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The Power of Algorithms and Big Data: A Marketing Perspective on Consumer Manipulation in Business

Jordan C'rene Reuille-Dupont
Portland State University

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Jordan C. Reuille-Dupont

Marketing Department, Portland State University School of Business

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Dr. George Watson

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Abstract

In marketing, predictive analytics molds big data into tools that can create demographics, target pleasurable neuromodulator chemicals like dopamine, and influence individual and societal behavior patterns. Professionals and scholars alike can use machine-based computation to transform big data into usable knowledge that accurately represents and tracks human behavior. The deception used by marketers to achieve monetary profit can be seen as a direct exploitation of consumers' trust and privacy. In the past couple of decades this has led to the acceleration of the attention economy and has fueled the age of information. It has pushed countries to not only enforce new laws and regulations, but also race to secure control over data science technologies. Thus, this unchecked greed has created a world in which the power of algorithms and big data is of paramount importance. The future of humanity rides on the success of artificial intelligence algorithms (AI technologies), it is imperative that conversations around this topic become more frequent. The research for this thesis will ultimately lead to a better understanding of how the unregulated dynamic between artificial intelligence programs, big data, corporations, and marketers have had an invasive impact on consumers.

Introduction

Artificial Intelligence (AI) is quietly shaking the very foundation of our society. Recently, conversations around AI have taken off, with most people feeling either excited, happy, oblivious, confused, or concerned. Humanity is presently entering an era of unparalleled and inevitable disequilibrium driven by the forces of AI. By 2030 China is going to dedicate $150 billion to the research and implementation of the domestic AI market. The European Union has followed suite and has called for $24 billion by 2030 and the United States of America is set to leave the development of AI to the hand of its laissez-faire capitalist system (Jacobides, Brusoni & Candelon, 2021). Dr. Malhotra and many others throughout this paper agree that the world is about to see a dramatic *power shift* stemming from an AI-driven revolution. The global power dynamics between the various social classes of humanity and the corporations that own these communication technologies, any program or equipment that emits information, and the algorithms that produce troves of data are set to change. Some industries most heavily affected by AI are (but are not limited to) robotics, nanotechnology, brain-machine interface, 5G, aerospace, and medical technology. Whether or not that change is positive will rely on understanding this technology and placing regulations on what corporations can and cannot do with data and Artificial Intelligence.

To better understand the ecosystem of AI, its global influence, and its interconnectedness within the marketing field, this paper will first examine what AI and Big Data are to show how these technologies are being used in marketing. Next, this research lays the groundwork for understanding AI ecosystems by thoroughly explaining what these technologies are, the difference between consciousness, intelligence and sentience, and the impact psychology has had on the formation of various platforms that has helped drive margins and marketing tactics for the

last decade. Finally, this paper discusses how AI has been programmed to target pleasure sensors in the brain and create addictive platforms. Allowing people to do so ultimately built an economy around the value of attention and has thus far proven its inability to police itself. Therefore, new laws and regulations need to be implemented to ensure that this technology's future ramifications impact society positively. Ultimately this brings awareness to the influence social media and other platform companies have in bending social belief patterns to their will. By explaining how marketing uses predictive analytics to monitor AI and organize big data one can see how valuable the attention economy has become in recent years. All together this paper provides insight into what the future can look like with AI. Between the automation of the job market, digital colonization and the weaponization of AI it is clear that these technologies need to be thoroughly monitored and regulated before they can affect society in a irreversibly damaging way. After divulging into the research behind what makes unregulated data and AI so powerful, I implore you to answer the question, are you willing to give big data and AI the power to have a say in all your tomorrows?

Background

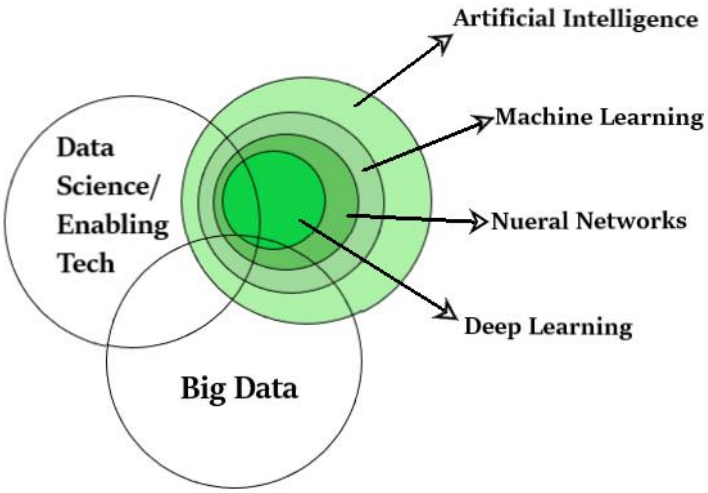
What is AI?

The invention of cloud and data processing programs has given the world access to extensive and usable data sets. This 'big data' has the potential to reveal trends, associations, and patterns in human interactions and behavior. Artificial Intelligence can be further broken down into three segments. The first is *AI*, essentially the engineering of making intelligent machines and programs; after this comes *Machine learning*, when machines gain the ability to learn without being explicitly programmed. As of the late 2000s, deep learning has become the natural

progression of these programs. *Deep learning* is a learning process based on deep neural networks found in ML. AI is a human-made cognition program and it is utilized in Marketing, it becomes a program that uses *big data* and *market analytics* to transform the evolutionary process of technology – that is, machines that can think and learn independently (Pacheco-Jorge, 2019). Figure 1 demonstrates the relationships between how AI, big data, and data science overlap.

Figure 1

The Relationship Between Data Science, Artificial Intelligence, and Big Data



Note. AI can be further broken down into four subsections. All terms used in this figure are further defined in Table 1.

AI programs are transforming the way business is conducted by rapidly assessing and adjusting the makeup of markets, ideas, and inventions based on data collection and real-time

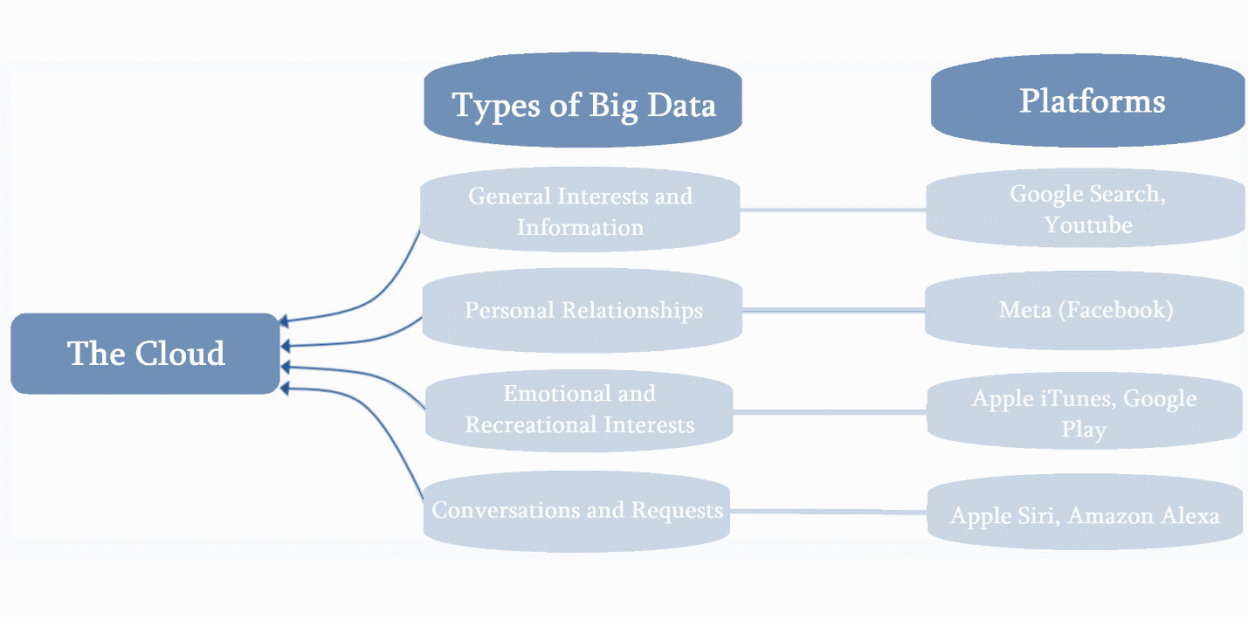
analysis, "The *volume* of data has been doubling every two years. Since 2005, there has been a 300-fold increase, and roughly 2.5 quintillion bytes of data are created daily" (Malhotra, 2021). Smartphones can be mostly to blame for this surge in information as their wide range of sensors collects far more data than their previous mobile counterparts, laptops, and desktops. The new techniques and material goods of technological advancements, innovations, and entrepreneurship have been driving the dawn of the new information economy. This means "automation ecosystems" (Jacobides, Brusoni & Candelon, 2021) are producing data at levels never seen before. They are dramatically shaping the future of all humankind. According to many experts, the world is entering a third industrial revolution. Unless businesses can learn to harness the power of data or "the new oil" that fuels the new digital landscapes, they will be swept away by the "technological tsunami" (Malhotra, 2021) that is growing within the vast ocean of information collection. This development will come at a significant cost to consumers unless more regulation is passed.

