Examining How Rhetoric Affects the Development of AI Technologies

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

Artificial intelligence (AI) arguably is the most widely discussed and debated topic today. It is the focus of movies, news, business, and even politics. It is almost impossible to enter any sector without a conversation about why or why not it can be applied. AI technologies are expanding faster than ever. In a study conducted by McKinsey, approximately three-quarters of their respondents were exposed to AI in 2023 (McKinsey). These numbers are expected to increase as companies express interest in spending up to 20% of their digital budgets on AI (McKinsey). One report from Bloomberg suspects the market value of AI to grow 32.5 times, from $40 billion to $1.3 trillion (Bloomberg). The increased effort to expand and apply AI will undoubtedly affect the lives of everyone. Although AI has been implemented into our daily technologies for decades, like in GPS or Siri, flashy technology such as ChatGPT and self-driving cars curates more interest than ever. Headlines on new ways AI is being used seem to come out almost daily whether it is in medicine, economics, or online gaming. This phenomenon results from the widespread adoption of AI is raising inherently political questions and news media are sources for people to access that information (Nguyen and Hekman).

The primary focus of this paper is on how rhetoric influences the development of AI technologies amidst the AI craze. The growth and implementation of AI depend on how humans decide to invest in it, and the perception of the technology will result in how people choose to talk about it. The general public's perception of AI, how that compares to the rate of AI development, whether the general public decides how AI develops or if it is based on the desires

of select, powerful people, and who is benefiting from development and AI technologies and why that's relevant are all explored.

Methods and Framework

To address the intricate relationship between artificial intelligence technology and the language used to describe it, various sources utilized in this paper are scholarly articles on the history of artificial intelligence and the current status of AI, books on the actor-network theory, and discourse analysis, articles on the demographic of the key players in innovation for AI, and more.

Discourse analysis and actor-network theory examine the relationship between technological innovation, specifically artificial intelligence, and societal rhetoric are discourse analysis and actor-network theory. Both help explain how different power dynamics influence the perception, adoption, and innovation of AI.

Wodak defines discourse analysis, also called critical discourse analysis, as "fundamentally concerned with analyzing opaque as well as transparent structural relationships of dominance, discrimination, power, and control as manifested in language" (Wodak, 2001). Although denotation is strictly tied to words and is immutable, connotation can be fluid and may change as different generations alter the application of it. The change in how people define a word is a phenomenon commonly referred to as semantic shift. For example, the term sick describes those who are ill but has shifted to also describe something as cool. Further in this paper, the semantic shifts of AI, the systems that instigated the shifts, and how those systems can pioneer the shifts are evaluated. The culmination of the semantic shift, system shift, and influencers of the shift demonstrate what social power in the tech industry looks like and how

that affects how innovators approach AI, and how individuals are changed. The intricacies of the different pieces that come together to support AI technology are further explained by actor-network theory.

Actor-network theory is the framework that examines society given a network of human and nonhuman attributes (Sayes). This theory is integral to the study of rhetoric and AI because there are many moving social parts that determine the growth and study of artificial intelligence. These parts include human actors such as engineers, users, owners, media, and society; it also includes nonhuman actors such as AI itself, test data that it needs, and the infrastructure to build and maintain AI. The relationships that exist between the actors are codependent and influence one another as AI progresses with time. It is important to study the language and growth of AI under actor-network theory because it demonstrates how power is gained, what it looks like for that power to be acted on, and how language and rhetoric enable or inhibit it.

Ultimately, discourse analysis provides support on how rhetoric, in particular, influences AI innovation; actor-network theory encourages a lens of looking at the intertwined relationship between different actors with different functions and powers. The two frameworks work simultaneously because, according to discourse analysis, power manifests in language, and to study power in AI, the relationship between the actors and what fuels power to specific actors needs to be established. Thus, language is an important actor. To best implement both frameworks a study to analyze the diction behind AI and its development of it, what it is, the history of how it has been studied and used, who has been creating the personas behind AI, and the public perception of it is reviewed.

