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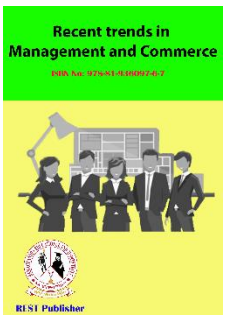

Artificial Intelligence and Social Implications A Sociological Analysis

***Deepa N**

Mercy College Palakkad, Kerala, India.

*Corresponding Author Email: deepasat06@gmail.com

Abstract: *Artificial Intelligence (AI) has emerged as a transformative force in the modern world, impacting various spheres of society, economy, and culture. From autonomous vehicles to advanced data analytics, AI technologies are shaping the way we live, work, and interact. This paper investigates the sociological dimensions of AI, exploring the terminologies and concepts used to understand the societal implications, power dynamics, and ethical challenges posed by this rapidly evolving technology.*

Keywords: *Artificial Intelligence, Scientific AI, Technical AI, Cultural AI*

1. INTRODUCTION

Now days we find widespread use of AI technologies in a broad variety of social domains, ranging from education to security, from retail to healthcare, from transport to law enforcement. However, a new field of enquiry - a field that may be called "the Sociology of AI" has emerged. The existing literature in the Sociology of AI can be divided into three categories- "scientific AI", "technical AI", "cultural AI". Sociological imagination leads people to see the interplay between larger societal structures and their own lives. For example, new developments in artificial intelligence might seem like a trump of humanity, but they could come with significant implications for the individual. A sociological conception of AI adds up to the open line of investigation about wide social implications, offering crucial understanding for designers and developers trying to anticipate possible negative consequences. The massive collection of data and the utilization of AI algorithms raise profound ethical and privacy concerns. Sociology plays a pivotal role in investigating how these issues impact society and how individuals respond to them.

2. DEFINING ARTIFICIAL INTELLIGENCE

AI refers to the development of computer systems that can perform tasks typically requiring human intelligence, such as speech recognition, problem-solving, and decision-making. Machine Learning (ML), a subset of AI, enables systems to learn from experience and adapt their performance without explicit programming. AI technologies rely on data, algorithms, and computational power to process information and make informed decisions. This paper divides the literature into three categories. Research in each category is informed by one analytic perspective and analyses one "type" of AI. Research informed by the "scientific AI" perspective analyses "AI" as a science or scientific research field. Research underlain by the "technical AI" perspective studies "AI" as a meta-technology and analyses its various applications and sub technologies. Research informed by the "cultural AI" perspective views AI development as a social phenomenon and examines its interactions with the wider social, cultural, economic, and political conditions in which it develops and by which it is shaped. These analytic perspectives reflect the evolution of "AI" from chiefly a scientific research subject during the twentieth century to a widely commercialized innovation in recent decades and increasingly to a distinctive socio-cultural phenomenon today. Artificial Intelligence is a transformative force that demands sociological analysis to comprehend its implications for society, power dynamics, and ethical challenges. By examining AI through sociological theories and drawing upon the insights of Indian and Western sociologists, we gain a deeper understanding of the complexities and social consequences of AI. Sociological research is crucial in shaping responsible AI governance, advocating for ethical AI practices, and fostering equitable and inclusive technological advancements. Only

through collective efforts can we navigate the socio-technical complexities of AI and harness its potential for the betterment of society, ensuring AI serves human values and social welfare.

