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Algorithmic **Power** And The **Politics** Of **Artificial Intelligence**

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Abstract

Artificial Intelligence (AI) matters to people, the planet, and profit. AI is revolutionizing machines, institutions, and entire cultural systems not only in their efficiency and productivity but also in their embodiment of command and control. This dissertation investigates the breadth of AI in generating new modes of *Algorithmic Power*. The objective is to examine AI algorithms beyond their technical manifestations as computer programs and robots. To pay attention instead to their role as the latest architects of power and politics.

The central inquiry unfolds in three stages: 1. Delineating the birth of modern AI inside Google and Facebook. 2. Tracing the evolution of AI in China. 3. Assessing the influence of AI on the global political order. Throughout this undertaking, Michel Foucault's social constructivist conception of power serves as the theoretical framework on which the analysis builds.

This paper does not conduct a cost-benefit analysis of AI, nor does it condemn the use of intelligent algorithms. Rather, it sets to examine the power dynamics that emerge from our growing reliance on these sophisticated technical entities.

The thesis concludes that Artificial Intelligence generates distinctive modes of *Algorithmic Power* that support social control mechanisms and gravitate the political pendulum towards *Digital Authoritarianism*; a model of government championed by the Chinese Communist Party.

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1. Introduction

When looms weave by themselves, man's slavery shall end, professed the Aristotelian epoch.

Almost two thousand years later, AI algorithms conduct 70% of all global financial transactions (Helbing et al., 2017), arrange and recommend content, drive cars, answer our questions, and help us navigate the world. Artificial Intelligence is the most recent force capable of altering the path of humanity, washing away old certainties, and replacing them with new ones. *“To apprehend this metamorphosis it is necessary to explore the new beginnings, to focus on what is emerging from the old, and seek to grasp future structures and norms in the turmoil of the present”* (Beck, 2016; cited in Elliott, 2021, p. 176).

That is precisely the goal of this paper; looking beyond the digital objects and technical systems, seeking to understand the social consequences of the development and use of AI technologies, and questioning how they transform human interactions with politics, power, and government. This inquiry aims to fill a gap in International Relations(IR) studies identified by Barnett & Duvall (2005). The authors argue that IR theories tend to characterize nation-states as the sole practitioner of power, often failing to account for global outcomes that emerge from the interaction between various modes of power that enable or constrain all sorts of non-state actors in pursuing their objectives.

Artificial Intelligence is one such global force. Taking their critiques into consideration, this paper embraces a bottom-up approach by first examining the roots of Artificial Intelligence in Silicon Valley, and subsequently, investigating the role of AI in amplifying centralized control in China. These two sections focus on the economic and political motivations that drag AI algorithms into existence and the ramifications of introducing such algorithms into social practices. A third section then concentrates on the global implications of Algorithmic Power and its significance for international relations. To map out the architectural organization of such contemporary power relations, the social

constructivist understanding of power offered by Michel Foucault¹ is adopted as the theoretical framework for this paper.

Ultimately this paper argues that Artificial Intelligence provides unique material and ideational grounds for transforming long-standing social, political, and economic arrangements, thus propelling us to re-imagine the global order and interstate relations, as well as other aspects of life. In the West, algorithmic power enables tech multinationals such as Google and Facebook to predict and formulate the behavior of millions of people to maintain their economic edge. In the East, similar technologies and methods facilitate the exercise of disciplinary power and social control; empowering the Chinese Communist Party to maintain a political edge. Therefore, it appears that the AI revolution generates clandestine modes of *Algorithmic Power* from which authoritarian regimes benefit. Hence, we witness the rise of digital authoritarianism as a serious contender to the conventional liberal democratic order.

¹ Famed 20th-century French philosopher, historian of ideas, writer, political activist, and literary critic. Most notably known for his lifelong focus on studying power relations.

2. Background

2.1. Intelligent Algorithms & Big Data

A. The Algorithm

The recent algorithmic ballyhoo is the result of decades of developments in computer sciences, information technology, and the datafication of all aspects of life. But what exactly is an algorithm?

Imagine an algorithm as a set of explicit instructions executed step-by-step to achieve a particular objective. As a simple example, consider the process of cooking, where the ingredients serve as the input, the cook follows a recipe, which constitutes the algorithm, in a step-by-step manner, and the resultant dish is the output. With this characterization, it becomes evident that an *algorithmic approach* to organizing various aspects of life predates the advent of digital computers and data processing.

Approximately ten thousand years ago, agricultural communities began to settle down and domesticate plants and animals. As populations expanded and societal difficulties elevated, more sophisticated techniques for agriculture, hunting, trade, construction, and day-to-day living became imperative. Hence, plans, procedures, and methodologies became crucial in shaping human progress, further exacerbating complexity. This complexity, in turn, gave rise to large-scale systems, infrastructures, and organizations, such as government institutions and multinational corporations, which required efficient management. And it is in a bid for more efficient management of such elaborate systems of living that in the latter half of the 20th-century digital revolution gives birth to computers and intelligent algorithms begin to emerge from the clouds. Thus, one can describe AI as the most recent attempt in a long-standing quest for mastering the art of doing life.

The vision for automation is also historical. Our ancestors have tried to automate looms that weave by themselves and water mills that generate power automatically. Along this path, brilliant minds such as Norbert Wiener (1948) have continually wondered if all systems, alive

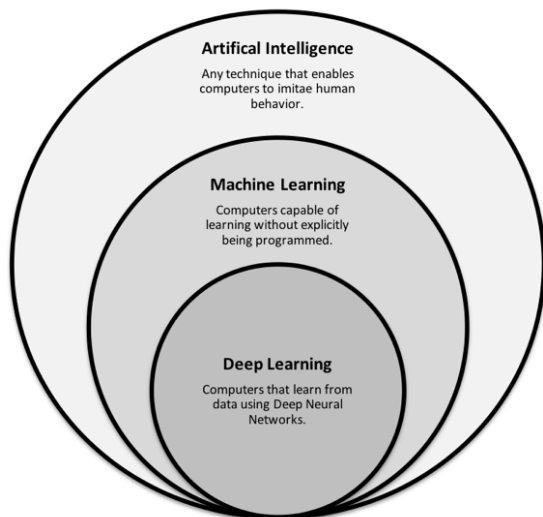
and artificial, could be automated. In his seminal book, *Cybernetics: Or Control and Communication in the Animal and the Machine*, he hypothesized that intelligent behavior could emerge, be controlled, and progress via constant feedback mechanisms (Mathias, 2021).

Soon after, Alan Turing (1950), widely regarded as the father of Artificial Intelligence, in his seminal article introducing the renowned Turing test, posed the question: "*Can machines think?*", and contended that there was no persuasive evidence to suggest that machines could not think intelligently, and proposed various methodologies to enhance the intelligence of machines.

A decade later, using a similar logic, Arthur Samuel proved that computers could self-learn and not necessarily be externally programmed. He successfully illustrated this through an automated checkers' player that paved the way for the field of *Machine Learning (ML)* —the driving force behind the current spring of AI.

The most advanced and more recent subfields of ML, namely *Reinforcement Learning*, and *Deep Learning* follow a similar logic but employ alternative techniques and methods in data training and output generation (Future Today Institute, 2021).

Figure 1
Subfields of Artificial Intelligence.



Today, Artificial Intelligence is a flourishing branch of computer science inside which human engineers develop complex programs that closely imitate humans. These artifacts are capable of learning, logical reasoning, problem-solving, predicting, exercising creativity, sensing, making autonomous decisions, and interacting with the environment (Future Today Institute., 2021).

But what constitutes ‘Artificial’ or man-made Intelligence? To distinguish human intelligence from the rest of the animals we often use particular characteristics. Following the same logic, as described by Alonso (2014), to qualify as intelligent, computer programs must possess the following three merits:

- I. **Autonomy:** take independent decisions; sensing, analyzing, and responding to the environment they operate in.
- II. **Adaptability:** transform independent observations into an experience and learn from the environment in which they operate; through trial-and-error, exploration, pattern recognition, and reinforcement learning.
- III. **Sociality:** recognize, cooperate, and organize with other, human and non-human agents.

Contemporary AI programs can manage supply chains, recommend products, assist decision-making, create models, write content, translate, design, and oversee financial systems. AI can also automate the process of drug discovery, enhance cancer prognosis, and study disease trends (Future Today Institute, 2021). Governments can use it for surveillance and militaries for autonomous weapons (Bloomfield & Vurdubakis, 2015). It is crucial to note that AI is not a single piece of technology. Instead, it’s an entire field that applies algorithms to large sums of digital data to optimize for a specific goal —ranging from identifying a face, driving a car, destroying a target, or recommending YouTube videos.

Consider Youtube for a moment longer. On the surface, Youtube is an online platform that provides access to an unlimited selection of

videos. Hidden deep inside the magic of the "*Youtube algorithm*" is a vast network of search and recommendation systems. A web of intricate AI algorithms that constantly train and learn from interacting with users. Your search history; what kind of videos you click on; how long you keep watching a video; your likes and comments are some of the details on which Youtube's algorithms train, learn, and develop.

Most notably, AI algorithms make Youtube flexible and lively. Unlike conventional mediums such as Radio and TV, Youtube interacts with its watchers and remembers their habits. It learns from their behavior and shapes their experience on the platform. The core functions of the algorithms, such as ranking and recommending videos, are indeed fixed and determined by the programmers, yet, the outcome of their interaction with each individual varies, and so the overall arrangement of the platform is constantly shifting and evolving. Youtube is one example of dynamic ecosystems hinged on the interaction between AI and humans. Later in the course of this investigation, more such examples will be discussed.