The expansion of communications technology is part of the natural progression of human evolution. These advancements have allowed the public to spread information, pass down stories, and grow their knowledge throughout history. Today it has become digitized, and it has become nearly effortless to find information. The internet and social media have become part of how individuals and society learn about the world around them. This technological literacy and education are critical pieces of the global communication puzzle. Therefore, learning how to benefit from AI, data science technologies, and big data instead of being consumed by them will become critical to the advancement of humanity. Figure 2 shows the initial process of data collection. It demonstrates how the flow of communication from big data occurs. Every second, the entire ecosystem of AI is continuously inputting data (big data) from the cloud, refining it,

mining it, and extracting information from these collected data points to turn them into usable knowledge for humans. This second figure shows which platforms produce which types of big data that are accumulated in the cloud. After it is stored in the cloud, Figure 3 demonstrates how it is inputted as raw data and then refined so it can go through data analysis (data mining) and be turned into information to output an interpretation analysis or knowledge for the greater community.

Figure 2

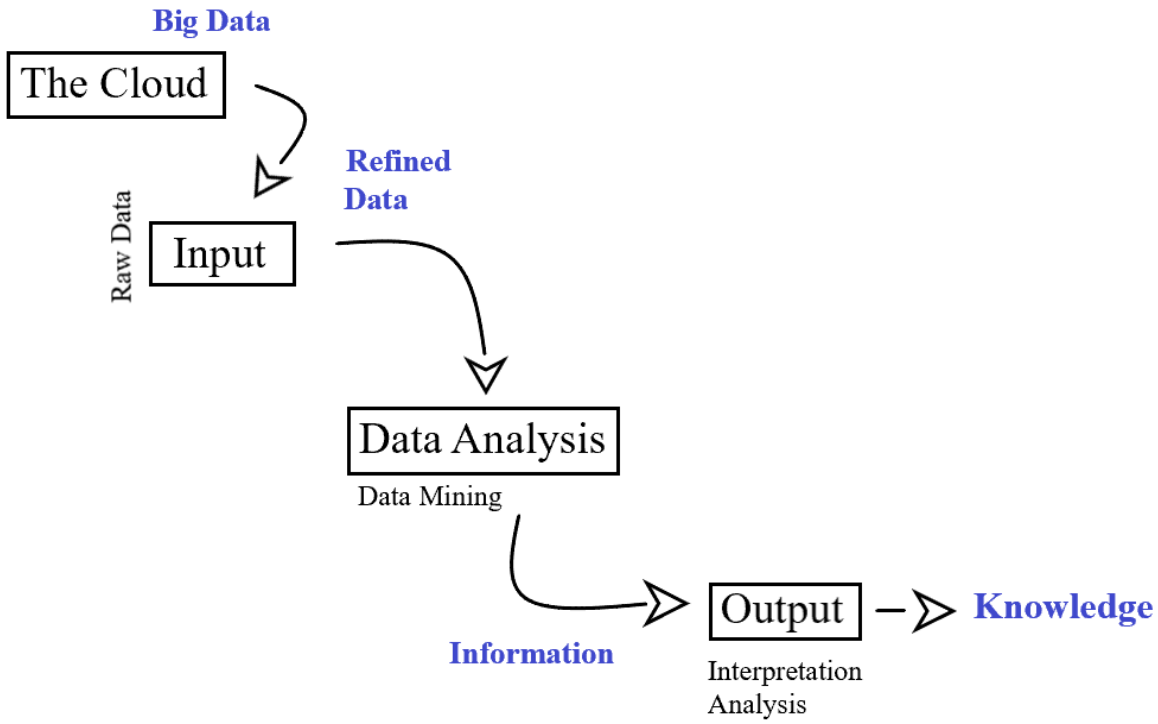
How platform companies feed the cloud big data



Note. Big Data is collected through many different platforms, this diagram only includes some of the most prevalent and frequently collected types. There are many others that are not shown here.

Figure 3

The process of retrieving knowledge from big data



Note. This is a demonstration of how the AI ecosystem works, big data is refined to information before it becomes knowledge.

The Difference Between Sentience, Consciousness, and Intelligence

The "real" world used to be merely physical; the third-dimensional realm we have come to observe and partake in as human beings. However, today it also pertains to online environments such as video games, social media, cinema, email, zoom, scholarly research, cooking, podcasts, shopping, music, and virtual reality companies such as Oculus. Something so vital to people's everyday lives has no business being classified as unreal because it is simply a

virtual version of this *reality*. These virtual realities are *real* realities but are on a separate plane of existence from our current state of sentience, consciousness, and intelligence. Some experts even go as far as to say that perhaps the cloud is, indeed, "a four-dimensional object (that) we catch slices of…when it passes through the three-dimensional world we recognize" (Blumenthal, P, 2017). Although virtual reality is created through computer-generated algorithms, human physiology perceives it as real. Animate beings experience things through their perception; whether imagined, tangible, or physical, the perception of such experience makes it real for humans. In the excitement, confusion, and fear of the impending future, many skeptics have confused the boundaries between sentient, conscious, and intelligent beings.

To be sentient means to be responsive to impressions and be aware of the perception of knowledge, the ability an organism has to experience or sense thoughts and feelings (Merriam-Webster, (n.d.).). This cognitive phenomenon can be considered a minimalistic way of describing consciousness. The opposite of sentience is insentience, or the inability to feel emotional or physical pain or pleasure. Presently, AI and data science technologies are insentient.

Consider that the phenomenon of consciousness is different from the phenomena of sentience along with that of intelligence, attention, self-consciousness, and knowledge. Searle explains how consciousness can be considered a biological process, much like growth and digestion, that occurs when one wakes from a state of unconsciousness (a dreamless sleep, a coma, or death) and continues through the day until one falls asleep once more. However, it also carries characteristics that other biological processes do not have, such as subjectivity or how one can perceive their environment on a personal level. This can be what someone feels, such as things like itches, tickles, and emotions, all of which are feelings private to that person (Searle,

2012). The act of judging an experience comes from inferring about prior experiences which can be in themselves inaccurate. The conscious mind may not be aware of all influences at the time of occurrence. (Reuille-Dupont, 2020) Although AI can be described as intelligent, it is being used to understand human intelligence further, and its behavior does not restrict itself to biologically observable characteristics. Therefore, humanity cannot categorize AI as a traditional organism following previous consciousness definitions.

According to Dr. McCarthy (2007), Artificial intelligence is the engineering of intelligent machines; it is the science that comprises intelligent computer programs. Intelligence is the ability to be self-aware and responsive rather than reactive to one's experiences and situations. It can be seen as the ability to address and solve problems creatively. Presently, the definition of intelligence relies only on that of human intelligence. Regarding technology, Dr. McCarthy would say that intelligence is the computational ability to achieve goals (McCarthy, 2007). AI can tell what's unreal but not really what the whole reality is; all it does is deduct from the whole it was programmed to perceive. It cannot infer what is unknown; it only knows itself and the information it was programmed to receive and evaluate.

