voters. Within those, Cambridge Analytica researchers had to define the target individuals, to whom the targeted messages should be sent. To that end, they had first identified the persuadable base who were not core voters for either party. For Clinton supporters, they had aimed to deter these group while for Trump voters they had tried to encourage to go out and vote. The targets were also selected on the basis of their likelihood of voting (Trump Campaign After Work Report, 2017).

After successful creation of models, the behavioral scientists in Cambridge Analytica started creating test groups to test the messages sent out to manipulate the target users. They concluded that the most efficient behavioral and cultural change can be observed in people

who have the Dark Triad personality traits; psychopathy, narcissism and machiavellianism. Since the company aimed to change behaviors through emotional stimulation, they concluded that the most vulnerable target for these are neurotics with dark triad personalities (Wylie, 2019).

4.3.1.2 Technologies of Digital Subjects: How Subjects Are Intervened

The pillars of the work that Cambridge Analytica had carried out were behavioral science, data science and addressable ad technology or behavioral micro targeting (Nix, 2017). Behavioral microtargeting is predictive modelling that reveal underlying psychological determinants of behavior so that target individuals are exposed to the right message at the right time (Cambridge Analytica, 2015). Wylie argued that the messages are designed to create emotional stimulation so that the target individuals can be affected and modified (Wylie 2019).

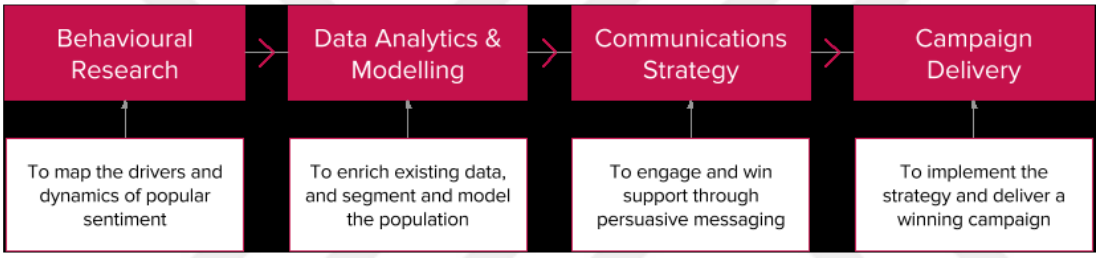


Figure 5 - The Simple Process of Cambridge Analytica on Political Campaigns (Cambridge Analytica, 2017)

The target of the company was not the whole eligible voters. On the contrary they had identified target individuals in the 16 key states with personal profiles. Their target was to change the political behavior of this subgroup of people. Behavioral microtargeting aimed to address each individual in a unique way at the right time. For that end, campaign strategists had created 5000 ads that are automatically tailored for each individual by algorithms. Kaiser argues that each ad had 10000 creative iteration that aims to target specific types of personality (Kaiser, 2019).

This process is guided by the automated algorithms and refined in real time through feedbacks. If an ad doesn't succeed with a certain type of individual, then it is removed for that group, but a new iteration is displayed for another one. So that simulations are run to perfect the system and increase the effectivity (Kaiser, 2019).

These interventions are made in the digital milieu without any coercion or forcing. For instance, for the ones who were measured as open and neurotic they stressed the importance of border security and American Interventionism. For the video ads they created, the message

was to have a strong leader who can navigate through the risks of international threats. For the extroverts they attenuated the leadership the US plays in the world and the success of the Army (Cambridge Analytica, 2015).

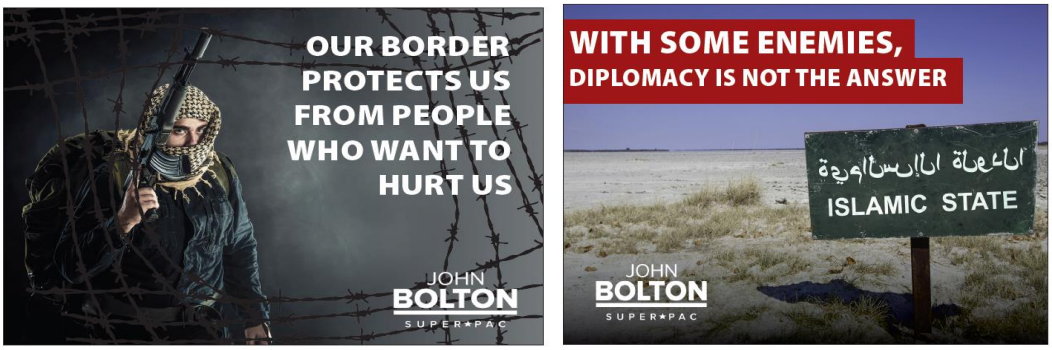


Figure 6- Border Security Ads for the People with High Neuroticism Score (Cambridge Analytica, 2015)

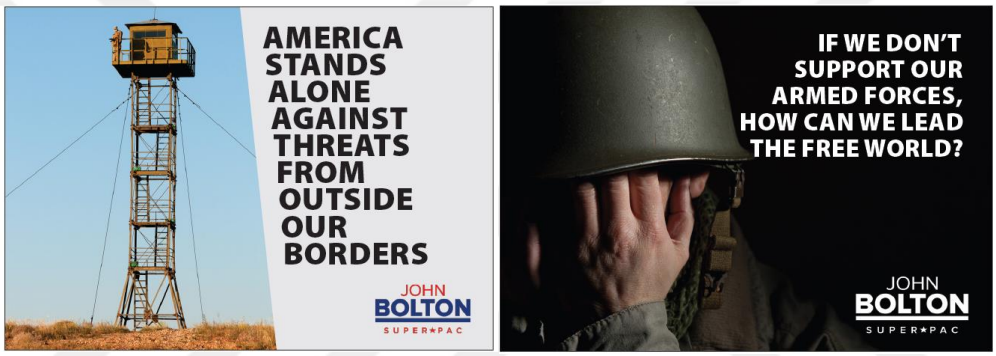


Figure 7- Border Security Ads for the People with High Extroversion Scores (Cambridge Analytica, 2015)

Cambridge Analytica targeted the audience with the right message at the right time (Nix, 2017). It is not just targeted advertisements that influence the behavior of the targets. One of the measurements Cambridge Analytica analysts gather was the interactions (Nix, 2017). When people interact with the messages, such as liking, commenting or retweeting, they also commit an effort, consequently they get more attached to the views they defend.

Other than placing ads, Wylie argues that social media companies also classify their users and promote the content the users are thought to like. By engaging the content created by Cambridge Analytica, targeted individuals are put into an endless cycle of reinforcement (Wylie, 2019).

4.3.2 Subjectivation and Mobile Health Applications

The relations of knowledge and power produce truths about individuals who in return are expected to work on themselves based on these produced truths. In this part, mobile health

applications will be analyzed to exemplify how individuals are defined, ordered and classified and in return how they acknowledge this classification and work on themselves.

4.3.2.1 Diagnosing Depressed Subjects Through Big Data

American Psychiatric Association publishes Diagnostic and Statistical Manual of Mental Disorders (DSM) to guide the psychiatrists to diagnose the mental disorders. In DSM 5, major depression is diagnosed through depressed mood, diminished interest in daily activities, significant weight loss, insomnia or hypersomnia, psychomotor agitation, fatigue and loss of energy, feelings of worthlessness, diminished ability to think or concentrate, recurrent thoughts of death. These symptoms can be expressed in subjective accounts or should be observed by an expert (APA, 2013).

Lane et al. argue that mobile phones, equipped with many sensors, are great tools for medical purposes. Being very cost efficient, mobile phones have the capability to sense the behaviors and the environments of individuals and transform these into calculable and analyzable data (Lane et al., 2010). It is possible to detect mood and mood changes through textual analysis in social media channels, the time of sleep can easily be acquired through smart watches, the accelerometer in smart phones successfully detect the movement of the owners, the movement of the hands for instance can be sensed easily through phone sensors, the thoughts can be observed in the pages one visits, or the search queries they made online. Through cameras in mobile phones, the change in the emotions can also be modeled based on the gestures. Hence, depression can be successfully diagnosed through sensors. Once enough data gathered about the individuals with depression, it is easily scalable. Through modelling, each individual can be assessed and diagnosed as well.

In a similar vein, Moshe et al. conducted a thorough study to predict the depression through mobile sensors (2021). To do that, they asked the participants of the study to download an app and use a wearable health sensor. The app continuously recorded the GPS locations and phone activities while the wearable sensor recorded data about the number of steps and the duration of activities, heart rate variations (HRV) and sleep time (Moshe et al. 2021). To measure the success of the sensing, they conducted three surveys to understand the moods of the participants and analyzed it with the data they gather. They concluded that the location change is an indicator of depression and anxiety (Moshe et al., 2021). Additionally, the duration of sleep, the time spent in bed and HRV also showed correlations with the depression and anxiety of the participants. Lastly, they concluded that combined these two indicators, they successfully predict the depression and anxiety of the participants (2021). Unlike

Foucault's analyses on madness in *Madness and Civilization,* in postmodernity, mental disorder is defined without institutionalized knowledge, expertise but through data and correlation. The people with depression are defined only on the basis of this correlation formed between already established models and general data sets. The causality, the reasons of the mental illness were left unattended, as long as one has the model and sufficient data, they can analyze the patterns in data sets and define and classify the depressed subjects.