There is ongoing debate as to whether Artificial Intelligence can be classified as a General-Purpose Technology (GPT)² akin to electricity, or if it belongs to a category of technology that is distinct from those with which we are familiar. Perhaps Thomas Edison's description of electricity rings true for AI as well: "*It is a field of fields ... it holds the secrets which will reorganize the life of the world*"(cited in Schmidt et al., 2021, p. page2). A detailed examination of the technical operation of AI algorithms is beyond the scope of this study. Therefore, the reader could explore works such as the "*Anatomy of an AI System*" by Kate Crawford.³

In all of these applications, data is an essential component that is technically inseparable from the workings of intelligent algorithms. In other words, the fire of AI is kept alive by the availability of Big Data, the importance of which the next subsection briefly underlines.

B. The Role of Big Data

To identify various objects and work with different concepts, machines —similar to growing infants— go through a learning process. A common practice for creating a computer vision system⁴, for instance, is to gather millions of images from the internet, classify them, and use them as a *training dataset*. These gigantic collections of data constitute the foundation, the *ground truth*, for how the system will perceive reality. Hence, the training dataset shapes the limits of what a particular AI model can *see* and how it interprets the real world (Crawford, 2021, p.98).

In recent years, various research groups have experimented with different statistical methods and technical procedures to improve how machines learn from data. One consistent finding from these studies is the positive correlation between the size of the dataset and the optimization of machine learning performance (Crawford, 2021, p.99). In other words, the machines are data-hungry, and fortunate enough, the spring of AI coincides with the availability of Big Data.

Every day we produce unimaginable amounts of data. We chat, email, scroll, post, like, and sweat data as we leave behind a trail of information on the internet; a digital footprint. Our actions, decisions, preferences, movements, and relationships are monitored and stored by various websites, platforms, and governmental institutions. In a recent book titled *Tools and Weapon*, the CEO of Microsoft, presents this phenomenon as such:

A century ago, automobiles, airplanes, and many trains ran on oil. Today, every aspect of human life is fueled by data. When it comes to modern civilization, data is more like the air we breathe than the oil we burn. People deposit their money in banks, and they store their most personal

² Technologies that can hold the potential to drastically disrupt every facet of societies. Other examples include electricity, computers and the internet.

³ See: <https://anatomyof.ai/>

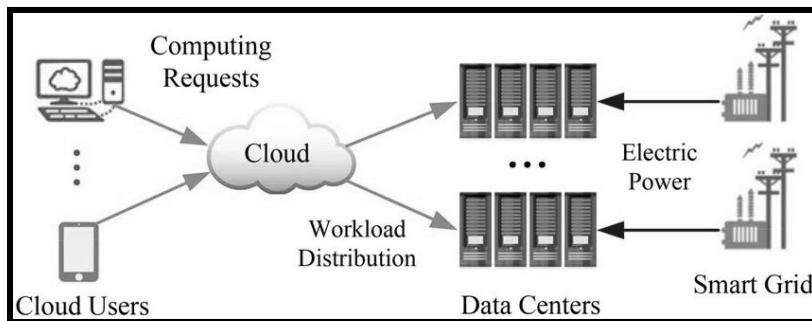
⁴ Computer vision is a field of artificial intelligence enabling computers to derive information from images, videos and other inputs. (www.ibm.com)

information—emails, photos, documents, and text messages—with tech companies. Even when trade slows or economies falter, data continues to grow at a steady pace. With AI, we’re doing more with data than ever before (Smith & Browne, 2021, p. 14-15).

Not so long ago, universities, government offices, and businesses would all have separate data centers; some still do. But, as the complexity and cost of collecting, storing, and processing big amounts of data amplified, tech industrialists spotted the opportunity in offering their storage and computing capacity for rent; hence the *digital clouds* were formed, resembling a new mode of digital feudalism. Clouds are essentially physical servers warehoused in gigantic data centers such as the mega facilities owned by Microsoft, Google, Alibaba, Facebook, or Amazon. These servers are accessible at all times over the Internet from anywhere.

Figure 2

Smart grid and data center interaction.



Big Data then, refers to the overwhelming amount of data that is generated all around us and stored seamlessly. A magnitude of data that has surpassed the processing capacity of conventional algorithms and techniques. AI algorithms, on the other hand, embrace all of this data. Consequently, the proliferation of Big Data has propelled the integration

of AI applications into all domains of life with such subtlety that their presence often goes unnoticed.

The significance of this partnership will frequently resurface throughout this paper. Yet, before diving into the analysis, let us examine the role of technology in relation to power and politics by reviewing existing literature.

2.2. Technology — Politics — Power

“Technology matters. Bicycles were instrumental in the political and social emancipation of women; photo and film technology induced a subtle form of apartheid; nuclear arms and energy shaped, for example through the non-proliferation treaty, international relations since the 1950s”(Bijker, 2006, p.1). However, prominent theories of IR tend not to conceptualize technology as an independent object of inquiry (Fritsch, 2011). Besides a handful of models, technology is often pacified into IR discourse, for instance, as a feature of the hard power of nation-states.

This paper supposes that AI & Big Data have a more profound relationship with politics, power, and International Relations. Hence, drawing insight from other disciplines of social sciences that grant technology a more central role inside their theoretical frameworks. The upcoming sections of this literature review present such studies and theories while trying to answer the following three questions: A. How can we characterize technological developments in the course of human evolution? B. What is the role of AI and its relationship to authoritarianism in this process? C. How can we conceptualize power in its various modes and formats?

A. To Conceptualize Technology

Plato, in his book Republic written in 375 BC, argues that “large sailing vessels by their very nature need to be steered with a firm hand, sailors must yield to their captain's commands.” Plato goes on to assert

that *"much the same conditions that require central rule and decisive action in organized technical activity also create this need in government."* (Winner, 1980, p.129).

In 1958 when studying the variance in production systems in British manufacturing firms, Joan Woodward claims that *"different technologies imposed different kinds of demands on individuals and organizations and that these demands had to be met through an appropriate organization form"* (cited in Leonardi & Barley, 2010, p.1-51). In the 19th century, when analyzing the necessary operating conditions for factories, railways, and ships at sea, Frederick Engels drew parallel conclusions. For things to run *"according to plans"*, he asserts, it is required that the workers must be subordinated to an *"imperious authority"* (Winner, 1980).

Such historical premises conscripted the blueprints of the reductionist theory of **Technological Determinism**. Essentially, suggesting that technology has the power to determine the evolution of social structures, institutions, and cultural values. Hence, technology is identified as a central agent of social change, resting on the assumption that *"technologies have an autonomous functional logic that can be explained without reference to society"* (Feenberg, 1992; cited in Leonardi & Barley, 2010, p.1-51).

In opposition stand the advocates of the **Social Determination of technology**, who highlight the users of technology and social context as determinants of technological change (Pinch & Bijker, 1948). As devotees of the *Social Constructivists movement*, scholars in this camp argue that *"social dynamics shaped the adoption, implementation, use, and meaning of technology"* and that *"identical technologies could trigger different dynamics and outcomes in varying contexts"* (Barley, 1986; Fulk, Steinfield, Schmitz, & Power, 1987; Rice, 1987; Zuboff, 1988; cited in Leonardi & Barley, 2010, p.1-51). In other words: *"what matters is not the technology itself, but the social or economic context in which it is embedded"* (Winner, 1980). For instance, in 1989 Susana Douglas uncovered how General Electric and the U.S. Navy had pivotal roles in the evolution of radio and communication inside American

culture. Her work also tracks how the use of radio shifted from point-to-point transmission to broadcasting with the help of radio amateurs and later towards mass entertainment with the help of the press.

In his masterful 1980 article —*Do Artifacts Have Politics?*— Langdon Winner rejects the idea that *"technology develops as the sole result of an internal dynamic, and then, unmediated by other influences, molds society to fit its patterns"*; he calls this *"naïve technological determinism."* Yet he also hopes not to *"immutably reduce everything to the interplay of social forces"*. Through his **Theory Of Technological Politics**, he offers a middle ground through the following categorization:

1. Technological Arrangement As Forms Of Order

This involves scenarios in which the invention, design, or arrangement of specific technologies evolves biased in a particular direction. An example noted by Winner are the low hanging overpasses, in Long Island, New York, designed intentionally so by Robert Moses in pursuit of a desired social outcome; that is keeping the lower classes, the poor, and the colored—who happened to use tall public transport buses—out of these roads.

Many technologies in this category, including many existing AI algorithms, are flexible in design and arrangement, and variable in their effects. *"One can easily imagine how a roughly similar device or system might have been built or situated with very much different political consequences."*

2. Inherently Political Technologies

Are technical systems, the adoption of which inevitably impose conditions on human relationships that require a specific political organization, such as centralized or decentralized, egalitarian or inegalitarian, repressive or liberating. Choosing such technologies means choosing a specific form of political life. This category can further be divided into two: the traditional technological determinist view; such as factories and ships described by Engels and Plato. And technologies that are compatible with a specific type of political relationship but do not

necessarily depend on it, like solar energy. Solar power does not require centralized planning and governance, and anyone who can afford a panel can access it. It does not demand democracy, nor does it entirely avoid autocracy, but it is decentralizing in a technical sense.

There remains room for concern with Technological Determinism. In the name of technological progress, economic growth, or security, deterministic discourse can transform Artificial Intelligence and Big Data into an ideology, a tool in the hands of governments, and a promotional means for tech firms to lure billions of people into their vision of the future. This may lead to an overhyped perception of necessity and a sense of urgency, which then justifies the development and integration of AI in all directions.

In section 3.2 when discussing AI in China, it should become more clear how a deterministic approach to AI & Big Data can reshape the limits of rights and freedoms in contemporary societies where “*Authority is increasingly expressed algorithmically*” (Pasquale, 2015, cited in Rubel, 2016). The next subsection briefly looks at a few existing narratives that highlight the relationship between AI and autocracy.