Nonetheless, even if experts argue that machines are not presently "conscious," there is no reason there should be a limit on what machines will be capable of in the future. All of the cognitive studies mentioned above are merely biased definitions made purely from a human, third dimensional perspective. Especially considering most artificial technologies are designed to copy and implement human behavior. Table 1 defines and highlights the primary critical constructs of this paper.

Table 1

Key Constructs

Computer Science Concept	**Definition**	**Applications**
Artificial Intelligence	The ability a machine has to simulate and imitate intelligent human behavior. A machine-based system that can make decisions, predictions, and recommendations within a given set of objectives. It can influence both virtual and real environments.	• Healthcare Management • Smart Assistance • Automated Financial Investing • Social Media Monitoring
Machine Learning	How a computer improves its performance by continuously analyzing data and inputting new data.	• Face Recognition • Spam Mail classification • Cancer Detection • Sale Prediction • Fraud Detection Systems • Audio/Voice Interpretation
Artificial Neural Networks (Neural Nets)	A reflection of the behavior of the human brain, Neural Networks allow computer programs to see patterns and solve problems. Neural Networks are a subset of Machine Learning and are at the core of Deep Learning.	• Pattern Recognition • System Identification and Control • Quantum Chemistry • Playing Board Games and Decision Making

Big Data	The accumulation of data happens to be too large for traditional processing and management tools. Big Data can either refer to the massive amount of collected data itself or the programs used to manage said data. It is exponentially growing with time.	● New York Stock Exchange ● Social Media ● Jet Engine
Data Mining	The process of organizing and analyzing big data.	● Ecommerce ● Crime Prevention ● Farming ● Designing Marketing Campaigns
The Cloud	Gives people a way to share information without the need for a third dimensional, physical space. The cloud refers to both the management of data and the software that was programmed to run off of designated servers.	● File Storage and Sharing ● File Backup and Disaster Recovery ● Advertising ● Software and Platform Applications Usage.
Deep Learning	A neural network that uses multiple layers of data to simulate a human brain. It progressively transforms big data, that is oftentimes unstructured, into something that AI can use to learn from.	● Healthcare ● Stock Analysis ● Fraud Detection ● News Analysis ● Self-Driving Cars
Market Analytics	The management of metrics data that determines the rate of interest on marketing efforts. The use of marketing analytics helps businesses identify areas of improvement.	● Customer Segmentation Analysis ● Customer Intent Analysis ● Customer Lifetime Value Analysis ● Current and Previous Data Analysis

Robotics	Robotics is the overarching term that refers to the creation of robots. Robots are machines that are made to resemble a living thing, they are capable of moving independently and have the ability to perform complex actions.	● Roomba (*iRobot*) ● Animatronic Toys ● Machines that are made to limit human physical participation. (*Think manufacturers*)
Symbolic Systems	This system can be referred to as a blend of psychology, linguistics, computer science, and philosophy. It is the science of the mind and looks at the relationship between humans and computers with the goal of making programs more user friendly. A symbolic language is a language that uses symbols or characters to convey a message.	● A computing system ● Human-computer Relationship
Platforms	Information organizations that are connected with other information organizations through the internet and use cloud-based content dissemination to spread said information.	● Utility (*Google Search*) ● Computing (*Apple IOS*) ● Technology (*Amazon Web Services*) ● Data Harvesting (*Waze*) ● Content Crowdsourcing (*Youtube, Yelp, TipAdvisor*) ● Content Distribution (*Google AdSense*) ● Interaction (*Facebook, Bitcoin*) ● Marketplaces (*eBay, Airbnb*) ● On-demand Service (*Uber*)

Note. Key constructs table. Sourced from, Jordan Reuille-Dupont, 2022

The Psychology of AI Programs

In the uncertain timeline of new technological advancements, one thing remains clear, online outlets or communities offer a haven for intimate relationships that do not have to be confined to typical societal norms. This collective apprehension offers more people and options for a more profound, intimate connection. Research shows that a deeper intimate connection leads to more significant mental and physical health improvements. With the help of the network effect, the platform grows in proportion to the amount of data consumers willingly or unwillingly surrender to it. By offering social engagements, these platform companies offer comforts that can fill the void of loneliness and boredom. For the first time in history, no one must be bored. No one must feel alone and sit in eternal silence, damnation, or excitement. Everything can be broadcast; everything can be shared. This newfound sense of community is, at times, very overwhelming and underwhelming. This craving for acceptance was only heightened amidst the Covid-19 pandemic.

Playing video games, for example, has proven to be a portal that can cause connection or isolation among consumers. Computer and video gaming addiction, also known as pathological gaming and gaming disorder, is an emerging adolescent behavioral problem (Liu, 2014). The serotonin released when a game is won often causes the user to keep playing. Sometimes in cases of addiction, one may play for hours on end, depriving themselves of essential activities such as sleep, bathing, and eating. Since most of the said consumer's time is invested in online platforms, it may become difficult for this person to interact with people in the *real world* outside of other players (Ahmed, 2017). Nonetheless, video games have become an inherent aspect of societal culture and will continue to be a form of communication for years. This is important to note as

approximately 39% of people in Generation Z have four or more social media accounts (Carbone, n.d.).

When looking closer at the internet's effect on youth, a clear line connects the personal online activity to rising depression, anxiety, and stress (DAS). DAS is the most common form of mental illness in youth. In this context, youth will be categorized as 15 to about 24 years; this specific age demographic includes late and middle adolescence for this research. During this time, individuals are more subject to psychological, physical, and social pressures, changes, and dimensions. For youth to gain personal development, it is imperative for them to have a sense of achievement, a purpose in life, love, independence, and belonging. Almost all these essential elements became immensely harder to find with the COVID pandemic of 2019.

During the study, *Prevalence, and Predictors of Depression, Anxiety, and Stress among Youth at the Time of COVID-19: An Online Cross-Sectional Multicounty Study*, researchers were able to question about one thousand members of the youth community about mental health, online usage, and COVID adjustments. On average, individuals experienced a 57% increase in internet usage after COVID-19 (Omari, 2020). According to an Active Minds Survey of about two thousand college students last year regarding the impact of COVID-19 on their mental health status, around 80% recorded feelings of sadness, isolation, and loneliness (Fernandez, 2021). These alarming statistics are because online usage can be directly correlated and targeted as a significant predictor for DAS (Depression, Anxiety, Stress). Therefore, the more people are lured into marketing and advertising traps, the more time they spend online, and the higher rates of DAS are in said individual. Understanding mental health in youth and all other global community members is imperative since the adoption of new and exciting innovations will not slow down anytime soon. Marketing professionals have the power to use AI technologies in

ways that influence what people believe, care about, etc. Ultimately, they can manipulate and exploit people's DAS.

How AI is Used in Marketing

AI is leading marketing and advertising to a complete change in nature. Marketing is becoming less of an overall promotion and more of a specialized experience for everyone. AI programs in many businesses blur the boundary between manipulation and consumer persuasion (Pacheco-Jorge, 2019). In the past, a marketer was supposed to gather demographic information, monitor trends, and further segment consumers to find a target market. An example of this is how grocery stores stock their shelves. (e.g., magazines and chewing gum are located near the checkout, and milk & eggs are at the back), Coke uses red, and specialty stores smell like certain perfumes. Almost every material today is carefully curated to persuade or coerce consumers to buy it. This job has been dramatically altered in the past decade, especially with the shift to a completely online environment that society was forced to experience during the COVID-19 pandemic.

Companies have accelerated pre-designing consumer interactions to increase consumer engagement and gain an economic advantage over their competitors. These methods push the boundary of coercion into the space of manipulation. The marketing industry now develops strategies and implements ideas based on collecting large amounts of data through search engine optimization, location tracking, social media, and health monitoring (e.g., the Fitbit and apple watches - heart rate, sleeping habits), along with many other points of interest. An example of this can be seen through Amazon's acquisition of IRobot, the company that makes robot vacuums under the Roomba brand. With the known potential options for collecting data, the Roomba

vacuums could be outfitted to record the exact layout of a person's home and share it with Amazon. With this new data trove, Amazon could now adequately recommend the couch that would fit a consumer's living room or space (Astor, 2017).

