Harnessing Sociological Insights For Equitable AI Development And Economic Policies

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Abstract: The deployment of artificial intelligence (AI) plays an increasingly prominent role in the economy and society. With AI-enabled systems now constituting a powerful force in shaping economies and societies, their development necessitates policy interventions and transformations. This is particularly important as revenues from AI solutions grow exponentially and have begun to outpace the rate of investment in other digital technologies. At the same time, public considerations of AI development so far have gained limited traction in the strategy-setting of governments and firms. Addressing inequality and bias as part of AI development do not come standard, and alternative configurations of AI have myriad paths towards potential futures. Therefore, it is possible to intervene and contest ongoing pathways of development, contributing to more informed and ethical engagements with technologies and future realities.

Keywords: AI, economic policies

1. Introduction

The discussion focuses on the potential roles for sociological insights in constraining the development of AI and economic policies toward desirable social outcomes, specifically towards more equitable and fair societal organization (Zajko, 2020). The societal consequences of AI have time and again been problematized under the rubric of social and distributive justice, democracy, accountability, transparency and ethics. In light of these concerns, there is a palpable urge for an agenda of development centered on more egalitarian values and distributions of power, benefits and protection across a broad range of interests and societal sectors. With growing awareness of the implications of algorithmic systems, there are a plethora of efforts to democratize and broaden considerations of their design, use and governance, comprising the articulation of data and algorithmic rights, transparency, scrutiny, oversight and watchdog initiatives. Broadly speaking, such efforts aim to understand and intervene in the development of AI broadly fit under the rubrics of ‘AI governance’ and ‘responsible AI’.

1.1. Background and Rationale

Artificial intelligence (AI) technologies are transforming rapidly along with the evolution of traditional technologies and economic systems. The argument goes that AI does not only influence our society and the economy in a way standardized technologies do, but also has an ability to make new disparities in society (Zajko, 2020). On the other hand, the long-standing socio-economic disparities have been turned into an urgent issue of late, especially when thinking about inclusivity of development. However, in economic policy mostly

pursued on macro-levels, such issues have been usually left out habits, and the needs to investigate on those phenomena through standpoints of sociology and bring it to light are discussed. With the currents analyses of the trends of AI technologies and the socio-economy from the sociological points of view to justify the necessity of the alliance between sociology and technology, the overviews of traditional economic policies are given a provisionally along with highlighting their inherent problems for the marginalized community, which are typically overlooked in considering economic policies. These discourses are justified further with an analysis of the Korean economy in the 2017-2018 period as a case example, and the investment-oriented ICT policy is proposed as a possible complementary. Lastly, two macro-suggestions for mutual interaction and securing data access between sociology and technology are presented with concrete examples. There are two critically important issues that AI-focused developers and economic policymakers should not overlook. On the one hand, the possibility of innovative AI technologies which might induce a 4th industrial revolution, on the other hand, long-standing socio-economic disparities, it may as well be said, marginalization, together with the rapid advancement of AI technologies. As the time passed, this lightened disadvantageousness to further deep-rooted problems, thus requiring an urgent policy implementation. This situation might lead to disputes in society especially in considering the fair sharing holding background economic growth. So, at first, the process of the formation of new wealth gap problem throughout the history of technological development before going to detail issues. These contemplations are better in combining insights and methodology of sociology as an academic discipline addressing such disparities. Further more, careful examination on possible interactions between the upcoming AI socio-economy and the former socio-economic structures proposed as an essential task in considering future challenges. At last, this urgent necessity for academic alliance, or S&T co-working is spoken.