Another account of subject definition in data episteme can be found in the creation of digital biomarkers. Instead of institutions with explicit boundaries, expertise and authority exercised in these institutions, health of the subjects can be correlated through data sets with digital biomarkers. This also exemplifies the transition from examination to correlation seen in data politics.

Biomarkers are medical signs, objective determinants of illnesses. Unlike symptoms that are subjective and described by the patients themselves and in need of expertise to understand and define, biomarkers refer to signs that are observable by the others (Strimbu & Tavel, 2010). Alongside with technological advancements new biomarkers are described, the last one being digital biomarkers (Dagum, 2019). Digital biomarkers are about the collection of health-related data that is beyond the traditional methods such as examination in the medical institutions (Jain et al. 2015). This data is not only useful in prediction and diagnosis but also is effective in the analysis and evaluation of therapeutics. Besides these points, digital biomarkers also profoundly alter the understanding of the diseases as well (Jain et al., 2015).

Digital biomarkers, unlike traditional biomarkers, are based on correlations. In 2014, neurologist Paul Dagum started a study to assess the possibility of identifying digital markers for neurological health of the subjects. He argued that examinations in clinical settings have certain setbacks such as the limit of the duration, the change in the environment of the subjects, episodic nature and poorly scalability (Dagum, 2019). To overcome that, he wanted to capture the neurologic activity in daily settings. To that end, he created an application that would work passively in the background of mobile phones to collect the data of Human Computer Interaction, such as the movement on the screen, tapping and double tapping and keyboard usage (Dagum, 2019). In order to create a model, he conducted a clinical study and assessed the neurological activity of the participants. Based on this study he then created a model that gathers the same data from the users of clinical theory. This is the data set that the general user data to be compared. After receiving the data from the app, he managed to identify several biomarkers for neurocognitive capacity of the individuals (2019). Mindstrong application, developed by Paul Dagum to assess the individuals' mental health

through their interactions of mobile phones, suggest important cues about the changes in medicine and how users are defined and divided.

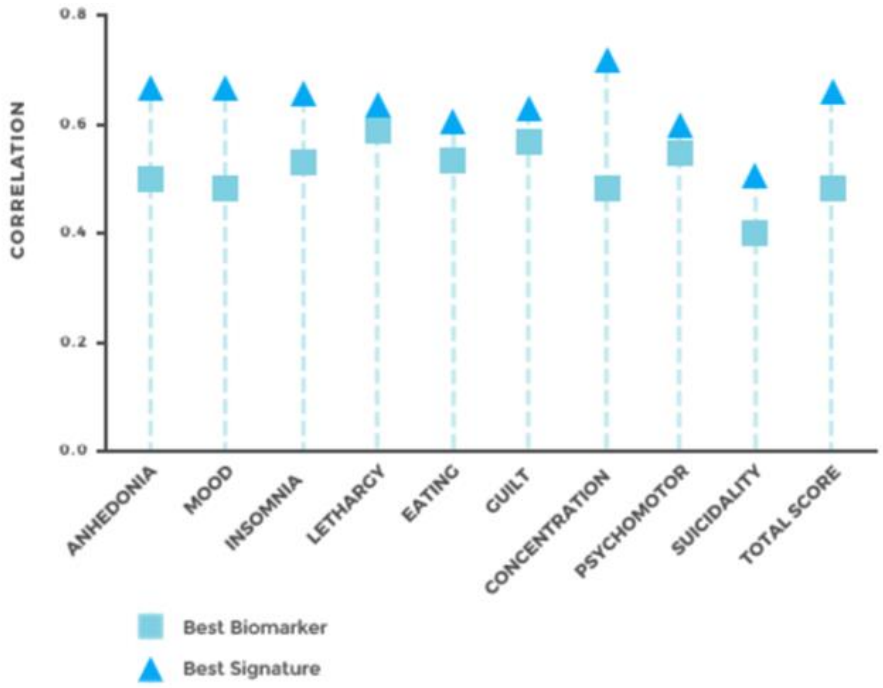


Figure 8 - Determining Mental Health Scores (Mindstrong, 2021)

In the privacy agreement, Mindstrong tells that it collects the information about the ways in which one interacts with the keyboard and touch screen, swipes, scrolls, keystrokes, and finally collects information about the apps you use. It also gathers data from the phone sensors (Mindstrong, 2021). However, a patent application made by Dagum provides better insights about the economics of visibility in data episteme. In this patent application he suggests a comprehensive data gathering scheme to understand and evaluate the cognitive health of the users (Dagum, 2016). To that end, the applications opened; the gestures, the tapping, body and eye motions when using mobile phone, keyboard entries, voice commands; all activity and kinetics and social data including the mails, messages and calls, travel data, and the data from wearable sensors such as heart rates, blood pressure are to be harvested and stored (2016). The idea behind is to find distinguishable patterns to use as biomarkers. In the following steps, it statistically analyzes these patterns with other recorded users and create metrics and assign the percentile of the specific user (Dagum, 2016).

After diagnosis, Mindstrong enables the users to get therapy online. Through the platform, if needed, users can access the therapists and get consultations. The application is not only reactionary. If the app senses someone is stressed, it also sends a message and asks the user

if they would like to have a consultation or suggest some steps to reduce anxiety and stress level (Mindstrong, 2021). Unlike traditional methods, attenuating the enclosed spaces and expert knowledge, the diagnosis of mental health can be made through data. *Abnormals* can be sensed and identified in the data sets through correlation.

In these two examples the truth about the subjects and their health were produced by data sets and correlation. The subjects are classified based on their unrelated activities in the digital milieu. The division of the sick individuals from the general public was done through correlation without any enclosure. Then this depressed or stressed subjects are monitored and if an anomaly occurs for a given individual, they are warned and are asked if they need consultancy. The divided subjects are not coerced to get required treatments, but they are suggested some minor steps so that they can practice themselves. If needed, a call with a consultant can be scheduled very easily, yet it is up to the subjects to have that call.

4.4 Knowledge, Power and Subjectivity

Big data had altered the nature of knowledge and episteme and created new instruments and processes for production of truth. Consequently, a new relation of power, namely data politics had emerged and as a result of the relations of power and the regimes of truth, new modes of subjectivities are created. The theoretical assumptions will be analyzed through case studies reviewed in the preceding part.

4.4.1 Data Episteme, Knowledge and Defining Subjects with Big Data

At the beginning of this chapter, it is argued that big data has changed the episteme and knowledge, and consequently the relations of power, leading to the emergence of data politics. The subjects are defined and classified through big data in the data sets using correlation. This study posits the changing nature of data knowledge and suggested noninstitutionalized and atemporal hence dynamic knowledge observed in data politics. As a result of these changes, the truth on human beings is produced by this new episteme and power created a new mode of subjectivity that can be analyzed through subjectification and subjectivation.

Subjects are considered as blackboxes and they are defined, ordered and classified by big data in postmodernity. In Cambridge Analytica, the target individuals are defined in a virtual plane through data and statistical modeling. The truth about personality types were produced on the basis of correlation, similarities and dissimilarities with others in the general data set. This production of truth is different from the ones that were observed in disciplinary power

that divided the subjects through examination in specialized institutions based on the norms. Cambridge Analytica problematized the subjects on their personality types without any enclosures or time segregation. To attach each individual their personality types, the researchers in company had formulated an online IPIP Questionnaire of 100 items. The users willingly filled out the survey and gave permission to the researchers to harvest their online activities. This is the base of dataset that Cambridge Analytica had created. They created models, correlated the online activities that the users had carried out such as liking the Facebook pages to the personality types. They also had access to the activities of friends of these users which enabled them to scale the first model to the general data set. This definition of subjects did not involve any formation of causal relations. They defined the personality types by creating statistical correlations between liking pages such as Camping or the popular TV series *Game of Thrones.* Mobile health applications assigned mental health scores for each individual using their applications through their patterns of human computer interface such as tapping and swiping. It treated the subjects as blackboxes interacting with their environments. It is also not normative and aim to capture the normality.

Big data produces truth on individuals through probabilistic statistical analysis and correlation. Data episteme argues that the truth can only be produced probabilistically in a universe where chance events are intrinsic to the nature. Individuals defined through patterns in data sets are not considered as concrete beings. Through the similarities and dissimilarities determined by the data sets, they are classified and grouped. However, this classification is probabilistic and predictive. In terms of governance in postmodernity affected by the highly mathematical episteme, the models used to produce truth on individuals are created to ensure quantitative analysis of probabilities as they enable researchers to objectively test the truth produced and modulate the models and technologies accordingly (Madsen, 2019).