The daily profiling of individuals is being handed down to the development of emotional and psychological models that can exploit consumer vulnerabilities and weaknesses. By targeting the motives that are the most likely to succeed and pinpointing what fears and threats make the most effective impediments, the doors to manipulation opportunities begin opening on their own (Malhotra, 2021). Businesses can now conduct experiments with their consumers in hyper-efficient ways. Unlike traditional data analysis, where one can measure the probability of a specific interaction, machine-based experimentation allows businesses to explore the causal relationship between consumer behavior and business marketing strategies. Therefore, AI is no longer persuading consumer behavior; instead, it "can now be used to identify and directly influence specific behaviors within consumers" (Galli, 2019). Persuasion and influence are both leadership skills, but persuasion should be distinct from an influence. Big data is a real-time abundance of knowledge that provides opportunities to modify behavior for profit by creating a paradigm of personal identity. This manipulation can be found in all kinds of applications, including but not subject to location tracking, facial recognition, cross-platform tracking with the help of cookies, etc. However, it is essential to note that only some companies deploying these features use them for malice.

Many business professionals need to recognize the research trifecta that goes into making AI software for commercial applications. Through a combination of neuroscience, psychology, and marketing tactics, these programs look at the scientific study of the human mind and the overall structure of the nervous system to curate the best way of promoting and selling products

or services. Simple AI algorithms use a sophisticated analysis of a user's online activity to learn more about them. By scoring their engagements (impressions) and comments (clicks), they can produce a scarily accurate representation of said person's wants and needs as well as actively chart a user's click-through rate (CTR). A CTR is how often a consumer clicks on a given advertisement and proceeds to the company's website. For marketers, these rates quantify the success of their outreach. At the forefront of this technology is the latest research in intuitive and emotional machine learning. In other words, deep learning now allows machines to generate detailed individual profiles based on a newfound staggering comprehension of an individual's emotional and logical life. A user's phone now knows them better than their closest friends and family. These detailed profiles are for one person and communities, nationalities, and other categories that take digital surveillance to unfathomable heights (Malhotra, 2021).

Advances within this field have led to increased profit margins across the board. Due to the exponential growth of data science and big data combined with little to no regulation, corporations have been able to push any boundaries to find out precisely what makes a consumer tick. With the help of psychologists and neuroscientists, many professionals within this field are eagerly trying to locate and capitalize on what is known as the "consumer buy button," or where in mind the impulse to make a purchase lives. Through this collaboration between neuroscience and marketing, there are now "revealing neurological patterns that correspond to specific perceptions, emotions, and actions." (Malhotra, 2021). Soon personalizing commercial offers could even send someone advertisements for their favorite ice cream shops when their AI detects that they are sad. In 2014 there was a conference where the future of power in digital marketing and the manipulation that would ensue in the following decade. Concerns were addressed that regarded the legitimacy of a fair marketplace by saying these emerging techniques and

technologies will empower corporations to "exploit the limits of each consumer's ability to pursue his or her self-interest." (Calo, 2014). Even though it has been almost ten years since this conference, to date, there have only been a few new laws or regulations that have been implemented to secure the public's agency of free will and privacy. However, at least 60 nations have adopted AI laws and regulations since 2017. This means the public and national officials are at least beginning conversations about the significance of AI applications, especially for younger generations.

Implications

For decades marketing professionals, neuroscientists, computer scientists and psychologists have been working together to cultivate this transformative era of Artificial Intelligence. At the core of its essence intelligence is simply intelligence and can be either artificial or organic. Over the past decade the collective societal level of intelligence has grown into what is known as the vast network of the internet. Scholars and professionals alike can use this information to go beyond the means of human competency. They can use machine-based computation and predictive marketing analytics to further human understanding of behavior and knowledge. In the past decade this has led to the acceleration of the attention economy and has pushed countries to enforce new laws and regulations.

Predictive Analytics

One of the defining characteristics of a good marketer is their ability to use marketing analytics to predict what a consumer will do. A prediction is an informed assumption about the future fueled by experience. At the epicenter of managing customer relationships is the idea that

one can master the art of prediction. Predictive analytics is an emerging field of computer science that can help marketers identify unexpected opportunities, optimize existing operations, better grasp consumer behavior, and evaluate problems before they arise. Wayne W. Eckerson is the director of research and services for The Data Warehouse Institute and has been covering the topic since 1995. He defines *predictive analytics* as a set of business intelligence technologies. It is a forward-thinking technology that uses past events to reveal patterns and relationships within big data sets to foresee the future. Marketers use this technology for loyalty applications, campaign management, forecasting and budgeting models, customer attainment, and cross-selling tactics. Predictive analytics intersect machine learning, statistical modeling, and data mining. It is commonly referred to as statistics on steroids (Eckerson, 2007).

In the past, things such as brand perception, desires and needs, and improving target advertising were the main goals of predictive marketing. However, the more these statistical and modeling techniques are augmented, the easier it is for predictive analytics to tap into more sensitive data, such as using social media profiles to piece together a user's level of risk aversion, intelligence, degree of deliberation, values, and other psychological traits. This allows corporations to influence our beliefs and political opinions subtly and covertly. This is going to become a threat to contemporary democracies "that emanate(s) from the possibility to employ such capacity to manipulate and control not only economic choices but also social and political behaviors, have only recently become apparent" (Galli, 2019). In an article posted in the Washington Post, "Facebook invites you to live in a bubble where you are always right," writer Brochures (2018) talks about the AI that controls a user's feed. He says it comprises technology that can continuously read a user's engagement. The co-founder Larry Page came forward when asked what defines Google's core business. He said, "People will generate enormous amounts of

data … Everything you have ever heard or seen or experienced will become searchable. Your whole life will be searchable" (Malhotra, 2021). AI software can track everything a user does to provide an addictive substance that reels them in for hours—pulling or burying them deeper into a hole of artificial creation. The Vice President of Poynter Vice, Kelly Mcbride, said "Facebook has an incentive not to challenge the ideological perspectives of its users: If they feel more comfortable with their news feeds, they are going to spend more time scrolling through them.

Moreover, if they spend more time scrolling through them, Facebook shows them more ads (Brochure, 2018). The competitive market behind these *free* platforms is based on something other than cash flow but on how long they can get an individual to use their app. When a person logs on, they see direct advertisements of products constantly flickering across their screen; instead of paying for an app in currency, users pay with their attention.

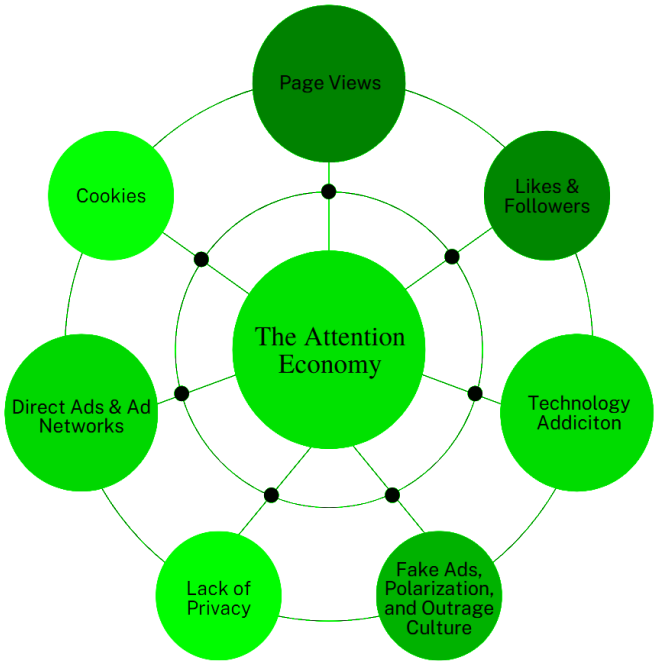
The Acceleration of the Attention Economy