3. FOUR SENSES OF AI

The term "artificial intelligence" was first coined in 1955 by the computer scientists John McCarthy, Marvin Minsky, Nathaniel Rochester and Claude Shannon. They use the term to describe the capability of machines to "use language, form abstractions and concepts, to solve different kinds of problems now reserved for humans" (McCarthy, Minsky, Rochester, & Shannon, 1955, p. 1). Later, McCarthy (2007, p. 1) gives a simpler definition, describing AI as "the science and engineering of making intelligent machines". When AI is understood along these lines, it is perceived to be a science, or, a system of scientific knowledge and practices, that aims to make machines do things that humans can do. The term "AI", therefore, is sometimes used interchangeably with the terms "machine intelligence" and "intelligent machines". Distinctions have been made between strong (or general) and weak (or narrow) AI. Whereas strong AI (or artificial general intelligence [AGI]) is found in machines capable of performing any intellectual and cognitive tasks that a human can perform, weak AI can only accomplish tasks in a human-like way. In other words, the difference lies in "whether machines can be truly intelligent or simply able to act 'as if' they are intelligent" (Kaplan, 2016, p. 68). Narrow AI has made significant progress over the past few decades due to advances in two techniques: machine learning (ML) and deep learning (DL). The term "AI" is also used to refer to the scientific research field or community that is devoted to the production and dissemination of AI knowledge and expertise. In this sense, it is a branch of computer science and interlinked with disciplines such as mathematics, neuroscience, psychology, linguistics and philosophy. As with other scientific fields, AI knowledge and practices are socially constructed and shaped by power relations between agents and groups of agents that exist and act in this field (Bourdieu, 1975). Scientifically, core too many AI systems are algorithms, sets of mathematical instructions given to computer programs for them to perform certain tasks. Because of the centrality of algorithms to AI systems, many sociologists have discussed AI in terms of these artefacts. Meanwhile, the commercialization of AI in recent decades has happened and people have started using a range of popular AI applications and sub technologies, such as smart home assistants, virtual reality and facial recognition. As a result, "AI" has been discussed as a met technology and analyzed in terms of its various sub technologies and applications. Lastly, the recent revival of AI has occurred in the middle of what is known as "the digital revolution". Many views AI development as a distinctive technological and socio-cultural phenomenon which constitutes an integral part of the digital revolution. These four senses in which "AI" has been discussed across scientific and non-scientific contexts underlie the three principal analytic perspectives identified in the sociological literature on AI. Each of these perspectives examines "AI" in one or two of these senses.

4. SCIENTIFIC AI

Most 1980s and 1990s sociological discussions of AI treat it as a system of scientific knowledge and expertise which seeks to make machines do things that humans can do. Some of them address the question of how AI research is conducted by social actors (AI researchers) in social environments (universities, research institutes, corporate research labs, etc.) and therefore is a socially constructed enterprise. Others explore the socially constituting role of AI systems. Still others examine AI's implications for the nature of human knowledge and for the human–machine relation more broadly. This body of research is influenced by intellectual traditions from the sociology of science, the sociology of knowledge etc. For some sociologists, AI is not only a socially constituted enterprise, but also socially constituting in the sense that when implemented in a social environment an AI system can assume social roles, enact social practices and form social relations. An important task of sociologists of AI is hence to examine how AI systems "penetrate and transform social institutions" (Schwartz, 1989, p. 180) and in the process "redefine social life" (Schwartz, 1989, p. 199).

5. TECHNICAL AI

Recent advances in AI and the application of automation in more diverse professions have led many to reconsider the question of AI's impact on work and employment. The observations made by Brynjolfsson & McAfee, 2014; Wajcman, 2017, including predictions such as that up to 47% of today's jobs will be replaced by AI (Frey & Osborne, 2013). A group of scholars examine the rise of automated surveillance from a sociological perspective. Most AI-powered smart surveillance technologies rely on recognition technologies of various kinds; much of the discussion thus focuses on assessing the technologies' implications for issues such as privacy, transparency, and social control. For instance, scrutinizing the ethical dimension of the various AI-powered emotion detection technologies, such as facial recognition, eye tracking and sentimental analysis, McStay (2018) warns that these technologies are subject to misuse by commercial and political entities to advance their private interests at the

expense of public good. In a similar manner, many studies explore the use of automated surveillance technologies in public or semi-public spaces, including in schools (Andrejevic & Selwyn, 2020; Dewan, Murshed, & Lin, 2019; Monahan & Torres, 2010), public transport (McClain, 2018) and public service (Taylor, 2016; Young, Katell, & Krafft, 2019). Together these studies draw attention to the question of how automated surveillance has both benefits and risks for society as a whole and should be managed with caution. Apart from examining various AI applications, some sociologists have analyzed AI in terms of algorithms, the underpinning components of most AI systems. This work joins a large body of research on algorithms by scholars from media studies, journalism, STS, anthropology, geography, law and other disciplines, which constitutes a multidisciplinary research field—algorithm studies (Lee & Larsen, 2019; Seaver, 2019).