B. AI And Digital Authoritarianism

Contemporary AI-based technologies cultivate practices such as surveillance, controlling the flow of information at mass, filtering, and behavioral predictability, which render AI a strategic component in the authoritarian toolkit (Wright, 2019). If we assume this statement to be true, one can then ask: why does authoritarianism seem to benefit from the emergence of AI more than other modes of government?

There is one straightforward narrative: soviet leaders could not dedicate a KGB officer or equipment to track, surveil and collect data on every one of their almost 200 million citizens. Even if they did, following individuals around and writing a paper report to send back to the headquarters in Moscow for it to be interpreted would result in piles of paper reports. Logistically, surveillance and control of large populations have historically proven unrealistic. However, thanks to AI

& Big Data, that is changing now. Smartphones, microphones, and cameras everywhere collect our data, whereby AI processes it all with unprecedented speed and accuracy. Thus, for the first time in history, it is becoming feasible to monitor, *hack* and control billions of people continuously (Harari, 2021).

A second narrative posits that AI systems often require large amounts of data, computing power, and financial resources, which can be more easily concentrated in the hands of a few large organizations. This centralization of resources can give these organizations significant power and control over AI technologies, which can in turn reinforce their existing power structures (Crawford, 2021).

Throughout history, the world has witnessed the failures of authoritarian regimes, such as Fascism in the 1920s and bureaucratic Soviet-style authoritarianism in the 1960s. No other regime type has been as successful as liberal democracies at consistently promoting prosperity among the citizens of large, industrialized states. With the advent of Artificial Intelligence and related technologies, there is a plausible and tangible reason to posit that the outcome may differ this time around (Wright, 2019, p.23).

China’s bid for AI supremacy makes it the first likely contender to break the authoritarian glass ceiling, as we shall observe later in this paper. The ability to gather, process, and act upon massive amounts of data is the crux of the relationship between AI and modern authoritarianism. In this context, *Digital Authoritarianism* is essentially a centralized autocratic form of government in which the exercise of power is dependent on “*the use of information technology to surveil, control, and manipulate domestic and foreign populations*” (Meserole, 2019, p. 2).

Hitherto we have broadly examined the role of technology in human development, as well as the usefulness of AI for Digital Authoritarianism. The last section of this literature review explores the concept of power —initially within International Relations studies and subsequently through the social constructivist framework of Michel Foucault and his historical examination of power relations. The goal is to

conceptualize the term power before investigating the new modes of Algorithmic Power produced by AI.

C. To Conceptualize Power

In the realm of political studies, power is often understood as the ability to cause other actors within the international system to do things they otherwise would not do, as Robert A. Dahl famously phrased it (Baldwin, 2013). Forebears of classical realism, such as Machiavelli and Morgenthau, viewed power as an inherent goal pursued and promoted by states that are characterized as power maximizers relative to each other; each seeking to strike a *balance of power* (Baldwin, 2013). In the broader context of *power politics*, power is the ability in influencing “*major groups in the world, to advance the purpose of some, against the opposition of others*” (Wright, 1955, as cited in Baldwin, 2013, p.274).

The power of influence can be coercive through threat or use of force, attractive through economic relations and trade, cooperative through diplomacy and cultural exchange, competitive via an arms race, or in reality a blend of these approaches. Furthermore, power can be associated with *capability*, *security*, and, *status*. For instance, military capabilities and economic security have undoubtedly appended the US with global ‘*superpower*’ status. Morgenthau summarized these into *components of national power*; defined as the sum of all the resources available to a nation in the pursuit of its international objectives.

In an attempt to stretch the above-mentioned conceptions of power, this thesis adopts the perspective that “*Power is the production, in and through social relations, of effects that shape the capacities of actors to determine their circumstances and fate*” (Barnett & Duvall, 2005, p. 42). Hence, a slight digression from the conventional IR theories brings this paper closer to a social constructivist interpretation of power, which corresponds to many of the conclusions made by Foucault; whose work forms the basis of the later analysis.

Michelle Foucault is celebrated for his historical breakdown of power, knowledge, and truth in the context of social, economic, and political relations. Foucauldian characterization of power evolves around the key assumptions that

- 1- Power is not a ‘thing’ or a ‘capacity’ which can be owned.
- 2- Power is not purely located in the State (or the administrative and executive bodies that govern the nation-State).
- 3- Power is not merely oppressive towards individuals, social classes, or natural instincts. Power is productive; it generates particular types of knowledge and cultural order.

Foucault primarily argues that “*no form of knowledge emerges independently of complex networks of power and the exercise of power produces specific types of knowledge*” (O’Farrell, 2005, p.79). Churches, government institutions, mental hospitals, universities, and militaries all cultivate various forms of knowledge and truth onto the world. Therefore, constructing knowledge empowers such establishments to analyze, observe, and methodologically influence a population’s intellect. Consequently, institutions that generate knowledge are also mechanisms for wielding power. We will discuss in the first section of the analysis how modern technology firms take on this role.

Foucault, throughout his career, describes various modes of power around the nexus of *power-knowledge*, as crudely visualized in the following representation⁵.

⁵ Often these concepts are used interconnectedly and in no fixed arrangements. Thus, this is a framework based on my comprehension of Foucault’s works. He does not have a unified model.

Figure 3
Michel Foucault's modalities of power



Sovereign Power dictates that the populace has to abide by the laws and regulations set by a highly individualized authority, the king, or else face violence. Foucault argues that forms of sovereign power become less efficient in regulating the behavior of populations in Europe towards the end of the eighteenth century, leading to the evolution of power in the form of social control techniques (O'Farrell, 2005). Sovereign power does not vanish, it exists inside various forms of government even today. Rather, it is no longer the status quo.

Most modern governments do not gain legitimacy through direct violence, terror, or the right to end life. In their adoption of **disciplinary power**, the violence is rather structural. Consequently, individuals are compelled to behave in ways the power wants them to via more subtle techniques such as education, hospitalization, military service, factory work, surveillance, imprisonment, and censorship. *These new mass forms of training bodies, gestures, and behaviors are a 'political anatomy' aimed at producing 'docile bodies' whose economic and social usefulness could be maximized* (O'Farrell, 2005, p103). In what Foucault calls a '*disciplinary society*'—Power is not discipline, rather power is exercised through discipline.

Lastly, Foucault describes **governmentality** as a mode of power unique to *neoliberalism*. Whereas disciplinary power is exercised by restricting freedoms, governmentality relies on social mechanisms that

guide people's behavior. Subjects of *governmentality* are mandated to govern themselves in the interest of the nation, the economy, security, or their well-being. In this context, subjects feel as though they are in charge of their lives; retaining their sense of freedom. Hence, *governmentality* uses more positive means of control via socialization, rationalization, and systematization of power. This mode of power fits well inside the framework of liberal democracy whereby competing sources of power, such as technology leaders, newspapers, websites, vendors, and pundits, present us with advertisements, bonuses, and the promise of success, hoping to pull or push us in various directions. Foucault famously called this "*the conduct of conduct of the people*" (O'Farrell, 2005).

With governmentality, Foucault also shifts his focus towards *biopolitics* or *biopower*. He investigates how forms of knowledge and practices relating to hygiene, public health, the control of reproduction, and sexuality became the subject of administrative interest (O'Farrell, 2005). Thus, *Biopower* is the systematic management of life, death, and health of entire populations. Consider China's one-child policy as a most iconic example of biopolitics.

The modes of power mentioned above are not necessarily competing forces. These various power structures often mutually materialize in both democratic and autocratic states. Furthermore, whereas sovereign power was somewhat noticeable by a populace, the more recent modes of power tend to be in guise and undetected by individuals and societies.

This thesis aims to evolve Foucault's frameworks of power. Throughout the paper, the term *Algorithmic Power* refers to the various modes of power generated by AI beyond its existence as "*technical things or coded objects*" (Bucher, 2012). Hence, focusing on how different actors, such as tech firms and governments, employ algorithms as powerful means for achieving their political, social, and economic objectives.

It was Foucault's ambition to uncover the mysteries of power relationships that are imposed upon us through centuries of social

development. In that he suggests; power is most intelligible in light of the techniques through which it is exercised.

Following his guidelines, the first section of the analysis (3.1) sets out to identify the subtle AI techniques used by Google and Facebook in generating Algorithmic Power. The second section (3.2) looks at the usefulness of AI algorithms in government; via the case study of China. Toward the end of section 3.2, the various dimensions of Algorithmic Power are integrated into Foucault's typology of power previously introduced in figure 3. The last section (3.3) analyses the power of AI in reorganizing international relations.

Along the way, three fundamental questions guide this journey. How does AI generate new modes of power? How is AI accommodating digital authoritarianism in China? What are the implications of the AI revolution for international relations?

3. Main Inquiry

3.1 The Cradle Of Machine Learning

Technology enterprises have become some of the most influential entities to have ever existed. Today out of the top 5 trillion-dollar companies, four are tech firms (See figure 4).

Figure 4
World's most valuable companies

Rank	Company	Market capitalization
1	Apple	\$2.8 trillion
2	Microsoft	\$2.2 trillion
3	Aramco	\$2.0 trillion
4	Alphabet (Google)	\$1.8 trillion
5	Amazon	\$1.6 trillion
6	Tesla	\$905.7 billion
7	Berkshire Hathaway	\$700.6 billion
8	Nvidia	\$613.0 billion
9	TSMC	\$600.3 billion
10	Tencent	\$589.8 billion
11	Meta	\$565.4 billion

In pursuit of commercial success, these innovation hubs combine long-term scientific research in evolutionary anthropology⁶ with the extraordinary advances in information technology and data science. Consciously or not, deliberately or inadvertently, these powerhouses create technological structures that influence how people are going to work, communicate, travel, consume, and so on over the long term. Thus, their business models —how they make profits from their services— shake the material and conceptual foundations of life in all corners of the world.