What and Why is AI

A good fundamental understanding of what artificial intelligence is, why its characteristics make it highly sought after, and what that means for society is necessary. Artificial intelligence is computer systems that can simulate human intelligence such as learning and interacting. These systems use data, training sets, and algorithms to process and run tasks quickly (Maheshwari). The results of the algorithms of the AI machines are inherently dependent on the data and training sets provided to them because it is the lifeblood that fuels AI algorithms, allowing them to learn, adapt, and make decisions (Sehgal). Machine learning and deep learning are tools that AI uses to be able to determine patterns and connections in data to produce results. Thus, data, algorithms, and the producers of such are vital actors in the network of AI development. They are what dictate the quality of the software response. When the data is skewed and the algorithms are built on biases, the AI programs will undoubtedly reflect those same values. Consequently, it is important to evaluate the programmers of the data and the collectors of the data.

AI's ability to read through data quickly and give answers makes it lucrative to businesses and individuals. It saves time which, in turn, saves money. The McKinsey Global Institute found that generative AI has the potential to generate between $2.6 and $4.4 trillion in global corporate profits and productivity by 15-40% (Chui & Yee, 2022). Overall, there are high expectations of how AI can be implemented to work more effectively and generate more profits. There is optimism from companies that are interested in implementing AI into their business plan and from those developing such highly sought-after programs. They, too, are integral actors to better understand how those with social power change the perception of the general public.

The History of AI and Its Effects

The history of artificial intelligence will help better explain how the general public's opinion on it today has been molded. Artificial intelligence, contrary to popular belief, is not a new topic. Its origins date back to 1957 and have been consistently studied since then (Anyoha). In the 1980s, the expansion of algorithmic toolkits and a boost of funds fueled the growth of deep learning (Anyohoa). As computers evolved to do more arduous tasks such as recognizing images and translating language, a growing fear that just as computers are capable of doing good, they would be able to do evil grew. This fear was further exacerbated by media portrayals of robots and technology taking the world to destruction in movies such as *A Space Odyssey, Colossus: The Forbin Project, WarGames, or Westworld* (Ford).

The fear of AI negatively impacting human jobs first appeared in the 1980s (Fast and Horvitz). As AI technology advanced, a wariness of superintelligence grew as well. Adding onto the previous fears of machines developing out of the control of humans, a new recent fear of the societal and economic impacts of AI has grown. This includes fears of how AI can be manipulated to perpetuate discrimination, economic inequality, labor replacement, and spreading misinformation (One Hundred Year Study on Artificial Intelligence).

These fears continue today and have shaped politics with a study showing that in the 2017-2018 session of US Congress, mentions of AI-related words were ten times higher than in previous sessions (One Hundred Year Study on Artificial Intelligence). Although there is continued optimism about the ways that AI can build society, there is a coupled doubt. Since 2009, the discussion on AI has increased sharply with slightly more optimistic than pessimistic tones, but also many fears have been seen increasing in recent years (Fast and Horvitz). The

perpetuation of AI fears and how it may hurt society can be further discussed through discourse analysis by analyzing how people are affected by the media.

Language and Perception

The implications of language give power to the things it describes. For that reason, studying the language behind the perception of AI displays the relationship between how present-day media has affected its perception and growth. One study showed that in general, even if the portrayals of AI in movies and TV shows tend to be extreme- both positive and negative, the public does not follow those extreme beliefs (Nader et al., 2022). However, the study acknowledges that people are learning to be better at discerning realistic and unrealistic portrayals of AI. For that reason, a further analysis of language in news and social media is necessary, because that is how most people build arguments and belief systems.

News outlets are often sought by many to provide them with objective answers to their questions and the least biased stories. There is an expectation from society that news will give them truthful perspectives and informative stories. However, news tends to cover more scandalous stories, because ultimately that is what brings in more readers and listeners and most major news sources are for-profit organizations. There is a disconnect between what readers believe the motivation for news to be - to provide truth- and what news sources are prioritizing- profits.

One example of over-sensationalization in the media is pieces on the AI takeover. In an article published by The Atlantic called “Is This the Start of an AI Takeover,” where the journalist asked readers to predict the future of bots. The title itself prompts the reader to believe an AI Takeover' is bound to happen and that is just a matter of when. Although the content of the

article is just testimonies of people's experiences and anxieties with AI that do not necessarily have any scientific backing, nor do they answer the question of whether the state of the takeover is occurring. However, many people will just read the title and either consciously or subconsciously interpret the takeover as an anticipated doomsday.