6. CULTURAL AI

In the "scientific AI" and "technical AI" research reviewed above, the images of "AI" evoked are tangible or intangible AI techniques, systems or products, or the research work that creates them. It analyses the social dimensions of AI's technoscientific features—their social nature and ramifications—and tries to make sense of AI products and research from a sociological perspective. In contrast, the "cultural AI" category is less concerned with specific AI artefacts or research activities. Instead, it views AI development as a social phenomenon; takes this phenomenon as its object of study and analyses its interactions with the wider social, cultural, economic and political conditions in which it occurs and by which it is affected. The images of "AI" evoked are AI-triggered new trends, processes, actions and relations in a diversity of social settings. Thinkers like Turkle (1984) explored how computers affect human cognition and sociality and found that our tendency to define and describe AI in terms of human features and using human terms (e.g., computers as "electronic brains") can result in our defining and describing humans in terms of computer features and using computer analogies. As a consequence, the proliferation of AI can have a colonizing effect on human society by causing humans to think and behave like computers. Berman (1989, 1992) argues that AI can be not only colonizing but also dehumanizing. Influenced by Marxism, he maintains that discussing human capabilities using computer-inspired metaphors (e.g., human brains as "information processors") helps to justify the alienating social and economic conditions in capitalist societies, while popular AI narratives such as "augmented productivity" serve to threaten workers and encourage their "acquiescence in the power of the scientific, economic and political elites who control computer technology" (Berman, 1992, p. 112). The popularization of AI and an AI culture can thereby help to widen and deepen the unequal power relations in society rather than to abate them. Several studies show that AI development brings about both benefits and challenges to society and that the social challenges of AI are not always easy to identify and address. The AI community and the social scientist must work together if the technology is to be made more socially beneficial and sustainable. Researchers in economics, political science, and law have examined the development of AI by relating it to the digital revolution. Elliott's (2019) book The Culture of AI exemplifies sociology's attempt to explore the broader and longer term- social impacts of AI in the digital age. The book surveys several social domains that are undergoing transformation prompted by AI technologies. This includes the self and identity; the de-globalization of the global economy; social interaction; mobility; and politics and policy. Compared with "scientific AI" and "technical AI" research, "cultural AI" research is still a budding field. Whereas much research in the first two categories is conducted within the sub disciplinary confines of the sociology of science and STS—the established social science subfields for studying science and technology—the "cultural AI" analytic perspective opens spaces for sociologists in other sociology subfields to research AI's impact on issues of concern to their fields. The sociology of AI should contain the sociology of science and STS research on AI, but it should not be limited to that. Rather, it should be a research field in its own right, involving contributions by scholars from across the full spectrum of sociology to debate AI's relations with and impacts on all major concerns of the discipline.

7. UNDERSTANDING AI FROM A SOCIOLOGICAL PERSPECTIVE

These concepts offer insights into how AI intersects with power structures, influences social interactions, and shapes inequalities. Technological Determinism: Technological determinism posits that technology drives social change and shapes human behavior. In the context of AI, technological determinism explores how the widespread adoption of AI can lead to shifts in labor markets, education systems, and human-computer interactions, influencing society's direction. Surveillance Capitalism: AI technologies rely on vast amounts of data, raising concerns about privacy and surveillance. Surveillance capitalism refers to the commodification of personal data for profit, enabling companies to target users with personalized advertisements and manipulate their preferences, reinforcing power imbalances between corporations and individuals. Digital Divide Theory: The digital divide theory examines the unequal access to technology and digital resources among different social groups. In the

context of AI, disparities in access to AI technologies and digital literacy can aggravate existing social inequalities, leaving marginalized communities at a disadvantage.