Google and Facebook are two of the most prominent examples of such enterprises in our epoch. This section peeks into their digital

⁶ Study of the biological and the cultural evolution of humans based on scientific approach.

apparatuses and online archetypes to identify the peculiar sources of Algorithmic Power embedded behind codes and programs.

A. *Google's Revolution: Surveillance Capitalism*

Founded in 1998 by two young Stanford grad students, this emblem of 21st-century technology initially lacked a concrete business model. The vision was to create an online encyclopedia, and the motto: "*don't be evil*". Subsequent to the 'dot-com' financial crisis of the early 2000s, whereby investors began to pressure the young Google enterprise to generate more revenue, a shift occurred in the company (Zuboff, 2020). This came in the form of a set of discoveries revealing that as individuals browse online, they leave behind digital traces of behavior. These early online human imprints were known as '*digital exhausts*' (Mathias, 2021).

Google engineers discovered how valuable this data is and began to systematically utilize this *digital waste* to study and predict the behaviors and interests of the users; for instance, what kind of content a user is more inclined to click on or what triggers a user to stay on a website or platform longer. These techniques proved so effective that between 2000 and 2004, Google's revenue line increased by 3590% (Zuboff, 2020).

Meanwhile, users had no idea that these extra behavioral data existed, let alone being used to predict and influence their behavior. Nevertheless, in two decades Google grew to facilitate more than 90% of online web search queries.⁸ That is over 40,000 queries every second on average which translates to over 3.5 billion searches per day and 1.2 trillion searches per year worldwide (Google Search Statistics - Internet Live Stats, 2022). It has formed a global dependency so powerful that '*to Google*' is now ingrained as a verb in most languages (Epstein, 2018).

Even today, it is difficult for us as outsiders to have a clear idea of what goes on in the background of a Google search. Yet, Google knows

you better than anyone. It knows where you live. Whether you are about to get engaged or divorced. Google even knows what diseases you are worried you may have exposed yourself to. How is that possible? The answer is surprisingly simple: you will first Google what you dare not ask your closest friends and family (Galloway, 2017).

What's more, it is clear now that Google search results are not even-handed or generally the same for everyone. There is fierce competition for appearing on the first page of Google search results, involving *search engine optimization (SEO)* techniques and know-how. But Google algorithms also play a direct role in the game, using Machine Learning and other AI techniques to understand, translate, rank, or even censor search queries and activities (Epstein, 2013). For better or worse, Google is the world's most influential knowledge provider, the collective library of the human race, yet, its provisions are subject to algorithmic manipulations and constrained by human and machine biases.

To provide services, such as answering questions or offering directions, Google relies on a large and complex organization of algorithms, each of which follows unique objectives. These Machine Learning networks operate nonstop, conducting a significant load of assignments simultaneously and autonomously. Their instructions are programmed as input-output algorithms. Imagine an AI system that has as input: information about the users and the ad, and as output: the likelihood that the users would click on the particular ad, or not. Similar input-output logic is the logic behind numerous other ML systems⁹ that are running around the clock, generating revenues for their proprietors, keeping the platforms functioning and the users engaged. We will encounter a few more examples in the next subsection with Facebook.

The core of this data–algorithm business model is commonly referred to as *data sharing economy* or *data economy*. This model relies on collecting large amounts of personal data from users in order to generate revenue through targeted advertising or other means. Examples of companies that operate in this space include Google, Facebook, and Amazon. This is referred to as strategic data *acquisition*. In other words,

⁷ At that point they meant not selling out to the advertisement industry.

⁸ The term "query" refers to a request made by a user to a web search engine with the aim of fulfilling their informational requirements.

⁹ Managing E-mail spam filtering; newsfeeds; speech, text, and image recognition; language translation, etc.

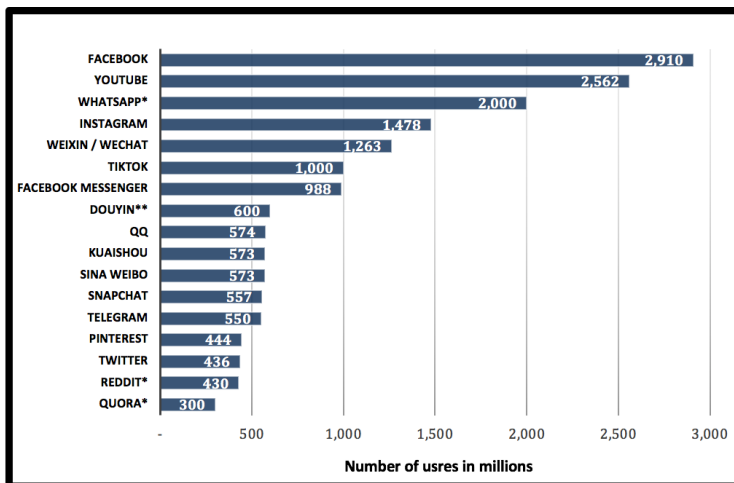
the products and services are free to use, but we —the users— are monetized. While this model makes a lot of sense in business administration, it has also gradually transformed these online platforms into ingenious surveillance corporations (Epstein, 2013). The implications reach far beyond the intention to generate profit.

We have entered a new phase of the economy, which Harvard Professor Shoshana Zuboff describes as the age of *Surveillance Capitalism*. An era in which private human experiences are claimed as a free source of raw material and fabricated into behavioral predictions (Zuboff, 2020). Over the past two decades, the Google scheme has spread considerably. The most recent example, Tiktok, a social media app growing out of China a few years ago using the same techniques, has now gathered an incomprehensible 1 billion monthly users worldwide.

What makes these 21st-century moguls influential is also their monopolistic conglomerates. Google is not just a search engine, it also owns YouTube, for instance. Figure 5 demonstrates how Mark Zuckerberg heads an establishment of social media platforms with which approximately six billion people engage (That is the combined reach of Facebook, WhatsApp, and Instagram).

Figure 5

Most popular social networks worldwide as of January 2022, ranked by the number of monthly active users (in millions)



Traditionally, newspapers might have reached a few hundred thousand people. A TV program beats that by millions. Yet, no other form of media, government, or any other entity for that matter, has had access to billions of people with the speed and accuracy of the modern technology firms. These are the all-seeing towers of power, capable of identifying a needle in a haystack and feeding content to it.

B. FaceBook: The game of algorithms

Facebook, like Google, has a large network of algorithms that monitor and process enormous amounts of real-time data generated by users. Facebook's algorithms are designed based on sociability —that is our need to love one another, our capacity to care, and our desire for sharing. These human instincts get coded into quantifiable engagement metrics: posting, views, likes, comments, sharing, etc. What users scroll through on their *news feeds*, or *Facebook wall*, is not entirely up to them or sequential. Rather, the content (pictures, videos, news) is sorted by algorithms based on engagement as their functional objective. It so happens that Facebook is also a successful commercial establishment dedicated to maximizing profit which in turn necessitates maximizing engagement (Epstein, 2013).

Consequently, to be prosperous on Facebook, a user is destined to play a game refereed by the algorithms. Hence, a contest for *Algorithmic success* among users on social media triggers a contest over viewers, followers, and better visibility. The engagement-based scheme encourages the propagation of content that elicits as much response as possible, from as many people as possible. This has consequences. For insurance, sensational content: posts that feature rage, hate, or misinformation, often spread further and deeper. The real-life implications of such effects vary from fuelling ethnic violence in Myanmar and Ethiopia to worsening polarization in the US, and the propagation of false news (Waterson & Milmo, 2021).

There remains a sensitivity here that is of interest to our inquiry: what if Facebook decides to show the users certain content and not

others? What if the algorithms are modified to stimulate collective behaviors toward specific objectives, say, electing a presidential candidate?

Facebook is notorious for conducting and publishing its internal behavioral experiments. In 2010, the company performed what it labeled as a *social contagion experiment*. The objective was to encourage people to get to the polls in the 2010 US midterm elections. Hence, they assigned algorithms to offer 61 million users an "I voted" button together with the faces of friends who had voted.

Figure 6

Facebook Contagion Experiment "I voted" button



Another subset of users, the control group, received just the button. As a result, Facebook claimed to have nudged 340,000 people to vote (Bond et al., 2012). Two observations from this experiment uncover subtle but robust components of *Algorithmic Power*:

- Incentives in the online environment could change real-world behaviors.
- Algorithms can nudge mass behavior while bypassing an individual's awareness.

Less than 100,000 votes separate presidential candidates in some elections. Facebook claimed to have nudged three times that many people to vote. Technology firms monitor everybody closely, they know who's a racist, who's a misogynist, who's a homophobe, who's a conspiracy theorist, and they know who is susceptible to what sort of

content. They have access to the largest pool of personal information that has ever been gathered, and the world's best data scientists (Epstein, 2013).

Unsurprisingly, other organizations have begun exploiting the combined power of Big Data and AI algorithms. Cambridge Analytica, a UK-based political consulting firm, rocked Facebook and the world in 2008. The firm had inappropriately harvested data from roughly 87 million Facebook user profiles, which it then processed using Machine Learning techniques, producing psychographically tailored content that aspired to influence people's voting preferences in the 2016 US presidential campaign (Hinds et al., 2020). The scandal forced Facebook CEO Mark Zuckerberg to testify before the US Congress (Kang & Frenkel, 2018). Later documents revealed the depth of the company's operations elsewhere in the world, serving various powerful actors in local elections and espionage.

Google, Facebook, or third-party contractors, seem to have developed the capacity to alter election outcomes with campaigns that convince a relatively insignificant fraction of their user base in a particular district to either come out and vote or stay home. Let us summarize the constituents of *Algorithmic Power* characterized so far:

- I. Big Data provides detailed records of the identity, preferences, location, and behavior of individuals and groups.
- II. AI algorithms command real-life behavior through sorting and presenting specific content on the internet —predictive, personalized, and targeted means of reaching out to users.
- III. The AI Black Box:¹⁰ Most users have no idea how these intelligent algorithms function, what kind of data they have stored where, and how their behavior is premeditated.
- IV. The monumental reach and effectiveness —billions of individuals worldwide interact with similar algorithmic models online.