When studying the effects media can have on an individual, it is essential to understand that higher exposure to media outlets leads to the crowding out of other activities. According to *Economic and Social Impacts of The Media* by Stefano DellaVigna and Eliana La Ferrara (2015), "in the US, the average amount of time spent watching television (which is just one form of media entertainment) is 2.7 hours per day, half of leisure time." Recently a new term has been coined to explain the rise of this phenomenon further; economist, psychologist, and Nobel Prize Winner Laureate Herbert A. Simon calls this the dawn of the attention economy. He applied economic theory to information management and used the principle of attention to represent a scarce commodity. *Attention* is the cognitive state in which someone devotes awareness to a particular subject or environment rather than other activities and interactions. He suggested that

humanity's new wealth of information at its fingertips "creates a poverty of attention" (Mintzer, 2020). In the 21st century, human existence is living in a world where people are forced to juggle more relationships with people but with less meaningful connections, more information but with less relevancy, and more knowledge but with a lower mental capacity. It is a time when page views, likes, and followers dominate the thoughts in one's mind. A world where ad networks utilize direct advertisements, and deep collections of big data, all with no care about the user's privacy. To tag or track consumers and organize this data better, HTTP cookies were invented. Cookies pop up when a user opens a website. As the user continues browsing said site, small data blocks are created and placed on the device being used, a world where technology has become an addiction- an opium of the masses. Figure 4 depicts the web of the Attention Economy. It further explains how to funnel ads and cookies into the lack of consumer privacy and fake information/polarization to become an addiction to views, likes, and followers.

Figure 4

The Attention Economy



Note. The Attention Economy is a focus point of interest intertwined into the very fabric of the world wide web, the success of the third industrial revolution, and the utilization of predictive analytics.

How many of a user's actions are based on their desires? With the world population only predicted to increase and media platforms growing alongside these numbers, it is now becoming imperative for people to investigate the amount of data technology companies' control. Right now, the media broadcasted on these platforms can reach almost a quarter of the world, if not more. In the TED talk "Filter Bubbles" (Praiser, 2011), Pariser discusses how technology continuously monitors, reads, and categorizes people's activities. Companies are now receiving

boundless amounts of transaction, self-reported, and psychographic data to get deeper and deeper into the minds of consumers. These large amounts of data are incredibly unregulated and becoming dangerous. The processes being conducted by automated machines are shaping the behavior of consumers on a never-before-seen scale, "with this reorientation from knowledge to power, it is no longer enough to automate information flows *about* us; the goal is to *automate us"* (Malhotra, 2021). Therefore, the more data the public willingly gives these *free* applications ultimately leads to a higher loss of selfhood. As AI becomes more prevalent, data science continues to advance, and big data retain such a high value, it will become imperative for people to recognize the trade-off between losing their free will and momentary gratification (Malhotra, 2021).

Today, the climate around consumer data is shifting as more people become aware of how their data is being transferred and used. Nonetheless, "there is no ban on using algorithmic systems to influence consumers in ranking or personalizing prices" (Galli, 2019). In the future, corporations must make that information public so that consumers can track where and why their data is being processed. The problem is a lot of "willful ignorance" (Swisher, 2019) regarding data mining and understanding data as a corporate resource. Swisher believes that since companies are paying for advertisements, they are paying for consumers' attention, making consumers a product themselves. The conversation should move from considering consumers as the product to calling them the fuel. As this consumer recollection occurs, it will be important to establish clear boundaries of what is acceptable and what is not when it comes to growing profit and gathering consumer analytics, especially under the guise of marketing.

Laws and Regulations

When considering the implications of this technology, the first thing that must be established is finding a solid balance between consumers' autonomy and cognitive freedom and the economic freedom of businesses. Above everything else, consumer protection is vital to freedom. Humans have been engaging in deceptive manipulation for thousands of years. With the help of AI, this has only accelerated. After conducting several social experiments, Australia's federal scientific and research agency concluded that AI could influence human decision-making. "The results showed that AI could locate and exploit weaknesses in human decision-making to guide people toward certain decisions" (Hurt, 2021). Presently, the problem with AI is that it is still a "black box" (Hurt, 2021). The way it can determine and narrow down strategies and techniques that make people decide one thing versus another has yet to be one hundred percent understood. In contemporary marketing, AI programs typically contain the producer's bias and are almost solely programmed to increase consumer engagement. Due to this, enormous and unforeseen consequences have been seen across the world as social media use has increased.

As a social media publisher, Meta, the new name for Facebook Inc., has slowly begun publicly acknowledging its influence over politics, culture, and the spread of information. With its profits and user base continuously growing, it now hosts more people than any country. According to Statista, Facebook has the largest audience of any other social media company, and as of 2022, its services are used by about 2.9 billion users (*Facebook Users by Country 2021*, n.d.). To put this into perspective, China is the world's most densely populated country and has a population of about half that of Meta's at 1.45 billion. Presently, Facebook "sits on top of industries including journalism, where it, together with Google, essentially controls the distribution channels for online news and, as a result, the way people discover information about

politics, government, and society." (Bluthemal P., 2017). This newfound power comes with immense pressure to uphold freedom along with trust.

The podcast "A Little Privacy, Please" (2019) by Today explained some proposed regulations and legislation that began to transpire in 2019. During that year, California passed a law prohibiting companies from privatizing all their data and data usage. It is hard to picture big data's enormity and then apply a code of ethics to it. Establishing good customer relationships with these platforms is essential as the amount of influence and power these companies carry will continue to grow and change the world. Today, roughly "86% of end users of AI in China generally trust the AI solution's decisions although only 45% of European users and 36% of American users do [as well]" (Jacobides, Brusoni & Candelon, 2021). This is a big difference; these numbers show how much distrust hangs in the minds of western societies.

Currently, there are three leading world powers who are concentrating on building algorithms: the laissez-faire (hands-off) capitalistic system of the United States of America (USA) marketplace (Big Tech companies such as Google, Facebook, Amazon, and Microsoft), the United Nations of Europe's consumer protection laws, and China's communist regime (Alibaba, Tencent). China has publicly declared it will invest $150 billion by 2030 in its domestic AI market. The European Union is calling for $24 by 2030; the United States is set to leave the development of AI to the hand of its laissez-faire capitalist system (Jacobides, Brusoni & Candelon, 2021). China is actively committing to the success of their economy using the advancement of AI technologies like their platform TikTok which currently has one of the most advanced algorithms the world has ever seen. China poses a serious threat to companies in the United States like Meta. Meta uses their platforms to control almost half of the global population's relational data. Now, it has become a race to see who will control future AI. Below

is a table of current legislation and major regulatory initiatives in the United States, China, Europe, and Australia.

Figure 5

Highly Influential Countries in the World of AI

Note. These countries include the USA, The European Union, China, and Australia.

Table 2

Updated Laws and Regulations Table

Name of the Law	Text, Definitions, etc.	Implications
1. **Privacy Amendment (Notifiable Data Breaches) Act 2017 ^** 2. **Regulations on the Promotion of the AI Industry of Shenzhen Special Economic Zone #** 3. **The European General Data Protection Regulation (GDPR) +** 4. **Unfair Commercial Practice Directive** 5. **The Communication**	1. This act was a reform of an act that was passed in 1988. (Australian Government, Federal Register of Legislation) 2. This set of regulations has been established to help frame the development and promote the use of AI. The goal is to establish a framework that will have the ability to govern the approval of AI services and products and regulate AI usage ethics. 3. Is one of the toughest security and privacy laws in the world. It encompasses but is not limited to; "data protection principles, lawfulness, fairness and transparency, purpose limitation, data minimization, accuracy, storage limitation, integrity and confidentiality, accountability, Consent, and Privacy rights." (GDPR European Union) 4. One of the main legal tools used by Europe to deal with manipulative corporate commercial practices. (Galli, 2019)	1. Having an older act reformed like this means that countries are willing to accept the change that is transpiring due to these technologies. 2. AI and big data are growing at rates that are incomprehensible. It will be extremely important in the future to develop manners of regulation for these technologies that can bypass human comprehension of the subject. This also shows how dedicated China is to the development of AI. 3. Data breaches and hacking have become extremely prevalent and dangerous within the last couple of decades. Laws like the GDPR provide a sense of security and comfort for online users. 4. Tries to alleviate the manipulative power corporations have on influencing consumer behavioral