8. PERSPECTIVES FROM INDIAN AND WESTERN SOCIOLOGISTS

Indian sociologists have examined the implications of AI for Indian society and economy. Rajeev Srinivasan in his work, “The ethical dilemmas of Artificial Intelligence” explores the ethical challenges and social implications of AI adoption in India. Srinivasan emphasizes the need for AI policies that consider cultural diversity and human values. Western sociologists have also contributed valuable insights into the societal impacts of AI. Shoshana Zuboff, in her book "The Age of Surveillance Capitalism", critically examines how AI technologies enable surveillance capitalism and affect democracy, autonomy, and individuality.

9. SOCIAL IMPLICATIONS OF AI

The rapid integration of AI technologies has wide-ranging social implications. In the workplace, AI can lead to job displacement and changes in skill requirements, affecting vulnerable workers and marginalized communities. In education, AI-driven personalized learning raises concerns about data privacy and educational equity. AI's use in decision-making processes, such as in criminal justice systems and hiring practices, can perpetuate biases present in the data used to train AI algorithms, leading to discriminatory outcomes.

10. ETHICAL CHALLENGES AND GOVERNANCE

AI raises significant ethical challenges, including transparency, accountability, and bias mitigation. Addressing these concerns requires interdisciplinary collaboration among sociologists, computer scientists, policymakers, and ethicists. Governance frameworks are essential to ensure responsible AI development and deployment. India's National Strategy for AI outlines principles for ethical AI development and emphasizes the need for AI for social impact.

11. STATISTICS AND FUTURE PROJECTIONS

Statistics on AI adoption vary across sectors and countries, but they demonstrate a growing trend. According to the World Economic Forum, 85 million jobs are expected to be displaced by AI by 2025, while 97 million new roles are projected to emerge.

12. CONCLUSION

It is important to analyses the complexities and social consequences of AI. An increasing number of sociologists are examining the social production, distribution, and consumption of AI. Some sociologists write about this within the sociology of science, others are drawn to the topic because AI development is affecting issues at stake to their fields of study. Interest in applying sociological tools to analyzing the social nature, antecedents, and consequences of artificial intelligence (AI) has been rekindled in recent years. These analytic perspectives reflect the evolution of “AI” from chiefly a scientific research subject during the twentieth century to a widely commercialized innovation in recent decades and increasingly to a distinctive socio-cultural phenomenon today

REFERENCES

[1]. Bourdieu, P. (1975). The specificity of the scientific field and the social conditions of the progress of reason. Social Science Information, 14(6), 19–47.
[2]. Berman, B. (1989). The computer metaphor: Bureaucratizing the mind. Science as Culture, 1(7), 7–42.
[3]. Berman, B. (1992). Artificial intelligence and the ideology of capitalist reconstruction. AI & Society, 6(2), 103–114.
[4]. Elliott, A. (2019a). Automated mobilities: From weaponized drones to killer bots. Journal of Sociology, 55(1), 20–36.
[5]. Elliott, A. (2019b). The culture of AI: Everyday life and the digital revolution. Abingdon, UK: Routledge.
[6]. McCarthy, J. (2007). What is artificial intelligence? Retrieved from http://www-formal.stanford.edu/jmc/whatisai.pdf.

[7]. McCarthy, J., Minsky, M. L., Rochester, N., & Shannon, C. E. (1955). A proposal for the Dartmouth summer research project on artificial intelligence. Retrieved from http://jmc.stanford.edu/articles/dartmouth/dartmouth.pdf.
[8]. Turkle, S. (1984). The second self: Computers and the human spirit. New York, NY: Simon and Schuster
[9]. Zheng Liu, (2021) Sociological perspectives on artificial intelligence: A typological reading https://doi.org/10.1111/soc4.12851