¹⁰ In science, computing, and engineering, a black box is a system which can be understood in terms of its inputs and outputs, but not the logic of processing.

For better or worse, AI algorithms construct knowledge through processing, classifying, sorting, and ranking content. *Classifications are technologies that produce and limit ways of knowing, and they are built into the logic of AI* (Crawford, 2021, p. 147). AI systems are political in that they make the world appear in particular ways rather than others. By extension, their monopoly on knowledge enables their algorithmic structures to analyze, observe and ultimately foster the intellect of the populace.

Similar to educational institutions, militaries, and churches, Google and Facebook are also mechanisms of power, only way more effective. *Algorithmic Power* in this context operates on the same Foucauldian knowledge-power nexus introduced earlier.¹¹ At an individual level and on the surface, the platforms give us the impression that we are free to see, hear and click on what we choose to, while behind the curtains a pack of intelligent algorithms set up the stage on which we expose our identity and sacrifice our sovereignty.¹² Such is the subtle nature of the algorithmic structures of power.

The strategic setup of Google-like business plans ushers unique practices of power, the consequences of which travel far beyond the tech industry. In the far east, China is maturing as a modern state that is restructuring its government practices around AI & Big Data, inspired by the same models invented in the west by the likes of Google and Facebook. Therefore, the next chapter is devoted to investigating the pursuits of the Chinese Communist Party (CCP) and the modes of Algorithmic Power generated inside China's digital autocracy.

3.2 The Panopticon: China Has (A) Plan

The Chinese government is determined in collecting a broad range of personal information from its citizens, including physical appearance, biological identity, the technology they use, and the sound of their voices. The extent and sophistication of the surveillance apparatus designed to support these efforts are unprecedented in their scope and complexity.

Every five years the Chinese Communist Party (CCP) releases a plan outlining its objective for the next half-decade.¹³ In its most recent campaigns, the CCP unveiled an extensive AI strategy¹⁴ involving all sectors of its public and private institutions and industries. It is clear that the CCP hopes to employ cutting-edge AI technologies to manage and process all of the data it is gathering and storing on its 1.4 billion citizens. What is it like for the world's most populous nation-state to be administered by AI algorithms? The subsequent three subsections explore

- A. How the authorities collect various types of data.
- B. How the information is processed using AI systems.
- C. How this ecosystem feeds *Algorithmic Power*.

The objective is not to vilify the People's Republic of China, but rather to hypothesize the contributions of *Algorithmic Power* to political organization and state governance.

A. Data Collection

The Chinese society has bypassed credit cards and instead shops in stores without cashiers, where the currency is facial recognition and QR codes. Out of the 1.4 billion population, 981 million use WeChat; a super application that combines social media, communication, financial

¹¹ Revisit page 13 for the discussion on power-knowledge.

¹² Refer to page 15 for the discussion on governmentality.

¹³ Tracking China's digital evolution is important but beyond the scope of this paper. There are many documents available online that do just that; this section sticks to the most recent and relevant plans and strategies.

¹⁴ The translated version: <https://na-production.s3.amazonaws.com/documents/translation-fulltext-8.1.17.pdf>

payments, and more. To capture the profundity of a society's relationship with advanced technologies from the outset is not a straightforward undertaking. However, let us examine a few examples and statistical facts.

Consider SmartFinance, an app capable of processing and responding to a loan request in an average of eight seconds. To qualify for borrowing money the users are asked to give the app full access to evaluate their worthiness by inspecting all the data on their smartphone. If granted, the algorithms then scan 1,200 data points about the user in connection with delinquency.

Processing millions of transactions and behavioral data, the AI-based application digs up features that would never be apparent to a human loan officer. For instance, factors such as how confidently you typed in your birthdate, or if you let your cell phone battery drain regularly, could signal accountability or the lack of it (Stevenson & Li, 2017). Similar techniques are applied elsewhere in the social, economic, and political context in China.

Each of these applications and platforms, which make life easier for the Chinese population, is part of bigger conglomerates such as the ones under Jack Ma's Alibaba Group. The sheer size of their customer base and reach is bewildering. Tencent News, the lowest reach in Figure 7, has more users than the population of most countries.

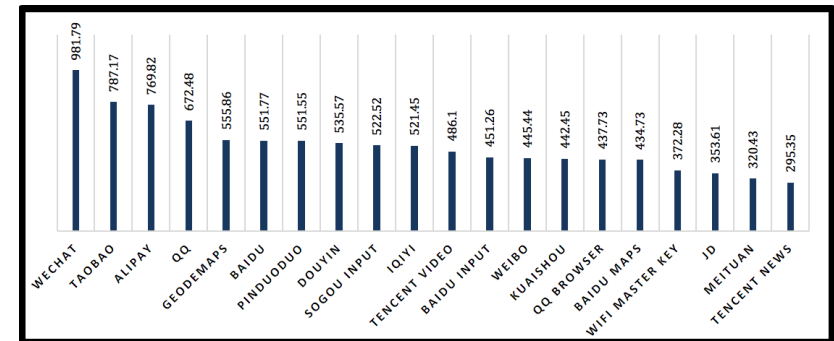
What's more, these companies will have to pledge allegiance to the Chinese Communist Party or at least abide by its policies; such as sharing data with state officials when necessary.¹⁵ At the same time, many of their founders and CEOs, such as Alibaba's Jack Ma or Huawei's Ren Zhengfei,¹⁶ are communist party members themselves. More recently the CCP has begun tightening its grip on these technology giants and their data treasuries. Data in China flows between the private and public sectors categorically. The upcoming paragraphs present a few means of the government's data collection.

¹⁵ Mind you, government access to private data is not unique to China, the FBI and the CIA regularly bother Microsoft or Facebook for confidential user data, the major difference is the need for warrants most of the time. Whereas in China the government has an easier access to more data.

¹⁶ See: <https://www.huawei.com/en/facts/question-answer/does-huawei-have-ties-to-the-cpc>

Figure 7

Top 20 Mobile Apps by Monthly Average Users (In Millions)



Let us begin at the foundation of China's surveillance state; the use of state-of-the-art cameras. From traffic management to crime prevention, CCTV (Closed-circuit television) has numerous applications, surveillance, and data collection are two. There are 770 million cameras worldwide, with China's share being 54% (Lin & Purnell, 2019). Sixteen out of the top twenty cities globally with the most CCTV cameras are in China (Bischoff, 2021b). A trend that renders China the world's most prominent producer, user, and exporter of such surveillance technologies. The scale and the ambitions of the government's video surveillance are evident in the 2015 *Sharp Eyes* and the 2005 *Skynet* projects.

These cameras work beyond the scope of standard video footage. Most of them are equipped with facial recognition and intelligent analysis systems—which means using AI techniques they can track moving objects such as cars and classify individuals by face, or by the way they walk. The police around China use AI software mounted on these cameras to identify a person's race, gender, and ethnicity, the color of their clothes, and whether they're wearing a mask or glasses.

AI algorithms can then input captured images from these cameras into existing databases for a match in a matter of seconds. These search results often contain more specific information about the person, like their national ID number, name, sex, and permanent address. In other

words, there is almost no lag between the moment the cameras capture you and the moment the authorities know who and where you are.

A government bidding document from Fujian province in the southeast of China illustrates that facial recognition cameras are capturing faces from video feeds and storing more than 2000 images of faces every day. The police often keep them for six months. There are 7000 video feeds in this Fujian system, that's 2.5 billion facial images stored at any given time (Zhang & Lu, 2020). All those images are for just one province in China (Qian et al., 2022).

While cameras track individuals in public, much of private life is tracked by Smartphones. An individual's location, the apps they have on their phone, and what they say online are some of the information that can assist the government to monitor people without them noticing. This involves using a phone's ability to search for the strongest internet signal. Trackers are installed inside the cameras or near Wi-Fi routers throughout a city and are used to map out a phone's movements. These trackers, similar to other internet-related infrastructure, can also exploit weak security practices to screen the apps installed on someone's phone or the websites they have visited, information that can reveal a lot about an individual.

For example, police from a county in Guangdong have acquired phone trackers and hope they can use them to detect which phones have an Uyghur to Chinese dictionary, users of the app are likely part of the Uyghur ethnic minority, a group that is heavily surveilled and oppressed by the government in recent years (Zhang & Lu, 2020).

In the city of Zhongshan, the police are adding devices to record audio from at least a 300-foot radius around street cameras. Hoping to combine voice recognition systems with facial recognition cameras to help identify targets more effectively (Qian et al., 2022).

These efforts stretch even further to the biology of what makes an individual. Surveillance programs are expanding towards collecting personal identifiers that are less likely to change over time such as DNA samples and iris¹⁷ patterns. In Xinjiang where millions of Uyghurs live, a

government contractor has built a database that can hold iris samples of up to 30 million, enough to cover the entire population. It seems that the same contractor is building large iris databases across the rest of the country (Zhang & Lu, 2020).

Authorities can use genetic tracing to catalog entire generations of men. Hence, a database built today will be useful far into the future. Criminal investigations around the world rely on genetic information for this same reason. DNA data can indicate a relationship along paternal lines and helps pinpoint the suspect's family history and geographic ancestry. One can only imagine the government can use DNA data for far more than minor criminal investigations.

Male DNA databases exist in at least 25 out of mainland China's 31 provinces and regions. Official documents indicate that it aims to nearly double the number of records included from 54 million to 100 million by 2020 (Qiang, 2019). *"Do not miss a single family in each village, do not miss a single man in each family"*, a bidding document from Gansu province denotes (Zhang & Lu, 2020).