2. Sociological Foundations of AI and Economic Systems

Over the past few decades, technological developments have grown at an ever-increasing rate, more and more rapidly integrating into every aspect of life, influencing and restructuring society in turn. The overarching sociological theory is imperative for the empowerment of individuals, organizations, and groups as autonomous actors functioning within and despite that technologically mediated socionatural fabric. Fundamentally, sociological understanding hinges on the fact that society itself is largely based on constructs, from norms to whole systems, economic, governmental, social, and more. Power dynamics – the ability of actors to influence the constructs they are situated within – are a central context in which technological systems exist and operate, no mere static but a constant push and pull. In this view, AI can be seen as part of technological systems, adjusting and enforcing power dynamics on a societal scale, inextricably glued to the sociological theory. Perhaps more importantly though, AI tech exists within a complex environment of social, historical, cultural, and deeply political factors, necessitating a broader and more integrative understanding of this technology’s impact and use.

AI constructions interact with human behaviors, influencing and altering them at both micro and macro scales (Zajko, 2020). In a top-down fashion, these are the models, systems, and frameworks humans build constructing technological systems and the structures that arboresc directly or indirectly, affecting judgments, behaviors, and cognition. AI can also work in bottom-up fashion, constructing social structures and guiding influences based on data analysis, as well as creating new and reinforcing existing power dynamics. This relationship is a central focus of sociological study applied to AI. Of interest is how to protect groups (and counter) tech-influenced disenfranchisement, the fostering of social capital crucial to seizing control of power dynamics and the nurturing of collective agency toward more equitable creation. An economic arena dwelling in systemic inequalities, some of which AI construction will embed, some of which it may disrupt. Editorial and policy decisions must be sensitive to these constructs, as the use of AI tech can operate to exacerbate or alleviate those inequities.

2.1. Key Concepts and Theories

Permeation has been transformational when businesses seek new efficiencies and social life and work systems. If emerged in response to the rise of streetlights, as scholars drew on new social and epistemic arrangements to comprehend and exploit their workings. This article applies intersectional sociological insights to AI economics and development. AI in private and public life is inextricably linked to intersectional social justice issues. Theoretical and methodological tools from sociologists are employed to redress these intersectional biases and create awareness. Economic social consequences stem from AI technologies that shape the world. Its development and deployment receives pervasive attention in scholarly and popular political debates. Critiques view with concern, scepticism and hope prolonged predictions of labour market optimisation postulating the further organisational restructuring of work and workplaces (Zajko, 2020). With increasing distribution of AI investments and the radical experiments in AI implementation have promoted a thorough economic reshaping. Broad historical and policy overviews are compounded by studies examining substantial labour market impacts across a range of near and middle future AI applications. It lays out a higher risk within a sociological theory of the technological underpinnings of AI and how AI may inform an institutional economics understanding of economic systems.

3. Ethical Considerations in AI and Economic Policy

Sociological interest in AI, from man’s earliest reflections on artificial people to contemporary reflections on artificial intelligence, coexists with the practical technological development of AI. Philosophical, ethical, and sociological work on technology has a much longer history. Presently, there is an urgent need for legal and policy frameworks concerning ethical AI development and the many social consequences of AI applications. Recent social interest in AI applications questions to what extent the distance between science fiction and reality is closing, given the ways early narratives lead technological

developments of advanced robotics and AI predate AI technologies. There is further an increasing recognition of the complexity of sociotechnical tensions, as well as, ethno/collective edging of AI towards applications in particular sectors or contexts. Overlapping and related issues of safety, privacy, control, employment, accountability, social justice, inequality besides others, offer multiple entry points bridging AI, STS and Sociological scholarship. A possible program of research building on these links is outlined to indicate the research agenda and suggest how it can feed into policymakers globally (S. Roberts & N. Montoya, 2022).