Probabilistic definition of individuals implies the need for constant surveillance and testing. The reactions to the tailored content by member individuals of a group are recorded and through probabilistic calculations the reactions of other members of the group can be predicted. Cambridge Analytica had employed Bayesian Probability Analysis to define and classify subjects. In order to make successful predictions about the future behaviors, individuals are defined based on their personality types and they are expected to behave differently to the same stimuli. Bayesian calculations allow the strategists to define a priori probabilities and then through continuous testing and update, modulate their modelling (Madsen, 2019).

Big data is noninstitutionalized and atemporal. In modern episteme where the examination was the principal method of inquiry, the institutions had a special place in terms of production of knowledge and truth. In disciplinary power Foucault analyzed the spaces and institutions to analyze the knowledge and truth regimes. However, it was argued at the beginning of this chapter that our knowledge is incomplete to the space and indeterminate to the time. Hence, space and time can't be a priori constructs of knowledge.

Cambridge Analytica had obtained the data to create models and classify the subjects from an existing database. It was already harvested by others and put together and sold out to the highest bidders. Their main dataset was a combination of various small datasets obtained in different times. Additionally, the subjects are surveilled and sensed in their spaces without the existence of specialized loci and experts. Mobile health applications are developed to overcome this modern understanding of knowledge. The developers argued that the examinations in the hospitals are insufficient for the production of knowledge on illnesses due to the time limitations and temporal character. In order to capture the essence of the phenomena, the targets should be sensed and surveilled regardless of their milieu and temporal segmentation. The same data set is updated through each feedback and classify and define subjects differently than previous ordering. It is argued that the decline of disciplinary institutions can be investigated from this point of view.

Subjects are technico-functional beings in postmodernity. Subjects are treated as technological and functional beings. Technological in Heideggerian and Foucauldian sense refers to the utilitarian revelation of phenomenon so that they can be mathematically modeled and statistically correlated. The subjects are classified in data sets that are consisted of hundreds or in the case of Cambridge Analytica eveb thousands of data points through automated algorithms. These data points represent the subjects only by their behaviors and their interactions with their environment. Cambridge Analytica researchers abstracted the subjects by their Facebook activities to statistically model and mobile health applications abstracted the subjects by the patterns of activities on user interfaces.

4.4.2 Data Politics and Cambridge Analytica

As argued above this study argues that a new mode of power emerged in the mid-20th century. These relations of power can be put forward through Foucauldian analytics of power with objectives, target, technologies and rationalities.

The objective of data politics is modulation of behaviors and subjects. The objective of data politics can be sought in the work of Cambridge Analytica. The epitome of the work that the

company had carried out was modification of political behaviors. To that end, the company employed various strategies to affect the behaviors but also the dividualities as well. The funders of the campaign that was run by Cambridge Analytica in 2016 had envisaged to change the culture itself (Wylie, 2018).

The dividualities in Cambridge Analytica are related to the mental states, described as attitudes in social psychology, the tendencies for distinctive modes of actions (Rose, 1996). The subjects are divided from others through their algorithmically calculated dividualities, the personality types in this case. Divided through data sets subjects are exposed to tailored content. This individualized approach can be termed as modulation.

The target of data politics is the emotions. Alexander Nix had stated that the primary target of the company was the neurotics as they are the most open to emotional stimulants (Amer & Noujaim, 2019). The subjects in data politics are blackboxes with existing states, a construction made up of virtual dividualities who will respond to the given stimuli (Weiskopf, 2020). The behavioral microtargeting techniques employed by Cambridge Analytica had mainly aimed to induce emotional reaction. For people with high neuroticism score it was the fear of losing jobs, fear of islamist terrorism, fear of losing American identity in the face of a migrant flux. For the people who have high scores on openness, it was the American leadership that was attenuated in the messages. If the recipient is unresponsive, unengaged, then the ads were modulated as well with the main message but with different outlooks.

Politics of visibility in data politics is a two-fold process, detailed surveillance and total surveillance. In Cambridge Analytica, the technologies of visibility were comprised of both surveillance and sousveillance practices. The users willingly fill out the information about their selves to learn truths about them. In return, they would learn their personality types. The surveillance practices however were consisted of gathering, harvesting data about their online activities occurred in Facebook such as likes, the number of friends and networks. In mobile health applications, the surveillance practices were comprised of sensing through mobile devices. The applications one uses, the gestures, the habits of using graphical user interfaces, the behavior of tapping on the screen, the time spent on online activities, the text messages one sent and the calls one makes are surveilled, recorded and automatically analyzed. This surveillance is automated and omnipresent.

In Cambridge Analytica and in mobile health applications both detailed surveillance of the users and total surveillance of the system can be observed. In order to successfully create models, each similarity and dissimilarity should be statistically abstracted and integrated into the model. To that end, Cambridge Analytica had purchased various datasets to integrate into

their existing models. Each individual should also be sensed in detail through data points to create a successful representation of individuals in the virtual plane. Mobile health applications are taking data from sensors, applications one uses, working on emotion recognition models through facial expressions, textual analysis models to capture emotions through writings (Baumeister & Montag, 2019).

The rationalities of data politics bear the mark of neoliberalism. The capitalization of human experience brings dynamic subjectivities and create the condition of possibility for the technologies of Cambridge Analytica which are productive and govern through freedoms and emotions. These technologies employ behavioral microtargeting as the technology of power while mobile health applications employ technologies of the self. Technologies of power are individualistic and aim to intervene to the digital milieu so that the respondents act in accordance with the given stimuli while technologies of self imply an understanding of subjects as entrepreneurial selves who constantly work on themselves to maximize their potential, human, biological and social capital.

4.4.3 Mode of Subjectivities: Subjectification Processes

Mode of subjectivities can be analyzed by both subjectification and subjectivation. Cambridge Analytica is reviewed as an example of subjectification, process of transformation human beings into subjects by the relations of power. Through technologies of power the individuals are turned into active subjects, marked and attached identities. Cambridge Analytica used behavioral microtargeting to modify the political behaviors, yet the objective was not only the behaviors but also attaching a more conservative identity to the targeted individuals (Wylie, 2018). To that end, they intervened by creating personalized and automated digital contents that the targeted individuals are exposed. These interventions are considered as stimuli to induce an emotional reaction. Each message is crafted to each user and the messages are automatically updated through feedbacks received in real time. This process requires a detailed surveillance that senses and records each feedback given in the system. The duration of reading the material presented to the individuals, their reaction is recorded and through these feedbacks the messages are automatically modulated. The nature of digital milieu contributes to the effectivity of these messages by creating self-reinforcing loops that the subjects are exposed. One of the former Facebook engineers claimed that the main motive of the service enhancements in social media is to increase the time spent on platforms so that the profiles can be perfected, the more data about the individuals can be harvested and monetized (Parakilas, 2018). The access to information about the actualities, the search queries are all "optimized." Bernardo and Pit argue that the

search results you get is tailored to your personal profile. In a study, they analyzed the returns of the political search queries and identify that based on the political leanings, the contents returned were ideologically selected (2018). Therefore, the contents thought to be liked by the user are returned primarily. Garrett, in his study on news sources, identifies these selective algorithms and resulting separation as echo chambers but claims that it is not a decisive factor in political alignment (Garrett, 2009). It is argued in this study that Cambridge Analytica had managed to shape the subjectivity through techniques that alter the dividualities. Human beings tend to acknowledge the views and behaviors of others as correct if they have a similarity with them and echo chambers, in particular that involve interactions, is an example of this. Unlike Garrett, Del Vicario et al. conclude that human beings are being exposed to the content they are thought to be liked, and exposure to optimized content creates a self-reinforcing loop in which the subject is being bombarded by the contents (Del Vicario et al., 2016). This is argued to be an important contributor of the political polarization witnessed today.

The targeted individuals in Cambridge Analytica were selected based on their personality types but it was the neurotics that the company had aimed to manipulate mostly (Wylie, 2019). These techniques of intervention are informed by the behavioral science (Nix, 2017). In terms of behavioral modification, Madsen argues that Cialdini's principles of persuasion provides a coherent theoretical framework from which the techniques of persuasion in microtargeting campaigns can be developed (2019). Cialdini identifies the commitment and consistency, authority and social proof, the reciprocity, and liking as the techniques of intervention (Cialdini, 2000). Looking at IMDB score of a movie has been a very standard action before choosing what to watch. When bored, it is also common to see trending, or hot topics, or popular discussions to see what everyone else is talking about. The popularity, the likes and the retweets one tweet gets, the likes of a shared Facebook post, the upvotes of a Reddit post show the appreciation of your actions or thinking and provide a sense of appraisal. Cialdini claims that the human beings have a tendency to determine what is correct based on the views of other (Cialdini, 2000). The behaviors are also considered normal while others do it. However, this doesn't mean that everyone is adapting to socially demonstrated behaviors every time. Cialdini suggests that in order to be affected by the social demonstration of accepted behaviors and attitudes, the individual should be in a vulnerable state. In general, he states, that the individuals tend to accept these behaviors when they are unsure of themselves, unsure of the certainty and unambiguity (Cialdini, 2000). The effect of the social influence rises with the liking for the social group and the affection one feels is about the similarity. Human beings tend to be influenced by the actions of their alike. The

posts prepared by the designers of Cambridge Analytica circulated freely in the digital sphere and displayed to the people who thought to be inclined by these messages. Since the *optimized* content are shown to the people in social media channels, the likes and comments on the content represent the liking of the alike. The more individuals tend to think that it is common sense, the more the produced truth is acknowledged.