Data availability is a substantial catalyst to China's success with AI. There is proof for this causal correlation in particular fields of AI such as facial recognition in which China has become a world leader, despite entering the AI race later than others in 2016 (Lee, 2021). One should not overlook the fact that data is valuable not only as means of surveillance and control but for many other purposes, some of which will immensely benefit Chinese society. Yet in the interest of identifying *Algorithmic Power* it is worth considering the distinctive political and social objectives that the CCP has in mind for the age of AI.

B. The All-Seeing State: Social Credit System

What can the Chinese government do with all of that data? The Social Credit System (SCS) is a grand vision for creating an AI-based, data-driven society in which every citizen's *'trustworthiness'* is measured

¹⁷ The iris is the colored part of your eye, the area around the pupils.

in real-time.¹⁸ Or as the party narrative goes: "*The main purpose of the Social Credit System is to allow the trustworthy to roam everywhere under heaven while making it hard for the discredited to take a single step*" (State Council of China, 2014). This massive program involves government organs in all regions and administrative levels collaborating to create a coherent information-sharing and surveillance ecosystem.

In essence, this means that all of the data gathered and stored in various ways all over China is used to evaluate individuals and enterprises. SCS is not a unified centralized system, at least not yet. Similar to Facebook or Google's operating systems, the SCS is an ensemble of AI algorithms managing a multitude of tasks and objectives in varying spatial contexts. An intricate network of algorithms that are provided with both live and archival data, training nonstop to improve their performance in achieving distinctive objectives.

For instance, in the city of Shenzhen, CCTV equipped with facial recognition is linked to ML algorithms that can instantly capture and live cast the faces of jaywalkers on billboards for the public to see. As jaywalkers cross the road shamefully with their faces on display, points are instantly deducted from their social credit score.

Multiple cities in China are already piloting their versions of the SCS. Social credit '*scores*' are awarded or removed based on behavior. '*Good social credit*' makes it easier to get bank loans at lower rates. Other perks include free health checks or discounts on heating and free water. Whereas '*bad social credit*' may limit access to tickets for high-speed trains or air travel. For example in 2018, due to poor social-credit scores, more than 11 million people faced restrictions on their purchase of airline tickets, as well as 4.25 million people from buying high-speed rail tickets (Qiang, 2019).

In reality, the SCS is at its early stages of development, and most of what is perceptible outside of China can be misleading. The system also remains very ambiguous, legally and practically. It is also important to note that presently the corporate side of SCS is more advanced and in use than the individual side (Reilly et al., 2021). However, once the SCS

is fully functional and the credit information is linked to household registrations and ID cards, government officials and private entities that are co-managing the SCS can guide and influence the social, economic, and political behavior of the citizens remotely, instantaneously and covertly. What's more, often no explanations are provided to those who are penalized algorithmically (Qiang, 2019). The Black Box nature of complex AI algorithms is often used to justify the lack of transparency.

The SCS may or may not succeed as a unified project, yet the details of the plan demonstrate some of the basic potential functions of AI & Big Data as extremely effective and subtle instruments of social control. In the case of Google and Facebook, the benefits of AI are more profit-oriented. whereas at the state level, the algorithmic capacity to map, track, store, and process data is aimed at the production of *docile bodies* whose political and social usefulness could be maximized at will. As we speak, many societies around the world are already merging with algorithmic archetypes that compel people to behave in conformity with the norms set by their administrators.

If those in charge of engineering the algorithmic structures are sexist, racist, or particularly fond of capitalism, then the system itself and the behaviors that it enforces on its subjects will reflect that. That appears to be no different from existing social and political institutions. Yet, AI algorithms automate these pre-existing practices with speed and accuracy previously unattainable for a superstate like China. The purpose of this examination is not to vilify the People's Republic of China, but rather to highlight the potential implications of *Algorithmic Power* on the political organization and governance of societies.

The concluding section of this chapter conducts a critical analysis of the China model by juxtaposing it with Jeremy Bentham's seminal architectural concept, the Panopticon. As well as situating *Algorithmic Power* within Foucault's typology of power, as previously presented in Figure 3.

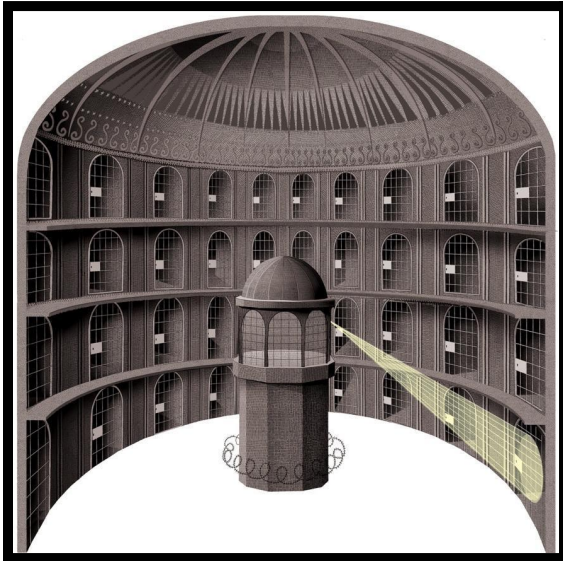
¹⁸ The word trust in multiple forms appears ± 60 times in the official notice by the CCP.

C. China's Strategic Panopticon

In the art of organizing a unified sovereign state, social stability is the watchword of the government. Artificial Intelligence has immensely enhanced the Chinese Communist Party's ability to scan the country for signs of unrest. However, the technical and architectural organization of *Algorithmic Power* in China is not merely a surveillance mechanism. Visibility at the scale possible today creates a whole set of alternative power relations and sources. To understand the implications of the China model let us consider Foucault's concept of 'panopticism'.

Figure 8

The Panopticon



In his book, *Discipline & Punishment: The Birth of the Prison* (1995), Foucault investigates Jeremy Bentham's famous prison design, the Panopticon. A circular building with cells built into the wall and a central observation tower. From the tower, you can see into every cell, but the tower is designed so that the

prisoners can't see into it. Hence, the prisoners can't be sure if they're being watched, but they know there's a pretty good chance that they might be. Bentham argued that the prisoners would regulate their own conduct just by knowing that they are visible.

Foucault further noticed that the panopticon is a mechanism, one that can be implemented beyond a prison building. In other words, the panopticon is the embodiment of a set of theoretical principles:

- **Pervasiveness of power**; the tower sees into every cell and sees everything that goes on, so it can regulate everything.
- **Obscurity of power**; the tower sees into the cells, but the prisoners can't see into the tower. Thus, the guards need not be present physically, they reside inside the prisoners' heads.
- **Structural violence**; the structure of the panopticon itself is coercive and it subjugates the prisoners to violence by design. Hence direct violence is often not necessary.

Let us assume China's Social Credit System as an attempt at building a nation-sized, AI-equipped panopticon based on a similar set of principles described by Foucault. Namely, an algorithmic social scheme that sees into and regulates every facet of life in the name of "trustworthiness" and "social integrity". There's a connection between being seen and being known. To a great extent, power can be exercised merely by observing subjects. The more power knows, the more it sees into the lives of its citizens, and the more *pervasive* it becomes.

Moreover, in a society monitored and governed by algorithms, the individual is constantly being watched and judged, yet there is no transparency about how or by whom one's data is analyzed to give a social score, much like you do not know how Google ranks your search results. Therefore, individuals are confronted with a reward and punishment system that is *obscure*. AI algorithms managing social relations can act as guards in the tower that cannot be seen.

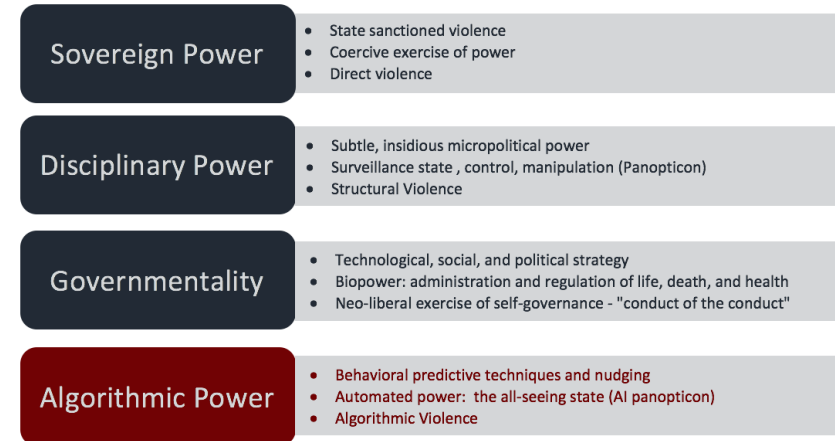
Once such digital systems are designated to achieve a particular objective they go on progressively and autonomously executing their functions. Consequently, algorithms are often unattended in exercising disciplinary power; identifying, rewarding, or punishing, and ranking individuals. Living under a social system governed by algorithms, one

will have to concede being subject to their verdict. Such is the case with Uyghurs in China, whom the AI systems detect and admit to reeducation camps. Thus what Foucault identifies as *structural violence* needs to be revised to embrace AI and conceivably be referred to as *algorithmic violence*. The term can broadly include the potential for these algorithms to perpetuate biases and discriminate against certain groups of people.

It is important to consider that these developments are not unique to China. In the U.S. and elsewhere, law enforcement and criminal justice authorities are increasingly using AI and automated decision-making (ADM) systems for a range of purposes such as detecting criminals using facial recognition or predicting and preventing future crimes. Neither is the use of AI limited to criminal justice; as discussed in previous sections, AI algorithms play a role in every facet of contemporary societies, for instance when managing and sorting content or assisting employment and recruitment.