3.1. Bias and Discrimination

Concerns over fairness have a place outside of machine learning research, relevant to other areas of technical and non-technical intervention. The European Union is the world's largest regulator of data protection, with a new regulation in May 2018. Article 22 grants a right for individuals not to be subject to a decision, which including profiling, with legal or otherwise significant effect. This right to explanation should reveal the significant factors, attributes and probable traits that underpinned the decision-making. Given how widely machine learning is used in processes that may affect human lives, it is clear that these systems should be held to the same standards of transparency as other forms of decision-making. Moreover, it serves the development and maintenance of good practice, and levels the playing field. However, meeting these demands are not trivial. The potential exists to develop standards tailored for practical use, filling a problematic gap in this area. The connection of fairness accounting metrics to actual methods for monitoring and testing for fairness across different socio-economic axes of inequality is characterised, and reinforcing the penalties for infractions is endorsed. Broadly, the more advanced and wide-ranging the economic, social and politico-legal understanding of AI and machine learning, the better equipped societies are to harness these changes for more equitable ends. Equally, the hope is that the papers here demonstrate that social theorists, regardless of the kind of inequality they have traditionally interrogated, have important insights and demands concerning the rapidly changing place of AI in the world. On both counts, then, it is argued that working to embed a radical approach to technosociality in academic and public debate on AI is of crucial importance.

4. Intersectionality and Inclusivity in AI Development

Using the framework of intersectionality can offer critical insights to scholars, practitioners, policymakers, and AI governance bodies to better understand how overlapping identities compound and affect one's experiences with technologies and consequently with AI and economic policies. AI-based technologies have the malleability either to mimic the unjust societal norms, widening the gap for those under the yoke of oppression, or to disrupt how inequity is perpetuated, building a more equitable societal structure with access and opportunities for all. The design, data collection processes, and future governance of AI systems and the policies based on those systems all need to

rigorously address the multi-faceted nature of identity. The monumental task to render AI fair and inclusive thus requires those who are on the front lines to make deliberate and sustained efforts to engage with as many persons, disciplines, and ideas as possible to facilitate and expedite a paradigm shift towards envisioning and realizing AI differently.

First and foremost, it is crucial to internalize how critical it is to let those perspectives that have been historically or continuously marginalized or occupied the periphery of power structures—specifically, persons of color, LGBTQ+ persons, indigenous communities, and persons with disabilities—shape, dictate, and lead what AI looks like, how it is created, and where it ought to be headed. Several efforts and initiatives illustrate ways in which steps have been taken to explicitly welcome and provide fruitful venues for such voices to materially participate in how technologies come into existence. Most importantly, persons who have too often been kept far from places where technological innovation occurs offer commentary on the subject. Also, in businesses and governing bodies of technology, there is a significant lack of input from underrepresented groups; such an absence translates to the end products not serving the needs or reflecting the lives of those who have not been included in their creation.

4.1. Gender Perspectives

Gender perspectives are discussed in the subsection 3.1.2 in their connection to a broader framework of intersectionality with race, class, age, (dis)ability, regional etc. It is also addressed in how biases of the dominant global AI development are replicating on and is co-constituting some forms of ongoing forms of oppression and (neo)colonialism. Besides, gender is also pivotal for a broader argument about the importance of the societal rather than technical AI development, which is analyzed through the lens of social inequalities and the highlights on various forms of feminist and gender analysis (Zajko, 2020).

Regarding the last one, a typical critique of lack of gender analysis in prevailing technological frameworks is presented. A persistent gender imbalance of most of the AI related fields is highlighted, stressing how this is limiting so much needed technology. Nevertheless, it is critically asked on what terms gender perspectives are to be mobilized and if and how that could be done in an assimilating fashion. Instead of these, already gendered aspects of technologies and societal biases of most of the mainstream AI development have to be more radically inquired. The paper argues an indispensable integration of various feminist theories and gender analysis with the current AI policy landscapes as well as with the AI design processes themselves. To that end, a few illustrative cases are featured where the integration of gender parity or broader gender justice considerations lead to substantially more beneficial impact. These include call driven innovations, the digital creative industry, the health care system, or a general argument for fostering and enforcing inclusivity and diversity policies in the tech sector, especially towards dismantling the well-documented oppressive structures of toxic culture (Leavy et al., 2020).