on 'Artificial Intelligence for Europe' Policy + 6. **Declaration on "the manipulative capabilities of algorithmic processes" +** 7. **'The Omnibus Directive**' + 8. **Trade Regulation Rule on Commercial Surveillance and Data Security (FTC)**. * 9. **Deceptive Experience To Online Users Reduction Act** * 10. **Deception Experience to Online User Reduction Act (DETOUR ACT) *** 5. This is the first comprehensive policy that focuses primarily on AI. (Galli, 2019) 6. On the intergovernmental level, the council of Europe adopted this declaration last February (Galli, 2019). The council of Europe recommends that member states initiate discussions for what may be permissible persuasion and unacceptable manipulation. 7. The legislative act was made to improve enforcement of consumer rights and raise awareness among consumers. It also is an attempt to introduce new rules about online market transactions. (Galli, 2019). 8. The FTC is a bipartisan federal agency whose primary job is focusing on consumer protection and enforcing antitrust laws. It has the power to prosecute any "unfair or deceptive acts or practices in or affecting commerce" (Section 5 FTC Act) (Galli, 2019) 9. Uses the FTC or fair marketing law to attempt regulation on advanced technologies. (Galli, 2019) 10. "Prohibits the usage of exploitative and deceptive practices by large online operators and to promote consumer welfare in the use of behavioral	thought patterns. 5. Being one of the leading policies to regulate this technology, it made the world take a closer look at the power of these technologies. 6. This declaration drew attention to how manipulative marketing is and the difference between proper persuasion and what it means to influence the way a population perceives information. 7. Right now, the world has four different generations in the workplace. The psychological manipulation that occurs within marketing was never really talked about before which means that this legislative act is the pioneer of discussion within consumer rights. 8. This agency has an impact on almost all areas of commerce. It focuses on primarily protecting consumers. 9. Corporations must alter and sometimes change their products to abide by these regulations. 10. Deceptive marketing can lead

11. **Organization for Economic Cooperation and Development (OECD) AI Policy Observatory *** 12. **Global Partnership on Artificial Intelligence (GPAI)** * 13. **The National AI Initiative Act of 2020** *	research by such providers" (117th Congress, 2021-2022) 11. This is the first set of intergovernmental principles for trustworthy AI that was established in February of 2020. It is a platform used to facilitate communication between stakeholders. "The US has 47 initiatives associated with the observatory that help contribute to COVID-19 response, invest in workforce training, promote safety guidance for automated transportation technologies, and more." (US Department of State) 12. In June 2020 this multi stakeholder initiative was launched to make sure AI technologies upheld democratic values. (US Department of State) 13. A federal program in charge of intensely studying AI applications to further development, the economy and national prosperity. (National Artificial Intelligence Initiative Office)	consumers to buy products that are counterfeit or fake by enticing them with unfair or false claims. Some of the best examples of this exploitation are the 1950s cigarette campaigns. 11. This helps the government break down the immensity of data science technology regulation. It also shows that the government is paying attention to the power these technologies hold and allocating appropriate surveillance to them. 12. This initiative makes sure that candidates are not manipulating data technologies in extreme manners to achieve the election outcomes they desire. 13. This can help monitor economic and national growth. This regulation can impact all corners and members of society.

Note. This table of Legislations and Major Regulatory Initiatives span over four decades. Most updates have been done in the last two years and there are many that are not included here. Key: ^ represents laws/regulations from Australia, # represents China, + represents Europe, and finally * represents the United States.

From a consumer protection standpoint, official organizations worldwide are behind in regulating this technology. As illustrated above in table two and figure 5, big tech corporations and governments have only recently started looking at implementing widespread regulation, with Europe and China putting the first significant regulations in place. The results of these decisions will remain.

As stated in the beginning, data is the "new oil" fueling the digital economy. In nature, oil and gas float through the porous rock into underground pockets resembling umbrellas. From there, an exploration geologist will conduct a series of seismic mappings to determine whether a particular area has the potential for oil. AI, big data, and data sciences are slipping through the cracks of the job market and filling the industrial umbrella with new robotic techniques and technologies that provide unprecedented cheap labor. Marketers are sifting through the results and implementing different automated processes in search of monetary gain.

Future Research Directions

Thus far, many significant changes in the world can be attributed to the advancements in AI technologies. AI has been poised in society to make significant contributions and influence almost every industry. Until this point, his paper has focused on breaking down what this technology is and how it is currently used in marketing. The following section will outline a top-down approach to how these technologies will flow into and affect other cultures and positions of employment to evaluate what needs to be done to ensure the societal success of AI and significant data development in the future.

Changes in the Job Market

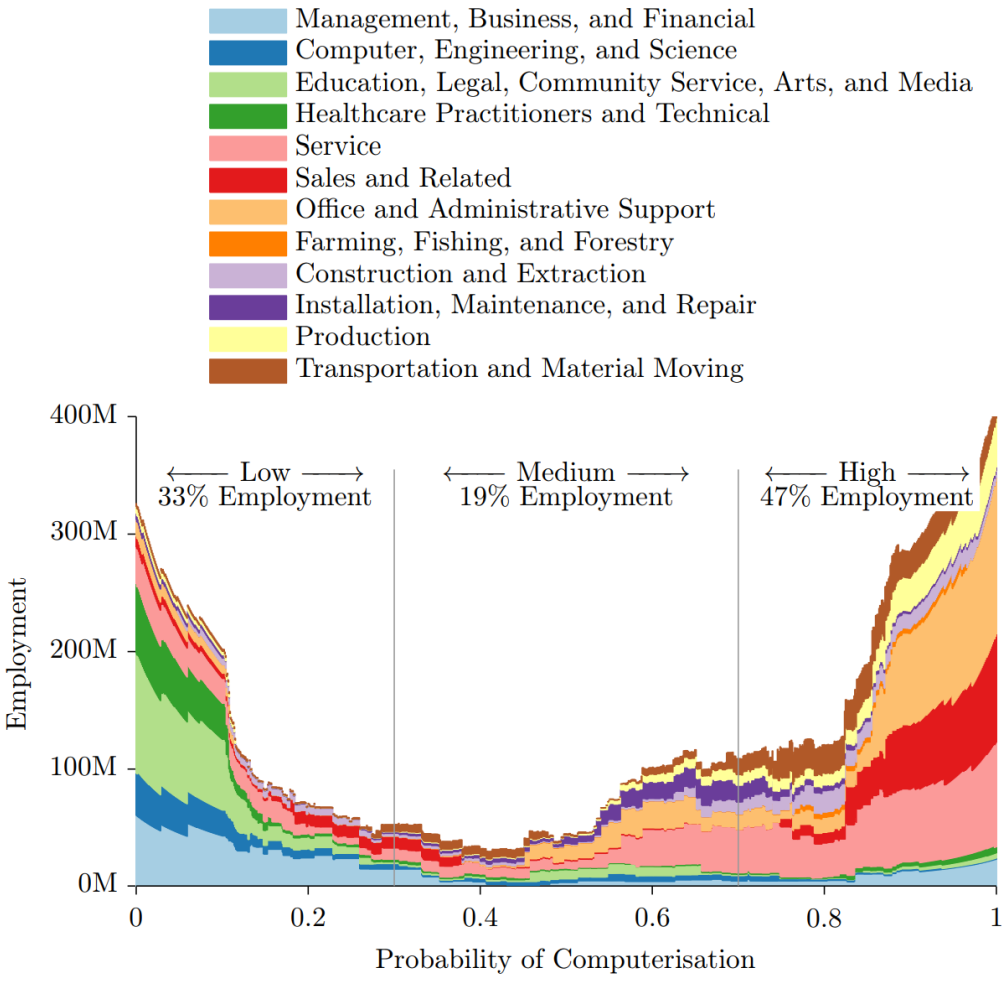
Besides infringing on the nature and culture of other countries, the future of the average workforce also needs to be considered when looking at the future directions of this technology. The occupational composition of the labor market does not change even close to the same rate of AI deployments. Many experts are worried about the impending wealth gap and the looming unemployment rate. Paul Epping, a well-known keynote speaker on exponential change, said, "The power of AI and machine learning (along with deep learning) is underestimated. The speed of advancements is incredible and will lead to automating virtually *all* processes (blue- *and* white-collar jobs)." (Anderson, 2021). The pace of technological innovation is ever-increasing, which makes the use of traditional workers redundant. In the past, AI technologies were confined to routine manufacturing jobs. Despite AI's historical past, it is taking on more manual tasks, such as automated driving. Less than two decades ago, programming a system to perceive the world through human perception would have been nearly impossible. Now Arizona has made autonomous driving completely legal, and philanthropists like Warren Buffet predict that automated drivers will take over the human driving force in the next twenty years. The scope of what computers can do has grown immensely in the last forty years and will continue to exceed expectations.