The second method Cialdini describes is consistency and commitment. He argues that human beings tend to preserve their attitudes when they act in accordance with the values they hold (2000). The likes of a post, the comments made under the posts show a commitment for the ideas represented in the posts. Hence, the more human beings interact, the more they are influenced.

The third method, described by Cialdini is the authority. Quoting the famous Milgram experiments, he analyzes the effect of authority on human beings and on their behaviors (Cialdini, 2000). Exemplifying through a popular dispute about the vaccinations for the COVID Disease, almost all of us had encountered the testimonials of a *doctor* who cited the reasons why we shouldn't get vaccinated. Cialdini also argues that it is the symbols but not the content or the actual expertise what matters (2000).

Zuboff on the other hand focuses solemnly on the techniques of behavioral change and identifies three key techniques implemented in data politics. The tuning, the herding and the conditioning are the methods she highlights (Zuboff, 2019). She describes the tuning as an architecture of choice. Through design on user interfaces, the choices that are favored by the architects highlighted, or the choices that are not favored were hidden behind so many clicks (2019). The herding is the techniques that involve direct action such as new safety features in the cars. If the algorithms deem you tired or sleepless, it turns off the engine and forcibly prevents you from driving (2019). The last one is the behavioral conditioning. Following Skinner, she stresses the importance of reinforcements that is widely encountered in applications. When you regularly run, you get virtual medals, you raise your percentile, and you can share this in your social media so that you can get an appraisal (2019). When you post on social media, the reinforcements are the likes and the attention your content gets.

When the tailored messages created by Cambridge Analytica analysts spread, people comment about it, like it and interact with it. These activities are shown in the timelines and through the effect of echo chambers, shared by the people with alike political views. This constitutes the liking, defined by Cialdini. As more people like it or comment about it, it becomes socially acceptable, constituting social proof. When you comment on a post and if it is approved by many people, this constitutes a reinforcement. Therefore, a plethora of

processes happening in digital social milieu on the changes of behaviors other than just being exposed to online content. This exposure leads to the various processes to modulate the behaviors and the subjects' political views.

4.4.4 Mode of Subjectivities: Subjectivation Processes

Mobile health applications are reviewed as an example of subjectivation in data politics. The applications that diagnose mental illness through correlation produce truth about the mental health of individuals and divide them within themselves, produce a truth that individuals should acknowledge in themselves.

Foucault identified a fourfold analytical framework for the analysis of subjectivation. He argues that a thorough analysis encompasses the ethical substance, the mode of subjectivity that is why subjects are inclined to work on themselves and for what purpose, the technologies of the self and finally the telos, the result aimed to achieve after these interventions (Foucault, 1997).

Ethical substance in postmodernity is the desires and emotions. Mobile health applications predictively diagnose the mental health issues through correlation formed by the similarity of usage patterns of mobile phones. It assigns each individual a score of mental wellness and allows the subjects to track their progress (Mindstrong, 2021). It problematizes the mental health of the subjects and divides them within so that they can work on themselves through suggested practices, behavioral therapy and online calls with psychologists or therapists. It suggests the changes in lifestyle and expected the subjects to behave in accordance with their progress tracked daily and displayed to the user.

Postmodern subjects are entrepreneurial selves who work on themselves to achieve their potentials, who render their lives as projects to be fulfilled (Scharf, 2015). The desire to be healthy, the feeling of achievement is the main motive behind these personal interventions. Another link can be formed between neoliberalism and the mobile health applications as neoliberalism expect the individuals to assume their risks themselves. The mental health of the subjects are considered as individual risks.

Postmodern subjects work on themselves rationally. Subjects are expected to behave rationally to become better than what they were. In mobile health applications subjects are expected to accept the produced truth about them and work on themselves rationally through suggested steps to control or cure their mental illness. The therapeutic practices guide the subjects in these processes of self-work, but these practices are also being adjusted based on the feedbacks.

Postmodern subjects modify their behaviors as technologies of self. The change of the self by the self is carried out by behavioral modification. Mobile health applications suggest behavioral changes for the subjects to comply. Stress management techniques comprised of quantifiable behavioral modulations such as sleeping more, exercising more, going out or eating healthy. Behavioral modulations are also easy to follow and record so that the efficiency of therapeutic practices exercised by the subject.

The subjectification and subjectivation processes comply each other yet it is possible to see differences among these two processes. Cambridge Analytica subjectifies individuals through behavioral microtargeting and aims the subjects to assume more conservative identity. It targets emotional stimulation to ensure the behavioral change. In subjectivation processes exemplified by mobile health applications what is witnessed is a rational practice of the self to be constantly changing, adapting and developing, becoming better. In terms of neoliberal rationalities various aspects of this rationality create different conditions of possibility for the technologies of power and technologies of the self. Productive nature of relations of power, uncoercive nature of interventions and governing through the milieu in subjectification processes, and technologies of self that envisage constant transformation and adaptation, improvement can be observed in neoliberal rationality.

CHAPTER 5

CONCLUSION

Data is causing profound changes in knowledge, science, epistemology and everyday practices that the individuals experience. Each science has a data driven subfield and nowadays a large data set is offered to be a solution for every problem one faces. Since we can statistically correlate everything and find hidden determinants, what is the use of philosophy or politics, was considered a valid question by so many.

This study aimed to explore the mode of subjectivity that data brings about through Foucauldian analytics of subjectivity, a tripartite framework, consisting of epistemology, relations of power and ethics. I argue that a new mode of subjectivity, distinct from disciplinary and biopolitical modes of subjectivity has emerged as a result of the data episteme and data politics. Hence, I found that human beings are turned into subjects through data and correlation and the assumed identities are dynamic and open to change in postmodernity. Subjects are defined and they define themselves by the correlations and patterns in data sets that represent normality without normative dichotomies. They are classified by the probabilistic and automated algorithms in the data sets without the formation of causal relations and institutionalized knowledge and are rendered as technical and functional beings. Based on these classifications they are intervened by the technologies of power, and they work on themselves that are technologies of the self, such as confession and narration. I finally argued that neoliberal rationality and data are the primary determinants of this new process of becoming. I traced this new mode of subjectivity in knowledge and relations of power.

In this study the changes in episteme are analyzed genealogically starting from the mid-19th century with statistics and later on cybernetics. Kant had formulated the space and time as a priori intuitions inherent in individuals. However, starting with the statistical mechanics and quantum physics, it is posited that our knowledge is incomplete to the space and indeterminate to the time. Later on with the acknowledgment of chance events by quantum physics, the knowledge and truth was solemnly to be searched through probabilities. Early cyberneticians in that sense claim that the truth can only be found in a number of multiple,

similar universes. To govern in a chaotic world then, the objects of inquiry should be defined, classified and grouped based on the similarities and dissimilarities to the other phenomena in the data sets and they should be modeled. The actions of the similars are statistically analyzed and probabilities are calculated for a given object. Therefore, knowledge is only produced through analysis of measurable outputs of human beings, that are behaviors. This line of understanding can be referred as blackboxism. Similarly, Agamben, Arendt and Heidegger highlight different aspects of this change in epistemology and put forward the death of philosophy and the death of politics as these are normative in nature and necessitate causality.

The regimes of truth, the relations between the object and the knowing subject, is also directly related with the technologies and instruments used to produce knowledge. The principal mode of inquiry, the method to produce truth has changed from examination to correlation. In a probabilistic world, the truth can only be obtained with statistical methods. Hence, it is argued in the study that correlation is the principal method of truth production in data politics. In postmodernity, the questions of how, the processes gained significance over the means to an end. To that end, technic formulated by Heidegger and Foucault provides great insights in this new epistemology. Technical inheres utilitarian revelations of the subjects by themselves, and also abstraction of subjects and their experiences in a calculable way.

The founders of the cybernetics, in their studies conceive the subjects as organisms whose functions can be mathematically modeled. The three studies that were considered as the founding pillars of cybernetics attenuated the communication, logic and behavior and posited a subject that was a blackbox whose inner features were not known and deemed unimportant. Besides, statistical analysis mainly focused on the traits that can be modeled and abstracted, and the inner nature of human beings were considered too complex to be defined mathematically. The behaviors were the units of analysis par excellence as they are observable, abstractable and measurable. Later on, behavioralist view was challenged by the functionalists and Putnam stressed the importance of existing states of the systems. The subjects are considered as systems with existing states that affect their interactions with their environments.