Media can also portray AI over optimistically and problematically misrepresent it. One article by The Economist is titled "What will Humans Do if Technology Solves Everything?". Again, the title prompts the reader to believe that technology has the potential to solve all the world's problems when no supporting data is provided. Although the story itself may have found its inspiration in truth, the title is very misleading and may instill a false sense of hope.

Additionally, many news outlets are subscription-based and only provide a short excerpt of the article before prompting the reader to buy their product. However, the excerpts generally do not get to the conclusion of the article which leaves the reader with only the beginning where the problem is addressed and never concluded. Thus many readers are building their arguments and heuristics on AI based on the hook of the article which may or may not provide the argument for or against the title of the article.

The social power of news outlets manifests in their strong potential to shape society's understanding, especially when it comes to the implications of AI. There is a high demand for news on the latest AI innovation and not all journalists are computer science experts. Thus, the credibility of what is written must also be evaluated. Many journalists are most likely not "well prepared to make sense of this complex technology and its manifold effects." (Nguyen and Hekman). Subsequently, the portrayal of AI on the news is not necessarily fully truthful nor can they explain the nuances of the technology. Consequently, the reporting on AI has shown to

become more critical over time, both concerning increased risk references and tone of voice (Nguyen and Hekman). The aforementioned general rise in pessimism and fear of artificial intelligence in the past 20 years may be attributed to such fearful language. This sentiment is reinforced by another study that found that news tended to provoke negative sentiment using sensationalist “warning” and “danger” headlines, potentially fostering unnecessary anxiety and fear among the public (Roe and Perkins). This phenomenon is further observed in the same news article mentioned earlier titled “Is this the Start of An AI Takeover?”. With the rise in negative language about artificial intelligence due to its fear-inducing portrayal in the media, an ignorant fear of its growth may have also increased.

Although there is a lot of evidence that AI presents risks, the imminent destruction that the news portrays AI to be does not seem to be an accurate assessment of these risks at present (Roe and Perkins). Although AI technologies have the potential to be wielded as a weapon, the technology is the source of the issue. Rather, the way that it is used and developed is. AI cannot stand alone apart from all of the other actors in its development network which is also why too much emphasis on AI’s capabilities is not necessarily effective. Instead, the ways and who is building those technologies are assessed.

AI Growth and Social Power

The actors that are important to evaluate how AI is growing are general people in society, the people who are developing the technology, the liaison between the people and the developers, and the materials needed to support the growth. The news outlets and media act as mediators between the developers of AI and the general public. These actors have different motivations and objectives for AI in their lives. The general public hopes to utilize AI to make their lives easier

and lessen their workload. On the other hand, news outlets and developers hope to profit from the desire of people who want to utilize the technology. Society has both implicit and explicit demands for AI and some individuals and corporations are attempting to build the technologies to supply that. However, large corporations hold social capital that allows them to grow AI independently of what the public wants.

Support for AI development varies considerably between subgroups of different gender, education, income, and experience with technology. Wealthy, educated males or those with higher education support the development. One reason for this may be that their prior knowledge and experience help mitigate the negative stigma that is portrayed by the media to society. They are better able to differentiate what is true and what has manipulated information to sell a narrative to viewers that may or may not be true. Also, individuals from that demographic tend to be the ones who have social power and wealth and ultimately make many decisions that impact not just them but society as a whole. The majority of those in leadership positions in technology firms are white-educated males. However, this niche group of people is not representative, and this ultimately leads to a mismatch between what people overall want and what this group of wealthy, educated males or those with higher education want.

A critical analysis of those in power and their language is integral because they are responsible for the existence of inequalities and have the means to improve conditions (Woodak). In this study, the people in power that Woodak is referring to would be those developing the technologies and the data used to create the neural networks for artificial intelligence programs. Because their opinions are the opinions dictating how AI develops, their rhetoric- and in turn their beliefs on it- are important to evaluate.