Oxford researchers Frey and Osborne compiled a quantifiable analysis of what recent technological advancements will mean for employment rates, reproduced in Figure 6. The jobs on the left side of the figure with a cooler color will be necessary to watch as they will be the most likely to survive this automation revolution. In 2013 they concluded that 47% of the US job market stands to be at risk of computerization. At the end of their study, they stated that "generalist occupations requiring knowledge of human heuristics, and specialist occupations

involving the development of novel ideas and artifacts, are the least susceptible to computerization" (Frey, 2013).

Figure 6

Task Model of Levels of employment and the probability of said field becoming computerized.



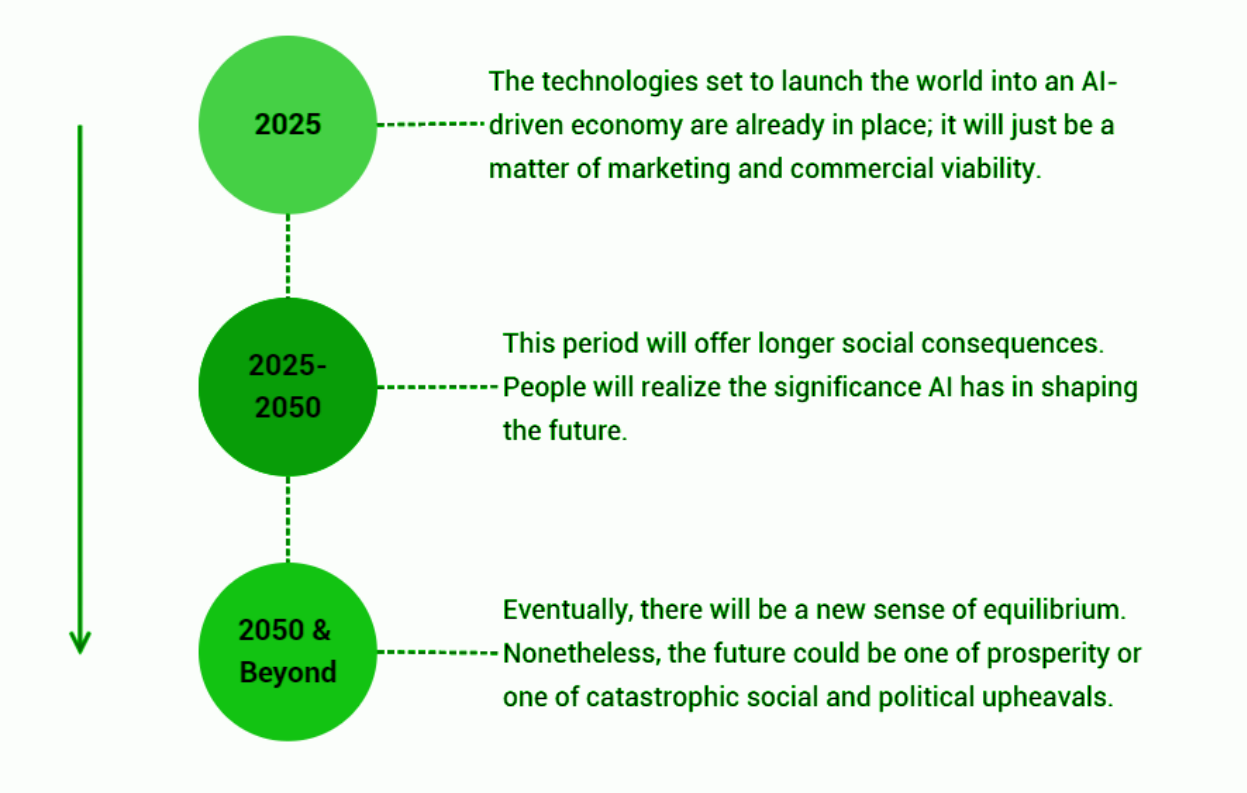
Note. Professions that are likely to succeed automation tend to be those that are spiritual, require analytical and management skills, or are people to people professions.

Ultimately, "The economic meltdown precipitated by AI's impact on jobs could lead to social unrest with potentially catastrophic results." (Malhotra, 2021). Regrettably, many corporations must become more knowledgeable and prepare the workforce for this imminent future. To prevent mass unemployment, retraining old employees and creating new jobs to replace lost ones will be essential. However, it is hard to get companies to direct money away from themselves and toward the benefit of society. After all, most of them will switch from human employment to robotic automation to save money. Industry analysts propose a possible solution to this imminent threat that may constitute the expansion of "emotion-based and care-based professions that nurture the spirit, such as yoga teachers, entertainers, and life coaches rather than production jobs." (Malhotra, 2021). As seen above, this idea fits the prediction made by Frey and Osborne in 2013. Whatever happens, one thing is sure: AI will drastically alter the job landscape, and big data will fuel the change.

The below timeline was created to represent Malhotra's assumptions more clearly:

Figure 7

A rough timeline of the impact advancements in AI technologies will have on society in the next 30 years



Note. There is two directions AI can proceed. One takes society into destruction and illusion while the other offers prosperity.

Digital Colonization

In the future, this creeping impingement of the digital world into the fabric of global society could lead to drastically unequal distributions of labor and wealth among other countries; Malhotra said the world of "data [now] represents national wealth" (Malhotra, 2021). Developing nations just starting to gain access to the internet will be subjected to the attention economy, manipulative marketing cycles, and bias programming. The richer countries ahead in AI

development currently hold the pioneering power to dominate or manipulate countries without as much technology. This phenomenon is commonly referred to as digital colonization. If this theory proves accurate, developing nations will be for sale, and AI will become a compelling means of perception control. If someone can control the flow of information into and out of a society, they can:

> …influence its shared sense of right and wrong, fair and unfair, clean and unclean, seemly and unseemly, real and fake, true and false, known and unknown. You can tell people what is out there, what matters, and what they should think about. You can signal how they ought to judge the conduct of others. You can arouse enthusiasm and fear, depression, and despair. You can shape the norms and customs that define what is permitted and what is forbidden, which manners are acceptable, what behavior is considered proper or improper, and how shared social rituals like greeting, courtship, ceremonies, discourse, and protest ought to be performed; what may be said and what ought to be considered unspeakable; and the accepted boundaries of political and social conduct. (pp. 176)

If left unkempt this amount of unfiltered influence can lead to horrible atrocities and in some cases even genocide.