These changes in epistemology brings forward the changes in the modes of power. I argue that data politics, a mode of power statistical in nature, noncausal, future oriented and probabilistic, emerged as a new mode of power in postmodern societies. In order to claim that data politics is a distinctive mode of power the differences between the existing modes of power are discussed. Disciplinary power aims to produce docile, conformant subjects through training, spatial and temporal segregation. It is normative as it segregates and

classifies based on the normative dichotomies. The principal mode of inquiry is examination in disciplinary societies. Biopower on the other hand aims to ensure the health of population. The technologies of biopower are statistical and they aim to manage. It is not concerned with the minutiae of life, and it targets the populations but not individuals. The dissimilarities are ignored, considered as flaws in data in biopower and the individual is considered as a relay to intervene to the public.

In order to consider data politics as a distinctive mode of power, I employed the grid of analysis used by Foucault. In his analyses, he investigates the modes of power through their objectives, their targets, their technologies and their rationalities. Although the analysis carried out by employing the same grid of analysis will be different in nature as data politics is noncausal and doesn't have a predefined objective, it still provides a coherent framework in which the data politics can be analyzed. The target of data politics is the subjects, dividualities and behaviors through emotions, a Deleuzian concept that can be defined as the data that together with other dividualities form the subjects. Data politics doesn't aim to transform individuals as it is highly costly. It aims to target the dividualities and resultant behaviors. The objective is the automated modulation of the subjects and behaviors for various ends. Data politics doesn't have a predefined end. As exemplified by Cambridge Analytica, it aims to automate the subjects so that they can behave in accordance with the given stimuli. The technologies it employs are the behavioral modification techniques through emotions. Finally, it is argued that technologies of power carry neoliberal characteristics.

The discussions on data politics are done on the grounds of the subjectivity it produces. Data politics aim to find the similar, multiple subjects so that it can probabilistically make predictions and ultimately govern. Data politics as a new mode of power affects the subjectivity through technologies of power. By intervening in the digital milieu that the subjects are in, these technologies target behavioral modulation and dividualities through emotions. Finally, I argued that data subjects are dynamic beings who are constantly working on themselves to capture the future possibilities as entrepreneurial selves. To test these theoretical arguments Cambridge Analytica and mobile health applications that diagnose mental illnesses and cognitive disorders are reviewed as case studies.

Bauman notes forgetting as a key aspect of postmodern subjects. They should be able to adapt to changes in a dynamic world, so they are not tied to a space, and they are future oriented. Based on the queries in the models, the subjects can be redefined and regrouped very easily. These subjects are reactionary, acts on the given stimuli and can only be governed

probabilistically. Diagnosis of depression through mobile health applications, identifying digital biomarkers through patterns, and modification of political behaviors through data sets are examples of this new subjectivity.

There has been a growing literature on the analysis of postmodern subjectivity and data. This study also contributed this line of research by genealogical analysis of data politics. I argue that in order to successfully understand the modes of subjectivity, the changes in the episteme, the changes in the power relations and the practices should be investigated. The statistics and cybernetics, as antecedents of data science should be reviewed genealogically. Additionally, the changes in the natural sciences should also be discussed. There are alarming studies showing the effect of data in identity formation and behavioral modification. Some argue the end of democracies while others claim the pervasion of fake news and echo chambers. This study provides a valuable contribution to understand the changes accompanying data politics.

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APPENDICES

A: TURKISH SUMMARY/TÜRKÇE ÖZET

Bu çalışmada gelişen teknoloji çerçevesinde bilgi, iktidar ve öznellik konularında belirleyici bir kavram olarak ortaya çıkan büyük veri ve bu kavramların arasındaki ilişki incelenmiştir. Büyük veri çalışmada, analizi için bilgi teknolojilerine ihtiyaç duyulan, otomatik olarak sentezlenen ve analiz edilen büyük veri grupları olarak tanımlanmıştır. Bu büyük veri gruplarının bilgi yapısını değiştirdiği ve sonucunda iktidar ilişkilerinin de bu değişim neticesinde farklı bir şekilde postmodernite de tezahür ettiği öne sürülmektedir. Bilgi ve iktidarın ise öznelliği belirlediği ve öznellikte farklı bir çerçeve oluşturduğu, bu nedenle büyük verideki değişimlerin öznellik açısından da belirleyici olduğu öne sürülmüştür. Çalışma temel olarak bu değişimleri analiz etmeyi hedeflemiştir. Çalışmanın temel sorusu Foucault'cu bir yaklaşımla, büyük veriye bağlı olarak ve şu zamana kadar eşi görülmemiş kadar çok üretilen bilginin özneleri nasıl etkilediğidir.

Çalışma beş bölümden oluşmaktadır. Birinci bölüm giriş, metodoloji ve temel tanımlara yer vermiştir. İkinci bölümde özne felsefesi incelenmiş, temel olarak iki ayrı akım tespit edilmiştir. Bunlar, bilinç felsefesi ve bilgi, rasyonalite ve mantık felsefesidir. Üçüncü bölümde veri biliminin öncülleri olarak sibernetik ve istatistik bilimi yönetimsellik çerçevesinde değerlendirilmiştir. Dördüncü bölümde ise teorik tartışmalar yapılmış, teorik tartışmaları somutlaştırmak adına vaka çalışmaları incelenmiştir. Bu kapsamda, metot olarak vaka çalışması seçilmiş ve Cambridge Analytica öznelerin iktidar tarafından kimlik edinimini incelemek üzere incelenmiştir. Bunun yanında mobil sağlık uygulamaları öznelerin kendi üzerlerindeki kimlik edinimi süreçlerini incelemek için çalışılmıştır. Çalışmanın verileri raporlar, eski çalışanların ifadeleri ve farklı komisyonlarda verilen ifadelerin dökümünden oluşmaktadır. Sonuç bölümünde ise genel bulgulara yer verilmiştir.

Bu kapsamda ilk olarak özne felsefesi incelenmiş ve çalışmanın teorik çerçevesi ortaya konmuştur. Özne felsefesi Descartes'tan itibaren özne ve nesne ayrımını benimseyen ikircil bir anlayış geliştirmiştir. Buna göre varlığından tek olarak emin olunan özne ve ona içkin olan evrensel rasyonalite çevreyi ve nesneleri anlamlandırmaktadır. Özne felsefesi ya da bilinç felsefesi özneyi tüm ilişkilerin merkezine koyan ve indirgenemez bir yapı olarak

tanımlamıştır. Bu anlayış, öncelikle Hegel ve sonrasında Freud ile eleştirilmiştir. Hegel özneyi iktidar ilişkileri içerisinde efendinin bir yansıması olarak tanımlamış, Freud ise bilinç altı kavramı ile mantığı çerçevesinde nesneleri anlamlandıran özne anlayışını sarsmıştır. Bu noktada Frankfurt Okulu evrensel rasyonalite ve mantığı iktidarın bir unsuru olarak tanımlamış ve mantığın oluşumundaki farklı etkenleri modernite kavramı çerçevesinde incelemiştir. Adorno ve Horkheimer *Aydınlanmanın Diyalektiği'nde* evrensel olması beklenen bu mantığın nasıl bir iktidar enstrümanı haline geldiğini incelemiş ve aydınlanmanın hedefi olan insanları özgürleştirmenin yol açtığı farklı iktidar ilişkileri ortaya konmuştur. Husserl ve daha sonrasında Heidegger *varoluşçuluk* çerçevesinde özneyi çevresi ile ilişkilerini de ele alarak incelemiş ve öznenin sadece çevresi ile birlikte var olabileceği ve çevrenin de özneleri etkileyerek onu şekillendirdiğini öne sürmüştür. Özneyi *dassein* olarak tanımlayan Heidegger, özneyi *dünyada oluş* olarak tanımlamıştır. Habermas, yine modernitede görülen bilinç felsefesini eleştirmiş ve bunun yerine iletişimi ön plana çıkaran bir yaklaşım benimsemiştir. İletişimin mantığı ortaya koyabilecek yegâne unsuru olduğunu söyleyen Habermas bu iletişim süreçlerinde özne ve mantığın şekillendiğini öne sürmüştür.