Thus, *Algorithmic Power* is the predictive behavioral power of AI & Big Data practiced by Google and Facebook; the automation of the exercise of disciplinary power inside the China model, and the prospect of algorithmic violence in all aspects of life. Figure 9 expresses *Algorithmic Power* as the extension of the model introduced earlier in figure 3.¹⁹

Figure 9
Algorithmic Power



The unique methods, speed, and scale by which AI algorithms harvest power distinguish *Algorithmic Power* from previous modes, necessitating a respective categorization. In this new class, autonomy from human agency, scale, and covert complexity of the power mechanisms are pivotal components. *Algorithmic Power* is an extension of the Foucauldian power-knowledge relationship and the evolutionary successor to the disciplinary regimes and governmentality, not a substitute. AI does not 'invent' a new mode of power out of thin air, as much as it has not invented driving or working anew. Rather, AI is the force that revolutionizes long-standing mechanisms of power, and through that, it reshapes power relations and cultivates new modes of power along the way.

Foucault identified 'governmentality' as the practice of neoliberal regimes. Likewise, the patterns of *Algorithmic Power* are most noticeable in China's digital authoritarianism. However, these remain assumptions. We have just entered the age of AI, and China's grand plan is only gradually unfolding. Will China's model stand the test of time, and will *Algorithmic Power* become the dominant force in the art of governance? Perhaps only time can reveal.

¹⁹ I acknowledge the limits of my assertion here and recognize the need for further research. This is merely an attempt to identify the power of artificial intelligence and thus an imperfect sketch.

Moreover, Liberal democracy remains the overriding global force, and as such, the neoliberal exercise of power via governmentality has not vanished, rather it is also transitioning and adapting to the emergence of AI. Hence, as liberal democracy and digital autocracy confront each other in the century of AI, the last chapter of the analysis examines the implications of their contention for International Relations.

3.3 AI In International Relations

When examining the 19th-century global transformation, Buzan & Lawson describe *mode of power* as “*the material and ideational relations that are generative of both actors and how power is exercised and conceived.*” They argue that “*the mode of power changes less frequently than the distribution of power but has a more profound effect on international order when it does so. The mode of power is in term generative of the distribution of power*”(Buzan & Lawson, 2015, p.307).

So far, this paper has considered the emergence of *Algorithmic Power* as a new mode of power generated by advancements in the field of Artificial Intelligence. This final chapter examines the potential for AI to reconstitute power relations globally in three parts including the Sino-American AI rivalry, the globalized spread of AI, and the ideological scuffle between the west and the east in the age of AI.

A. The Race Towards AI Supremacy

In 2017 the Chinese Communist Party released the *Next Generation Artificial Intelligence Development Plan*.²⁰ According to this document, China aims to catch up with the United States in artificial intelligence by 2025 and become the “*world’s primary AI innovation center*” by 2030. With the plan, CCP also released a list of *focus tasks* which included a detailed theoretical map of AI projects such as maritime robots, swarm intelligence, deep semantic analysis, inspired computing chips, and smart fisheries. The CCP inquired and incentivized its public and private sectors to fulfill this wish list, thus setting off a procession of innovative projects in various corners of the country (Sheehan & Perera, 2019). This strategy worked. PWC estimates that AI deployment will add \$15.7 trillion to global GDP by 2030. China is

²⁰ The translated version: <https://na-production.s3.amazonaws.com/documents/translation-fulltext-8.1.17.pdf>

predicted to take home \$7 trillion of that total, nearly double North America's \$ 3.7 trillion in gains.

Some argue that “*as the economic balance of power tilts in China's favor, so too will political influence and soft power; as well as the country's cultural and ideological footprint around the globe*” (Lee, 2021). Regardless, one thing is for sure, AI is critical in China's exponential rise as an advanced economy, helping it escape the middle-income trap, move up to higher levels of the manufacturing chain in terms of added value, and maintain performance legitimacy in the eyes of its citizens.

The US is the world leader in AI, and Silicon Valley is still the global innovation hub, but China is catching up and aiming to challenge the status quo. Facing legal constraints and moral considerations, the US willfully forfeits the race in some areas. In others, China is simply more determined. For instance, in facial recognition, fintech, drones, and 5g, China has already overtaken the United States (Allison et al., 2020).

From the perspective of structural realism —inspired by Mearsheimer and Waltz— it is the architecture of the international system that explains how states behave. States operate in an anarchic system with no higher authority, are capable of causing harm, and no state can know the future intentions of others with certainty. The best way to survive in such a system is to be as powerful as possible relative to potential rivals. At one point during the cold war, upholding the great power status led to the space race and the emergence of nuclear weapons. Similarly, the rivalry pitting Beijing against Washington pivots around the pursuit of strategic technological advantages enabled by AI & Big Data. As a result, any failure to maintain the lead with AI advancement at the higher edge could result in losing global power and status.

Some argue that an AI arms race is already well underway and that we have entered a digital cold war era (Geist, 2016). At the same time, both China and the US, because of their economic interdependence and a shared fear of nuclear war, among other reasons, are keen to avoid outright military conflict.

Furthermore, Mearsheimer (2021) argues that China will translate its AI ambitions and economic power into military might in a bid to dominate Asia. The Chinese remember well the malice European great powers inflicted upon them between 1850 and 1950 —in what they refer to as the century of humiliation. The United States on the other hand does not tolerate peer competitors and it will go to enormous lengths to prevent China from dominating Asia. What is now termed a major ‘*decoupling*’ move, could mark the end of a long period of globalization and the beginning of a bipolar world. Hence, we find ourselves in a world split between two AI superpowers.

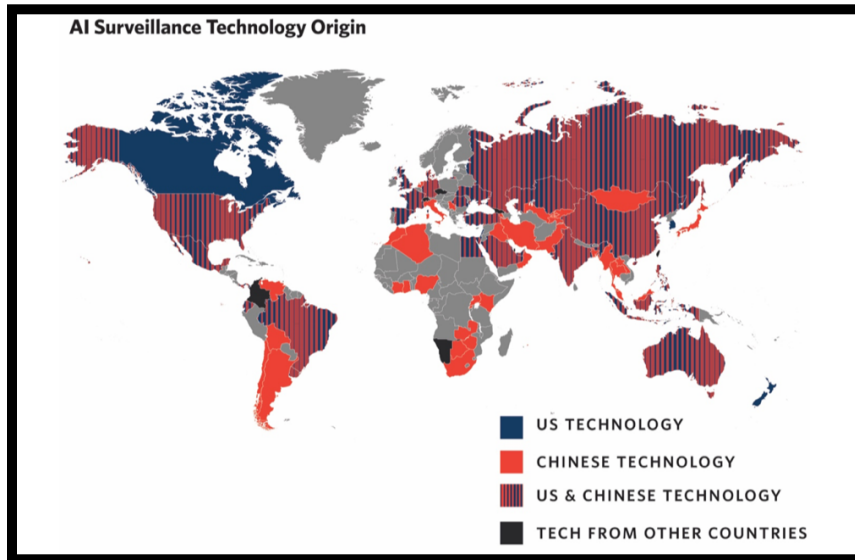
On the same line of arguments, this paper claims that AI & Big Data increase the likelihood of a power shift from West to East, splitting the superpower status between the United States and China. “*The West may have sparked the fire of AI deep learning, but China will be the biggest beneficiary of the heat the AI fire is generating*” (Lee, 2021). The *Algorithmic Power* of AI, in many ways, might just be China's winning card.

B. Exporting AI

During the initial period that marks the appearance of a new mode of power, sizable power gaps appear between those who harness the new modes of power and those who do not. “*The claim rests on the ground that any novel mode of power produces resources that massively favor those in possession of them*” (Buzan & Lawson, 2015, p.308). Critical resources and technological proficiency to achieve high-level advancements in AI demand certain painstaking social, political, and economic changes. Most nations are simply not capable of such radical transformation.

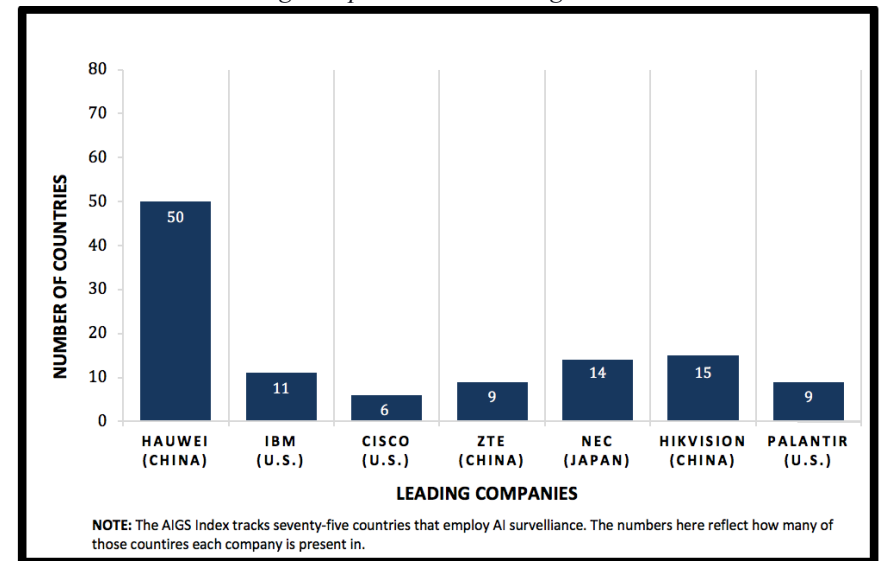
This means that companies in a handful of countries will soon monopolize the global AI network. Figure 10 illustrates this monopolistic effect. At least 75 out of 176 countries are actively using mostly US and Chinese AI technologies. (Carnegie Endowment for International Peace (CEIP) & Feldstein, 2019).