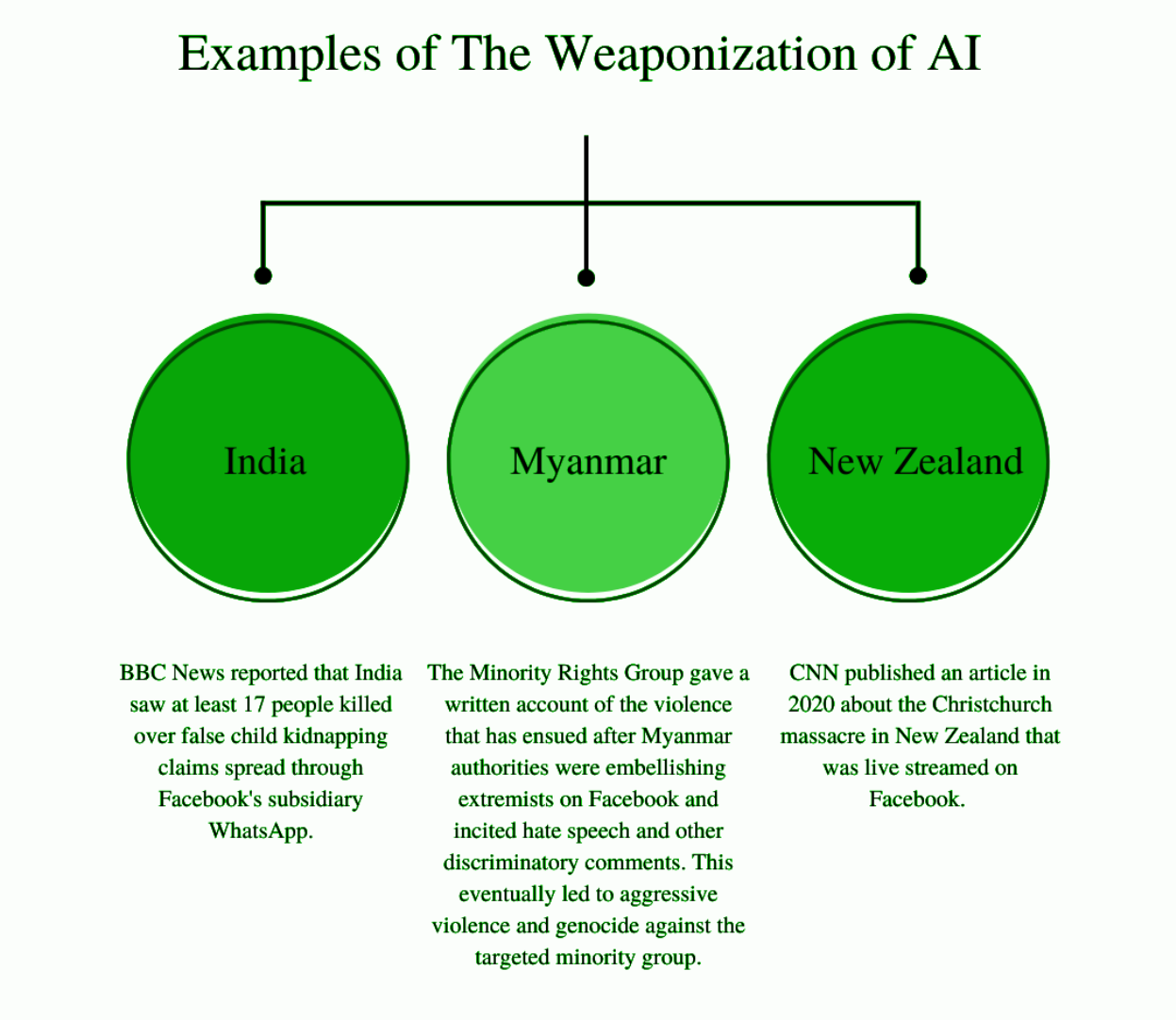
The Weaponization of AI

The weaponization of AI at the hands of governments, corporations, or both is not something to be taken lightly (Malhotra, 2021). Below, a chart displays three potential outcomes that occurred in the past when the media encouraged the spread of misinformation and hate speech to further deepen their corporate pockets with the wealth of attention, data, and capital of

a designated country. It also shows what can happen when political figures use these platforms to promote fake news, "coercive power does not manifest as a result of knowledge, but because the government bestows [it the] power" (Hobson & Stover, 2019):

Figure 8

Examples of Weaponization of AI Around the World



Note. All three of these incidents resulted in death, but the weaponization of AI does not have to be so drastic.

As seen above, if those who hold power are not held accountable for the hate speech and fake news that spreads through various communication technologies and if platforms are left unmonitored, cruelty and havoc can ensue in fatal ways. Nevertheless, there are ways to mitigate potentially existential threats and fight the weaponization of AI. Securing a successful AI climate will require people of diverse backgrounds to collaborate. Researchers, scientists, cyber security professionals, consumers, industry leaders, and policymakers can proactively act together to prevent violence and destruction.

This paper focuses on the manipulation of data by marketers for the benefit of corporations and monetary gain. However bleak as this information may seem, there are several benefits to the progression of data sciences, AI technologies, and big data, see the applications section in table one. This includes reducing human error, promoting human flourishing, using predictive analytics to foresee pandemics, and improving societal cohesion. When referring to AI, it is essential to note that it can be broadly defined as software that can generate outcomes, decisions, recommendations, or predictions, thereby influencing its environment for a given set of human directives. Ensuring socially fair uses of AI transpire in the future remains an important topic of conversation. The success of AI ecosystems relies upon resolving the tension between preventing misuse of this technology and allowing society to subsume the benefits (Floridi, Cowls, 2018). Between neuropathic medicine, monitoring communication channels, and identifying human rights violations, AI has been instrumental in shaping and navigating a cohesive global community. AI will continue to be discussed and debated; the future development of humanity will most likely depend on whether the impact it leaves in its wake will be positive or negative.

Conclusion

After reading this paper, I ask you these questions:

- How far are you willing to go to live more efficiently?
- How much privacy are you willing to give up to feel seen, heard, safe?
- Is society giving big data too much power in all your tomorrows?

Throughout history, there have been social classes. To an extent, there have always been workers and controllers: Plato's ideal republic state consisted of three main groups; the producers, the auxiliaries, and the guardians. Controlling these masses has always been a topic of discussion, a game of power. AI should be considered a complex socio-technical phenomenon (Galli, 2019), essentially it is an object with an immense unseen power that can become independent from space and time alone. The digital landscape seen today is complex, with interconnected networks that communicate with each other without any human interference and the people who *control* these systems have unmatched power. The knowledge available today can be seen as a vital and never-ending source: governmental bodies and people who come to power need to understand the delicacy of AI ecosystems. As the world ascends into more unified global economy, they need to recognize how the creators of each AI program implicitly create the programs with inherent biases and how to uphold democratic freedoms while respecting other cultures and conducting business. As of today, AI is a daunting topic. The information in the paper above was outlined to elucidate the manipulation performed by marketers. The public should be aware of the use of predictive analytics in molding big data to produce demographics that will succumb to various advertisements. The physiology of the human body shows that

neuromodulator molecules like dopamine and serotonin respond to anticipation and rewards in a way that feels good, a pleasant manner. When marketers use big data to create more “real” situations that target these neurotransmitters, it can be considered a direct violation of consumer trust and privacy, an act of manipulation. It can then be said that as these situations are generated, the consumer must respond to them and therefore is more inclined to be influenced by an identity. Whether that identity was predisposed remains decided by the marketers who produced the desired demographic.

In the past, things like religion, other means of comfort and hope, and even characters like Santa Claus made people comfortable with the idea that they were constantly scrutinized and watched. Malhotra (2021) argues that people are more willing to let others control their lives. The research done in this paper may be shocking to some. However, the reality is that many are willing to give up their privacy and control to make the tribulations of life more manageable, comfortable, and efficient.

AI is a potential power that can take away some of life's meaningless and mundane tasks. It gives humanity an edge, a leg up, in the race of life that would not be possible otherwise. To make AI safe and ensure the benefit of society, the corporate dynamics and secrecy that feeds data collection needs to see a worldwide change. Society would reap many benefits from seeing corporations release control over private developments of AI and transforming into organizations that become transparent about the inner workings of AI programs. This cultural shift is already underway and is described more clearly in the second table about laws and regulations. To continue this conversation constructively, early education needs to begin exploring AI literacy to fully understand the extent of data mining and knowledge extraction.

Understanding the precedence of unregulated artificial intelligence and big data is imperative to protect the future generations of humanity and downstream applications of these technology programs. As Under-Secretary of the Colonial Office, Winston Churchill once said, "with great power comes great responsibility" (Winston Churchill, 1906). This well-known quote has a simple meaning; if one stumbles upon or obtains the ability of something great, they must use it to benefit society and the betterment of their neighbors.

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