Kıta Avrupası'nda özellikle de Fransa'da bu süreçle paralel olarak mantık, bilgi ve rasyonalite felsefesi olarak adlandırılan yeni bir akım ortaya çıkmış, Canguilhem, Bachelard ve Foucault özne ve nesne arasındaki ilişkiyi bilme sürecini merkeze alarak incelemiş, düşüncenin eleştirel teorisi olarak adlandırılan bir yaklaşım geliştirmişlerdir. Canguilhem konseptlerin tarihsel olarak değişimini *refleksi* analiz ederken ortaya koymuş, Bachelard ise bilimsel bilginin, üretilmesinde kullanılan enstrümanlarla etkilendiğini öne sürmüştür. Foucault ise bu yaklaşımları bütüncül bir şekilde ele almış ve kapsamlı bir bilgi, rasyonalite ve mantık felsefesi geliştirmiştir. Bu kapsamda, *Akıl Hastalığı ve Psikoloji* ve *Bu Bir Pipo Değildir'de* Foucault bilgideki değişimleri ontolojik olarak incelemiş ve *epistemedeki* değişimleri ve bu değişimlere eşlik eden akıl hastalığının tarihsel olarak farklı unsurlardan etkilendiğini ortaya koymuştur. Bu amaçla, Rönesans, Klasik ve Modern Dönem'de akıl hastalığının farklı şekillerde tanımlandığını, bu değişimlerin tıp bilimi, bilginin üretilmesi yöntemleri ve liberal rasyonaliteden etkilenerek akıl hastalığının farklı yapılara büründüğünü öne sürmüştür. Bunlarla birlikte modern psikiyatrinin doğuşunun hümanizmden daha çok ekonomik ve ahlaki gerekçeleri olduğunu öne süren Foucault, modern psikolojinin dinsel, ahlaksal ve mekânsal kökenlerini ortaya koymuştur. İktidar ilişkilerini ise *Hapishane'nin Doğuşu'nda* incelemiş, öznenin siyasi teknikler ile üretildiğini, bu amaçla öncelikle öznenin diğerlerinden ayrılması gerektiğini, birincil olarak eğitim ile öznenin yeniden bir kimlik inşasına yöneltildiğini ifade etmiştir. Bilgiyi mekânsal ve zamansal olarak inceleyen Foucault, bu kapsamda tarihsel değişimleri analiz ederek günümüzde nedeninin dahi

sorgulamaya gerek olmayan ve hayatın her alanına nüfuz etmiş uygulamaları arkaik bir şekilde analiz etmeye çalışmıştır. Disiplin toplumlarının teknolojisi olan Eğitimin ise gözlem, normalleştirici yargı ve sınav ile şekillendirildiğini, bu unsurların modern iş yerleri de dahil disiplin toplumlarının pek çok kurumunda görülebileceğini örneklerle ortaya koymuştur. Okul, fabrika, hastane gibi modern kurumların kökeninde merkezi bir gözlem, normalleştirici yargı ve sınav bulunmaktadır. Okulda öğrenciler disipline edilmek için öğretmenleri tarafından gözlenmekte, diğerlerinden ayrılmakta, belirlenen okul normlarına uyumlarına göre sınava tabii tutulmaktadırlar. Benzer şekilde iş yerleri çalışanlarını takip edebilmek için her birine ayrı odacıklar oluşturarak performanslarını gözlemler. Bu uygulamalar ayırt edici bir şekilde disiplin iktidarının varlığını göz önüne sermektedir. Foucault analitik çerçeve olarak özneyi *Cinselliğin Tarihi'nde* etik ve öznenin kendi üzerindeki değişimleri gerçekleştirmesi olarak incelemiştir. Bu kapsamda çalışmada özneliğin iki şekilde oluşturulduğu öne sürülmektedir, iktidar ilişkileri ve etik. Öznelik oluşturma süreçleri ise bireylerin kimlik edim süreçleridir. Disiplin toplumlarında bireyler normatif bir şekilde değerlendirilmekte, bireyler hakkındaki gerçekler bu hiyerarşik gözlem ve ayırt edici sınavlar ile üretilmektedir.

Büyük veri grupları istatistik ve bilgi teknolojileri ile üretilmektedir. Hayatımızın her alanına tesir eden uzaktan algılama cihazları bireylerin her anını kaydetmekte, veri olarak soyutlamakta ve bir veri işleme merkezine göndermektedir. İyileştirilmiş süreçler hayatımızın her alanına nüfuz etmiştir. Akıllı saatler, akıllı telefonlar, akıllı yollar, akıllı şehirler, akıllı evler zekalarını veri gruplarına ve istatiksel analize borçludur. Çalışmada veri biliminin öncülleri olarak istatistik ve sibernetik ele alınmıştır. İstatistik, devlet bilimi olarak 19. yy'da ortaya çıkmış ve yönetim alanında oldukça önemli bir etki doğurmuştur. Hacking, istatistik biliminin normallik üretici etkisini incelemiş ve Foucault güvenlik teknolojilerini tarihsel olarak incelerken istatistiği yönetim unsuru olarak ortaya koymuştur. Bu kapsamda disiplin teknolojilerinden farklı olarak güvenlik teknolojileri liberal ekonominin de etkisiyle ekonomik olarak etkin olduğu ekonomistler tarafından ortaya konan toplumları yönetmeyi hedeflemektedir. Toplum ise farklı unsurlara haiz, karmaşık bir yapı olarak ekonominin temel unsurudur. Bu nedenle disiplin teknolojilerinden farklı olarak güvenlik teknolojileri doğrudan müdahale yerine çevresel müdahaleler yaparak toplumu yönetmektedir. Bu yönetim teknolojisinin temelinde ise normallik üreten istatistik bulunmaktadır. Hacking istatistiğin Newton'un belirliliğine uygun olarak bilinmesi mümkün olmayan olayların izahında kullanıldığını ve bu kapsamda şansın yönetilmesinin mümkün olduğunu ifade etmektedir. Newton'un belirlilik prensibi, 19. yy sonlarına doğru öncelikle istatiksel mekanik ve sonrasında kuantum fiziği tarafından reddedilmiştir. Buna göre bir sistemin bileşenleri

olan parçacıkların tam olarak gözlenmesine imkan bulunmamaktadır. Başlangıç pozisyonlarının tam olarak bilinememesi nedeniyle, determinist bir ilişkinin kurulması mümkün değildir. Benzer şekilde kuantum fizikçileri gözlemin gözlenen yapıya bir etki oluşturduğunu bu nedenle objektif gözlemin mümkün olmadığını öne sürmüşlerdir. 20. yy Newton'un belirlilik prensibi aksine kuantum bilinmezliğini getirmiştir. Buna göre şans doğal dünyanın içkin bir parçasıdır. Şansın hayatın içkin bir unsuru olduğunu kabul etmek mekânsal ve zamansal olarak her şeyin bilinmesinin mümkün olmadığını, bununla birlikte olasılık hesaplamalarının hayatın her alanında doğru ve gerçek bilginin üretilmesi için yegane yöntem olduğu sonucunu doğurmaktadır. Bu anlayışın gelişmesinde İkinci Dünya Savaşının da etkileri yadsınamaz.

20. yy'ın ikinci yarısında sibernetik ayrı bir disiplin olarak ortaya çıkmıştır. Savaş yıllarında farklı disiplinlerden pek çok bilim adamının bir araya gelmesiyle disiplinler arası bir yapı olarak ortaya çıkan sibernetik günümüzdeki bilgi teknolojilerinin de öncülü olmuştur. Sibernetik alanında çalışan uzmanlar özneyi ve işlevlerini matematiksel olarak ifade etmeye çalışmışlardır. Bu kapsamda McCullough ve Pitts, nörolojik aktiviteleri nöronları takip ederek formüle etmeye çalışmışlar, ancak geçmişe dönük bir şekilde nöronların takip edilemediğini ortaya koymuşlardır. McCullough ve Pitts sonuç olarak zaman ve mekanın sübjektif bilginin nesnel unsurları olamayacağını, bilgimizin mekânsal olarak yetersiz, zamansal olarak ise belirsiz olduğunu ortaya koymuşlardır. Rosenblueth vd., davranışları matematiksel olarak modellemek için yaptıkları çalışmada, insan davranışlarının ereklerine göre izah edilemeyeceğini, çok farklı unsurdan etkilenerek nihai halini aldığını iddia etmişlerdir. Buna göre illiyet bağının kurulması için öznenin tüm karar alma süreçlerinin bilinmesinin yanında çevresiyle etkileşimleri de eksiksiz bir şekilde takip edilmelidir. Bu ise mümkün olamayacağından özne ve davranışları arasında amaçları da göz önünde bulundurarak bir yaklaşım geliştirilmelidir. Sibernetik anlayış zaman ve mekandan bağımsız, matematiksel olarak ifade edilebilen, edilemediği hususların ise göz ardı edilerek ihmal edilmesini öngören bir bilgi felsefesi üretmiştir. Bunun yanında doğal olaylara içkin olan şans olaylarının ise sadece istatistiksel olarak korelasyon ile yönetilebileceğini varsaymıştır. Modern bilgisayar işlemcilerinin mimarı John Von Neumann doğrunun sadece nesnel olasılık analizi ile üretilebileceğini bu nedenle olasılık için geçmiş vaka kayıtlarının öneminden bahsetmektedir. Norbert Wiener, sibernetik biliminin kurucusu, bu kapsamda sibernetik bilginin sadece benzer evrenlerin istatiksel korelasyonu ile üretilebileceğini iddia etmiştir. Güvenlik teknolojileri ve sibernetik anlayış arasındaki benzerlikler görülebilmektedir. Bu nedenle, sibernetik ve bu teknolojiler arasındaki farklılıkların da ortaya konması önem arz etmektedir. Buna göre güvenlik teknolojilerinin hedefinde