In one study by KPMG, 72% of the CEOs in the United States say generative AI is a top investment priority (Newinski). Overall, tech companies' drive for AI is reflected in the amount of money and time they use to invest in AI. Whether it be Meta AI with Meta, Gemini with Google, or Copilot from Microsoft, companies have demonstrated that they are willing and able to spend millions of dollars to release their own AI tech; with each release, words of optimism and excitement are proclaimed to bolster positive public perception of the new technology they are releasing. They use terms like easy, quick, and seamless to make the technologies seem more lucrative because, ultimately, the goal is to bring in revenue.

CEOs declare that AI technologies are a top priority and that there are also ethical concerns about their ability in responsible decision-making (Newinski). However, these concerns are not specific and overall may be untrue with recent published studies of the misuse of AI. A contributing factor to the exacerbation of negative rhetoric on AI from the media may be ethical issues. One prominent example is that AI is exacerbating police racial bias. One study that examined this phenomenon found that datasets of facial analysis algorithms were overwhelmingly filled with lighter-skinned male subjects in turn making their results better at identifying them and more likely to misidentify darker or darker female faces (Buolamwini & Gebru 2018). One of the repercussions of such biases found in the artificial intelligence in facial recognition technology is in policing where identification of crime suspects is substantially more error-prone on darker skin tones than their white counterparts (Gentzel, 2021). Discrimination issues with AI give people further reason to distrust it and fear its implications. Whether the reason why minorities support AI development less begins from negative media coverage or from racial biases that further marginalize them, both are contributing to the spreading negative stigma around it.

Artificial intelligence systems are the physical structures that produce the biased product, but the data, algorithms, and developers are the ones who are ultimately responsible. The developers and data collection agencies are the decision-making actors because their design embeds their unconscious and conscious biases in algorithms (Broussard pg. 208). Because these actors can skew the effectiveness and quality of the programs, the individuals who are providing the data, creating and testing, and then ultimately releasing the software holds the social power and thus the social responsibility. Given the motivation for AI and the way that AI technologies are marketed to users to make tasks easier when AI fails to do that, disappointment arises and public support is stifled.

Even after the general public expressed discontentment with AI due to both media rhetoric and ethical issues, there does not seem to be a slowdown in development, instead, efforts to build more technologies are persisting. One reason for this is most likely because those who are creating the tech are also the ones who are not affected by the perpetuated discrimination found in AI leading to higher chances that those issues are not going to be addressed. Subsequently, a positive feedback loop of distrust of AI technologies is perpetuated. Ultimately, the beneficiaries of AI are the ones making a profit from the technology and the white-educated males who can access it and not face the consequences of the biased systems.

Conclusion

Numerous companies invest significant capital and time into weaving AI into their business infrastructure to keep up with trends and to keep from becoming irrelevant. However, this drive and passion for AI demonstrated by large tech firms are not shared by the general public. The disparity is evident in the language found in media and news to describe AI. The

rhetoric used to describe AI has increasingly been fearful and critical. A few contributing factors to this are that in the news, fear sells much better than optimism and that unethical issues of AI practices have increased poor public perception and derogatory coverage. The people marginalized by AI are not the individuals funding and programming it leading to a gap in value systems. While one group prioritizes personal safety, the other prioritizes profits and innovation. Thus, the development of AI is not determined by the language describing it, because the smaller group of people developing the technology are not affected by its discriminatory applications, nor are they as likely to fall into the clickbait of exaggerated and untrue stories.

The AI development networks comprise power struggles between the general public facing the consequences of biased data and AI algorithms and thus are more hesitant, and the corporations looking to increase revenue by launching these technologies. Language comes into play because it demonstrates and also feeds into public sentiment. Whether or not the fears of the public are truth-based, it is evident that the decision-making power of artificial intelligence development is not dependent on their beliefs.

Next Steps

Moving forward, something that would help create a more robust argument would be a more exhaustive numerical analysis of the specific words that previous tech firms have used to describe their AI technologies. Continued longitudinal research would be provoking due to the ever-changing nature of public perception and rhetoric. Seeing how power is displayed and shifted over time within the network of AI development would also demonstrate the relationship between the general public and the ultimate decision-makers and power holders of society.

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