Figure 10
Spread of AI Globally – US Vs. China



Little wonder then that AI is a strategic focus for China's expansion plans overseas. Consider the Digital Silk Road (DSR); revealed in 2015 as a component of China's Belt and Road Initiative (BRI). With the DSR the CCP aims to export and control technologies that will conceivably serve as the foundation of a new global digital economy. China is exceptionally active in at least 47 of 54 countries in Africa. China's large digital footprint on the continent is not surprising given that 41 African states are members of the BRI (Feldstein, 2018). In general, as demonstrated in Figure 11, Chinese companies, particularly Huawei, export AI surveillance technologies more than anyone else in the world (CEIP & Feldstein, 2019).

Figure 11
Leading Companies Contributing to AI Surveillance



However, Chinese firms do not have a monopoly on the export of surveillance technology. Neither is AI surveillance solely transferring from one authoritarian country to another. Democratic nations and their business moguls are also fighting for a piece of the same pie. What's more, China is exporting surveillance technologies to liberal democracies as much as it is targeting authoritarian markets. Likewise, companies based in liberal democracies (for example, Germany, France, Israel, Japan, South Korea, the UK, and the United States) are actively selling sophisticated equipment to autocratic regimes (CEIP & Feldstein, 2019).

The global spread of AI systems seems to mostly revolve around surveillance capabilities and infrastructure used by state authorities. In what is hypocritical politics, almost all governments seem ready to adopt such techniques proffered by AI & Big Data while also heavily criticizing China for it. Nevertheless, in the struggle for global superpower status between the East and the West, there remains one final topic for discussion, namely, the ideological feud.

C. Liberal Democracy Vs. Digital Autocracy

As one compares socio-technical institutions of different nations, one sees "ways in which cultural attitudes, values, ideologies, political systems, and social structure affect these imperatives." (Chandler, 1977 as cited in Winner, 1980, p132).

The US-China race toward AI supremacy is not merely a technological contest but also an ideological one. Hence, It is crucial to consider that technological determination²¹ has for long been a central part of China's efforts for economic reform and thus the bid for AI supremacy has deeper roots inside Chinese Techno-nationalism.²²

China's quest for leading in technology stretches back to the 1950s. When facing economic backwardness, foreign invasion, and famines, the CCP started to benchmark its capabilities and ambitions against overseas technology pacesetters, especially their Japanese neighbors. Thereupon, acknowledging that technology is fundamentally strategic to China's development path towards becoming a global superpower. China's ambitious projects and policies have persisted and cohered across seven decades amid very diverse conditions and under the assertive leadership of various historical figures such as Mao, Deng, Jiang, Hu, and Xi (Feigenbaum, 2007). Thus, deeply held and longstanding ideological beliefs cement the relationship between technology, power, and national sovereignty in the PRC's worldview. Among other values, techno-nationalism includes the key components demonstrated in Figure 12.

Figure 12
Components Of China's Techno-Nationalism



China is fighting its way back to its ancient position at the core of the international scene. It is undergoing an economic boom that has lifted much of its population out of poverty, creating a middle class that is now a driving force of global consumerism. China's regional and global ambitions today are backed by a population that has experienced what are at times brutal episodes of external and internal hardships. These are key considerations forming the relationship between the people and the party. We should then expect that China's techno-nationalist outlook toward AI & Big Data remains a persistent feature of CCP's policymaking and a symbol of progress for the Chinese population (Feigenbaum, 2007).

For a long while, liberalism has not encountered a real ideological contender. A decade ago many would still argue that China will be the next big object to classical modernization theory as its economic development would eventually lead to democratization in and around the year 2020 (Liu & Dingding, 2012). Meanwhile, it is the year 2022 and China has been gathering its strength, strategically surfing through domestic and international storms, and demonstrating resilience. Behind decades of persistence and illiberal adaptation to the global economy,

²¹ Revisit page 8 for the terminology.

²² Linking technological innovation and capabilities to the nation's national security, economic prosperity and social stability.

China seems to be having a field day with AI & Big Data, but why is that?

Historically, autocracies have been hindered by centralization, in comparison to democracies, both regarding innovation and economic growth. It was counterproductive to consolidate too much information and power in one place where it could not be processed fast enough to make proper decisions. That is not the case with China, as we have seen thus far. Ironically, the notorious impact of the AI revolution has turned the main handicap of authoritarian regimes in the 20th century to their decisive advantage in the 21st.

“If you disregard all privacy concerns and concentrate all the information of billions of people in one database, you wind up with much better algorithms than if you respect individual privacy.” From this perspective, the competition between the US and China is also a contest between varying data-processing systems, which happen to hinge on contesting ideological principles (Harari, 2018).

Democratic ideals have for long required reasons and explanations, but algorithmic practices turn societies into *black-box societies*. *“If algorithms do things humans find hard to comprehend and assess, it is unclear what would count as transparency and accountability”*(Mathias, 2021). Liberals are torn over whether universal claims of rights, autonomy, and self-determination can pertain in a society extensively organized by intelligent algorithms; yet, the technical effectiveness of such novel AI systems is extremely compelling. China does not have to work around similar internal contradictions.

Efforts are made by the US and its allies to “contain” China, but with economic growth in mind and capitalism as a platform, upholding liberal democratic values of freedom and human rights is proving to be formidable. That is why we stand witness from the sidelines as *“a comfortable, smooth, reasonable, democratic unfreedom prevails in an advanced civilization, a token of technical progress”* (Marcuse, 1964; cited in Mathias, 2021).

4. Conclusion

The gap between algorithmic and conventional power is as wide as the gap between paper maps and Google maps. At the very least, AI enables a real restructuring of civic life, with the potential to reinforce centers of power via advanced algorithmic tools that operate under the logic of capital, policing, and militarization. *At a fundamental level, AI is technical and social practices, institutions and infrastructure, politics and culture. AI systems both reflect and produce social relations and understandings of the world* (Crawford, 2021, p. 8).

This study argues that the integration of AI algorithms into social and political structures creates novel modes of Power, which better serve authoritarian modes of governance and undermine the conventional liberal democratic order. However, It would be inaccurate to view the utilization of AI and Big Data in exerting political power as a uniquely Chinese or autocratic phenomenon. The revelations made by Edward Snowden, a former National Security Agency NSA contractor and whistleblower, indicated that democratic governments in the West have similar, if not greater, ambitions in using these technologies for control and surveillance. The archive highlights the significant role played by the intelligence community in the development of AI and the existence of a parallel sector that operates entirely in secrecy and without limits.

The development of AI can also be traced back to the late 20th century when the US military-industrial complex invested heavily in research and development of science and technology. A notable case in point is facial recognition technology, which is currently dominated by China. Facial recognition systems of today use Machine Learning algorithms that have been trained on historical research and datasets, including the mug shots of deceased individuals collected by the National Institute of Standards and Technology (NIST) —a research program sponsored by the FBI²³—, and the Facial Recognition Program (FERET) funded by the Department of Defense Counter-drug

Technology Development Program Office and conducted at the Army Research Laboratory (ARL) (Rauss et al., 1997). These, and a dozen other research programs, funded by various military and intelligence organizations in the United States, serve as the foundation for the success of Artificial Intelligence in various fields today, some of which have now spread globally (Crawford, 2021).

Therefore, it can be argued that AI does not inherently exhibit authoritarian or democratic qualities, but rather its current manifestation is shaped by centuries of scientific progress, cultural evolution, economic growth, and political developments heading in a particular direction. To truly understand the implications of AI, it is necessary to examine the modes of power that these technological advancements enable and enhance in different contexts, rather than seeking to attribute inherent properties to the technology itself.

The real-world manifestation of algorithmic power through numerous AI systems will mirror the underlying motivations of those who design and own these technologies. Additionally, the use of AI techniques in the interpretation, acquisition, categorization, and labeling of human data gives rise to the contentious issue of algorithmic bias and ethical considerations. It is often the case that governments and technology companies attempt to attribute any authoritative and unjust consequences to the algorithms themselves, yet it is important to consider that human biases and preconceptions play a significant role in the design and development of new technologies.

AI, analogous to other human inventions, is a double-edged sword. The advantages of employing AI & Big Data are uncanny. Recently, a team of scientists at MIT used Machine Learning to identify a powerful new antibiotic (Sample, 2020). AI also has a hand in solving other significant 21st-century problems, such as pandemic prevention, food technology, and security, ocean health, climate change, and smart energy grids, just to name a few.

In some countries, such as Taiwan, digital democratic platforms and applications enabled by AI provide inspiring models for decentralized participatory governance (Future Today Institute, 2021).

²³ See the acknowledgments in page three of this report: <https://www.govinfo.gov/content/pkg/GOVPUB-C13-123f0f214b5c8e0991227900eab0288b/pdf/GOVPUB-C13-123f0f214b5c8e0991227900eab0288b.pdf>

Likewise, civil society and activists attempt to redirect the development and deployment of Algorithmic Power toward a more democratic use through initiatives such as *Participatory AI*.

However, one might wonder how influential these positive manifestations of AI prove to be as opposed to the ambitious states and tech enterprises. The initiatives to moderate AI are comparatively weaker than the already questionable efforts to mitigate global issues such as climate change. “*AI is developing fast, and we do not have a collective plan to deal with its forces as it sets out to transform the very meaning of what it means to be human*” (Harari, 2021).

However, in order to survive and thrive as a species we must overcome the pessimistic outlook. It is true that in reality, AI will materialize as an upshot of our practices and struggles with it—as well as our shared understanding of its constraints and opportunities. Therefore, it is crucial to frequently re-evaluate the conventional narratives at the core of various academic disciplines, including social and political sciences. These are necessary steps toward unveiling the hidden complexities of modern technologies and fighting for change.

Thus, this dissertation aims to inspire long-term investigations of the relationship between AI algorithms and humanity. As a follow-up to this paper, there is a need to further consider the consequences of algorithms executing social and political functions, and to explore potential strategies for resisting repressive forms of *Algorithmic Power*. These topics are just a few of the pressing issues that require further research.

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