toplumun yönetilmesi, özellikle sağlık alanında sağlığın kontrol edilmesi bulunmaktadır. Sibernetik ise bireyleri hedef alarak istatistiksel hesaplamaları bireylerin gelecek davranışlarını öngörebilmek adına gerçekleştirmektedir. Güvenlik teknolojilerinde istatistiksel hesaplama normalliği üretebilmek adına küçük farklılıkları istatistiksel anomali olarak değerlendirip göz ardı ederken sibernetik bireyselleştirmeyi tam yapabilmek adına bu küçük farklılıkları tüm modellemeleri içine almaktadır. Bunlara ek olarak güvenlik teknolojileri eşyaya ait olan her şeyin bilinememesini temeline koyarken, sibernetik bunları bilmenin imkansızlığından bahsetmektedir. Bu nedenle güvenlik teknolojileri ve istatistik sibernetikten farklı olarak olasılıksal hesaplamalar yerine bilinmeyenin anlaşılması ve yönetilmesini hedeflemektedir. Sibernetik ise bu hesaplamaların en yüksek olasılığı üretmesini amaçlamaktadır. Bu nedenle, sibernetik yönetimin belirsizlik ilkesine içkin olarak hareket ettiği sonucuna ulaşılmaktadır.

İstatistik ve sibernetiğin devamında 20. yy sonlarına doğru ayrı bir disiplin olarak veri bilimi ortaya çıkmıştır. Bu disiplin, bilişim teknolojilerinin istatistiksel hesaplamalarda etkin rol oynadığı, veri kaynak ve modellemelerin ekstra önem kazandığı ve yine istatistik ve bilişim teknolojilerine bağlı ayrı bir disiplin olarak ele alınmaya başlamış, günümüze kadar da artan bir ivmeyle gelişmeye devam etmiştir. Günümüzde her disiplin altında veri işleme ve analizi ile ilgilenen alt disiplinler üretilmiş ve veri analizi tüm sorunlara cevap olarak sunulmaya başlamıştır. Büyük veriye dayanan olasılık analizleri iş dünyasından ekonomik analizlere, sosyolojiden psikolojiye kadar tüm disiplinlerde etkin bir rol oynamaya başlamıştır. Bu kapsamda, veri biliminin öznelliğe olan etkisini incelemek adına bilgi ve epistemoloji, iktidar ilişkileri ve etiğin büyük veri ile nasıl değiştiğini analiz etmek gerekmektedir.

Bilginin üretimi sorgulama yöntemleri, zaman ve mekândan bağımsızlık yönlerinden modern epistemolojiden farklılıklar göstermektedir. Bunların yanında çalışmada postmodern epistemolojinin matematiksel ve fonksiyonel bir anlayış getirdiği, Foucault'nun analizleri çerçevesinde sosyal bilimlerin de matematik ile izah edildiğini göstermektedir. Bu anlayış öznelerin de kendilerini bir hedef doğrultusunda matematiksel olarak soyutlamalarını ve bu şekilde kendilerini veri olarak aktarılmaya uygun bir şekilde sunmalarını gerektirmektedir. Davranışlar öznelerin bu şekilde kendilerini matematiksel olarak sunmaları için en uygun nesnelerdir. Ancak çalışmada Putnam'ın fonksiyonel yaklaşımı daha uygun bir çerçeve olarak kabul edilmiştir. Putnam'a göre öznelerin mevcut durumları da olasılık hesaplamalarına dahil edilmelidir. Ancak bu nedensellik dışında tanımsal bir dahil edilmeye ihtiyaç duymaktadır. Buna göre olasılık hesaplamaları Bayesian ya da sübjektif hesaplamalarla daha doğru bir sonuç sunacaktır. Modern dönemde bilgi bireyi diğerlerinden ayırarak, özel mekanlarda uzmanlarca inceleme sonucunda üretilmekteydi. Doktorlar

hastalarını muayene odalarına alarak onları muayene etmekte, buna göre hastalıkları teşhis etmekteydi. Ancak büyük veri sayesinde hastalıkların günümüzde teşhisi farklı şekillerde olabilmektedir. Mobil sağlık uygulamalarında görüleceği üzere bireyleri diğerlerinden ayırmadan gözlem yapılmakta, bu gözlem ise istatistiksel modellemelerde örüntülerle ele alınmaktadır.

Bilgideki değişimlerin, Foucault'cu bir yaklaşımla, iktidar ilişkilerini de değiştireceği varsayılmaktadır. Buna göre yeni bir iktidar türü, data politik ortaya çıkmıştır. Data politik, olasılıklara dayalı matematiksel ve geleceğe dönük bir iktidar türü olarak çalışmada ele alınmıştır. Foucault iktidar ilişkilerini hedef, amaç, teknikler ve eşlik eden makro rasyonaliteler olarak incelemiştir. Aynı analitik çerçeve data politik tanımlamasında kullanılmış, buna göre data politiğin temel amacının öznelerin davranışlarını tutumlar ile beraber otomatik bir şekilde yönetilmesi, hedefinin tutumlar ve davranışlar olduğu, teknolojilerinin davranışsal teknikler olduğu ve rasyonalitesinin ise neoliberalizm ile izah edilebileceği savunulmuştur. Yeni bir iktidar türü olarak data politiğin ortaya çıkışı benzer güncel çalışmalarla karşılaştırılmış, bunların arasındaki farklılıklar ortaya konmuştur. Colin Koopman yeni iktidar türünü bilgisel iktidar olarak tanımlamış ve veri toplama yöntemlerinin bir kalıp oluşturarak öznelerin bu kalıpları kendilerinde de oluşturduğundan bahsetmiştir. Harcourt, öznelerin kendileri hakkındaki bilgileri isteyerek sunmasından hareketle teşhir iktidarı kavramını ortaya atmıştır. Yeni bir iktidar türü olarak araçsal iktidar kavramını ortaya koyan Zuboff ise oldukça geniş ve derinlemesine bir çalışma gerçekleştirerek gözlem kapitalizmi ve bu amaçla gerçekleştirilen araçsal iktidar kavramını geliştirmiştir. Teknoloji devlerinin uygulamalarını temel alarak inceleyen Zuboff, ekonomik ilişkilerin yeni iktidar türünde belirleyici olduğunu ileri sürmüştür. Ancak Zuboff yeni iktidar türünün temelinde davranışsal gözlemin yer aldığını iddia etmektedir. Bu çalışmada ise bireylerin de mevcut durumunun olasılıksal hesaplamalarda dahil edilmesinin daha doğru sonuçlar üreteceği düşünülmüştür. Bununla birlikte, yeni iktidar türünün farklı bir analitik çerçevede değerlendirilmesinin daha doğru bir sonuç doğuracağı varsayılmıştır. Teorik çerçevenin test edilebilmesi için vaka olarak Cambridge Analytica ve mobil sağlık uygulamaları analiz edilmiştir.

Cambridge Analytica yarı askeri bir strateji enstitüsü olarak Birleşik Krallık'ta faaliyet gösteren bir şirket iken 2016 yılında ABD Başkanlık Seçimleri için tutulmuş ve bu amaçla dijital kampanyalar düzenlemiştir. Şirketin çalışmaları eski çalışanlardan Christopher Wylie tarafından ifşa edilmiş ve dünya çapında tepkilere neden olmuştur. Wylie'ye göre şirket Facebook ve çeşitli veri bankalarından topladığı verilerle seçmen davranışlarına etki etmiş bunun için dezenformasyon tekniklerini kullanarak manipülasyonlar gerçekleştirmiştir.

Şirket ilk olarak seçim kampanyasında çalışmaya başladığında öncelikle istatistiksel korelasyonları gerçekleştirebilmek adına model kurabilecekleri veri toplama işine girişmiş bu amaçla Alexander Kogan ve Cambridge Psikometri Merkezi'nin daha önceden toplamış olduğu Facebook verilerini modellemiştir. Bu veriler farklı şirketler tarafından üretilen ve satılan diğer veri setleri ile zenginleştirilmiş ve seçmenler kişilik türlerine göre sınıflandırılmıştır. Bu sınıflandırma tamamen veri setleri üzerinden online olarak algoritmalar vasıtasıyla benzerlik ve farklılıklar üzerine kurgulanmış, benzerlik ve farklılıklar ise Facebook üzerindeki beğenilen sayfalar vasıtasıyla gerçekleştirilmiştir. Kişilik tipleri ve beğeniler arasında tamamen korelasyon kurulmuş, nedensellik incelenmemiştir. Örneğin kamp sayfasını beğenenlerin daha açık görüşlü oldukları varsayılırken, Star Wars filmlerinin beğenenlerin daha kapalı olduğu, komplo teorilerini takip edenlerin ise nevrotik kişilik türüne daha yatkın oldukları ortaya çıkmıştır.

Kişiselleştirilmiş mesajlar kişilik türlerine göre kurgulanmış ve sonrasında farklı gruplar üzerinde test edilmiştir. Bu test sürecinde elde edilen geribildirime göre mesajlar en etkili olacak şekilde tekrar kurgulanmış ve sanal ortamda seçmenlere sunulmuştur. Bu süreç de yine algoritmalar vasıtasıyla otomatik olarak kurgulanmış ve sürekli olarak geribildirimler vasıtasıyla kendini yineleyen bir sistem oluşturmuştur. Cambridge Analytica temel olarak duyguları hedef alarak davranışların değiştirilmesini hedeflemiş, bununla birlikte özneleri de hedef almıştır. Wylie, kampanyanın amacının sadece siyasi davranışı değiştirmek değil, toplum kültürünün daha muhafazakâr bir yapıya büründürülmesini hedeflediklerini söylemiştir. Duyguların hedef alındığı bir kampanyada doğal olarak seçilen hedef ise duygu tutarsızlığı olarak ifade edilen nevrotiklerdir. Bununla birlikte kara üçgen olarak adlandırılan psikopati, narsisizm ve Makyavelizm'i olanlar özelde hedef alınmış ve bu kişiler korku ve endişe yaratacak içeriklerle sürekli beslenmişlerdir. Wylie insanların büyük vakit geçirdiği sosyal ağların da bu sürece katkı sağladığını ifade etmiştir. Yukarıda da bahsedildiği üzere, veri bilimi bireysel benzerlikler ve farklılıklar üzerinden özneleri sınıflandırmakta ve bu sınıflandırmalar doğrultusunda öznelere müdahale etmektedir. Genel toplumdan farklı olarak veri modellerinde bireyleri ayıran her uygulama daha keskin sonuçlar oluşturmaktadır. Örneğin Facebook kullanıcılarının sadece küçük bir bölümü dünyanın düzlüğünü savunuyorsa, bu algoritmalar tarafından bu bireyleri tanımlamak için etkin bir şekilde kullanılır. Burada da benzer bir sürecin yürütüldüğü görülmektedir. Sosyal medya şirketlerinin algoritmaları kullanıcıların beğenebileceğini düşündüğü içerikleri kullanıcılar sunarak platformlarda geçirilen süreyi arttırmayı hedeflemektedir. Otomatik olarak yürütülen bu süreçler, Cambridge Analytica tarafından hazırlanan içeriklerin kullanıcılar tarafından

beğenilmesi ise kartopu etkisi yaratarak, şirketin çekilmesi halinde dahi kendi kendisini sürdürebilecek bir sistem oluşturmaktadır.

Mobil sağlık uygulamaları ise yine benzer şekilde istatistiksel olarak kullanıcıların ekran ara yüzleri üzerinde gerçekleştirilen hareketleri temel alarak model oluşturmaktadır. Buna göre, ekranı kaydırma hareketleri, ekrana dokunma hareketleri akıl sağlığı konusunda belirleyici olabilmektedir. Cambridge Analytica örneğinde olduğu üzere mobil sağlık uygulamalarında da ilk modelleme oluşturulduktan sonra genel veri setleri oluşturulmakta ve bu veri setleri ile bireysel veriler istatistiksel olarak karşılaştırılmakta ve bireylerin akıl sağlıkları olasılıksal olarak hesaplanmaktadır. Bu tanımlamalar kesin olmayıp, veri seti genişledikçe, bireyler hakkında daha fazla veri toplandıkça güncellenmekte ve yenilenmektedir. Mobil sağlık uygulamaları kullanıcılarını akıl sağlığı konusunda puanlayıp, önerilen adımlar takip edildiğinde bu puanlamaları değiştirerek kullanıcıları davranışsal olarak değiştirmeyi hedeflemektedir. Kullanıcılar sadece telefon ekranlarını kullanma örgüleriyle tanımlanmakta ve akıl sağlığı konusunda ayrıştırılmaktadır. Uygulamalar sadece pasif değil aktif olarak da kullanıcılara hizmet sunmaktadır. Algoritmalar stres seviyesinin yükseldiğini öngördüğünde, ya da genel kullanım örgüsüne uymayan hareketler algılandığında kullanıcılara mesaj göndererek stres azaltma teknikleri önermekte ya da kullanıcıların doğrudan bir danışmanla görüşmesine imkan sağlamaktadır. Çalışmada bu sürecin öznelerin kendi kendilerini oluşturma sürecinin bir örneği olduğu savunulmuştur. Öznelere dışarıdan bir müdahale söz konusu olmayıp, akıl sağlığı konusunda modellemeler vasıtasıyla üretilen teşhisin doğruluğunu kabul etmeleri ve buna uygun olarak önerilen değişimleri gerçekleştirilmeleri beklenmektedir. Neoliberalizm risklerin bireyler tarafından yüklenildiği bir anlayış geliştirmiş olup mobil sağlık uygulamaları da bu anlayışın bir örneği olarak incelenmiştir. Özneler kendi akıl sağlıklarını takip etmekle yükümlüdür, bu nedenle bu tür mobil sağlık uygulamaları sosyal güvenlik sistemi içerisine dahil edilmiş, bireylerin korelasyon vasıtasıyla teşhislerine uygun önlemleri alması beklenmiştir. Mobil sağlık uygulamaları da davranışların değiştirilmesiyle bireylerin daha sağlıklı olacağı öngörüsünden hareket etmiştir.

Tüm bu süreçlerde geribildirim de önemli bir kavram olarak ortaya çıkmıştır. Öznelerin çevreleriyle etkileşimleri uzaktan algılama vasıtasıyla sürekli olarak takip edilmekte ve kayıt altına alınmaktadır. Cambridge Analytica örneğinde kullanıcıların kendilerine sunulan içeriğe tıklayıp okumaları, okuma süreleri, buradan hangi içeriğe geçtikleri gibi pek çok metrik toplanarak sistem sürekli olarak güncellenmektedir. Mobil sağlık uygulamaları da kullanıcıların kendilerine önerilen uygulamaları gerçekleştirme oranına göre kullanıcılara

atanan sağlık puanını sürekli olarak güncellemekte ve bu geribildirimler sayesinde terapötik önerilerini güncellemektedir.

Foucault öznelerin kimlik edinme süreçlerini özneleştirme süreçleri olarak tanımlamakta ve bunu öznelerin hem kendi içlerinde hem de başkalarından ayrılarak üretilen bilgi ve doğrular vasıtasıyla kimlik edinme işlemlerini gerçekleştirmesi olarak tanımlamaktadır. Buna göre; büyük veri grupları özneleri istatistiksel olarak tanımlamakta ve bilgi üretmektedir. Doğrular algoritmalar vasıtasıyla üretilmekte, bu otomatik prosedürler sonrasında özneler ayrıştırılmaktadır. Özneler tanımlanırken sadece ayırt edilebilecek veri hareketlerine bakılarak, nedensellikten uzaklaşılmakta, benzerlik ve farklılıklar sürekli güncellenmektedir. Öznelere iktidar ilişkileri tarafından müdahale, çevresel olarak yapılmakta, temel olarak davranışlar hedeflenmektedir. Bu yaklaşım neoliberal anlayışla da uyumludur. Neoliberalizm temele rekabetçi market ekonomisini alarak sürekli yenilenen, değişen ve gelişen özneler tahayyül etmektedir. Öznelerin de sermayeleştirilmesi öznelerin doğrudan müdahaleye maruz bırakılmaması anlamına gelmekte ve sadece çevresel müdahaleleri mümkün kılmaktadır. Öznelerin kalıcı olmayan değişken ve adaptif kimlikleri neoliberal politikalarla da uyumludur. Bu kapsamda, liberal iktidar teknolojileri hem biyoiktidar hem de kısmen disipliner iktidarda görülmekteyken, data politik neoliberal rasyonalite ile beraber şekillenen yeni bir iktidar türüdür.

Sonuç olarak çalışmada büyük verinin bilgi ve iktidar ilişkilerini değiştirdiği ve özneleştirme süreçlerinin de büyük veri ile farklı bir yapıya büründüğü ortaya konmuştur. Data politik büyük veri ve bilgi etkileşimden ortaya çıkan iktidar türü olarak tanımlanmış, teorik tartışmalar vaka analizleri çerçevesinde değerlendirilmiştir. Buna göre, yeni öznellik süreci neoliberal politikalarla da uyumlu olacak şekilde, istatistiksel olarak hesaplanan, nedensellik bağı kurmayan, dinamik ve değişken özneleri korelasyon ile oluşturmaktadır.

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