5. Policy Implications and Recommendations

Introduction to the Special Issue of Socius: Sociological Research for a Dynamic World

The field of artificial intelligence (AI) has undergone rapid development and has seen a surge of investment in recent years, as commercial applications were increasingly integrated into society. In light of this explosion in AI-related initiatives, there is a critical need for sociological research to inform the development of ethical frameworks that can help ensure that as AI technologies evolve, it is in ways that promote, rather than hinder, greater social equity, inclusivity, and accountability (Zajko, 2020). Sociological insights can help shape discourse and practices surrounding AI, including discussions on what types of problems are defined as "AI problems," and to whom these problems are understood to be important. Sociologists can innovate new interfaces with large-scale AI projects, including testing on the ground. Ultimately, as AI technologies become more deeply embedded in everyday life and in communities around the world, sociologists have an invitation (as well as an imperative) to help make that AI world as socially informed as possible.

This special issue brings together leading sociologists to share their insights in ways that can inform robust and equitable societal responses to the development and integration of AI technology. Drawing on wide-ranging specializations, including work examining racial inequality, bias in automated systems, prediction and surveillance in crime control, and work on labor regimes, each piece explores how sociologists working in discrete areas might "not only to bring their analysis to bear on AI development, but also to gain insights from applied work that can feed back into (their) framing of the problem". Whether for those just beginning to grapple with what AI involves, its impacts, and its political salience, or for those deeply immersed in such projects: this collection offers a crucial set of intellectual resources to help understand, evaluate, and even envision AI's continuing role in a rapidly transforming world.

5.1. Regulatory Frameworks

As algorithmically based systems become increasingly prevalent in the global economy, there is a need to develop a robust regulatory framework capable of governing the deployment and development of AI technologies within economic policy. Existing guidelines frequently focus on the technological aspects of algorithms, rather than on the wider societal implications of AI. This leaves a gap in the regulation of the ethical, social, and economic considerations that AI technology raises. There are calls to reform existing guidelines to ensure that the widespread use of AI does not become a cover for biased systems, or reinforce the deeper structural inequalities that exist within society (Zajko, 2020).

Furthermore, many of these regulations are reactive in nature, meaning that they only come into play after damage has been done. Given that much of the conversation around AI bias

is currently focused on post-hoc model audits and reviews, it is likely that a system will only be improved (if at all) after a significant number of bias-related incidents have come to light. This is troubling when one considers that there is already a plethora of unexamined bias-related incidents upon which to draw, each representing instances where models were deployed in the public sphere before being scrutinized. Instead of adopting a reactive state of regulation, there is a case to be made for proactive measures against biased systems.

There is a growing chorus advocating for the creation of interdisciplinary 'AI rule-makers'. As this conversation moves forward, it is hoped that these new bodies will integrate sociological understanding of bias and social inequality into the development of regulatory mechanisms. Many different models of these bodies exist at a global level, with varying levels of success. In some countries, this has involved a single regulatory body. In others, AI policy is a part of the remit of a series of agencies or ministries. A more informal approach is to have an advisory body recommend policy to the government. The best autonomous organizations in Canada rely on all three models. Drawn from a critical realist perspective, sociological concepts useful for the drafting of equitable regulations are proposed. There must be a recognition of the underlying generative mechanisms that give rise to biased data and systems. These are heavily determined by the wider social, economic, and political contexts in which the data was created and the models are deployed. Scientists must be open about the contextuality of their models. The datasets input into a model must also be shown to be contextually unbiased. There is an ongoing need to assess the wider social impacts that an AI economic model might have. Results need to be disaggregated by protected and intersectional dimensions to ensure that no particular group is disproportionately harmed. It is paramount that there be public participation and stakeholder consultation in the creation of policy. Finally, there is a need for robust mechanisms of public accountability to ensure that those entities deploying AI models remain answerable for their consequences and can be held to account should they choose to reproduce or reinforce social inequalities such as the gap in the distribution of wealth.

6. Case Studies and Best Practices

To illustrate that AI can be developed and used to improve equity across diverse economic systems, it conveys seven case studies. However, before diving into these examples, it is instructive to discuss best practices in developing AI to be inclusive of and benefit diverse populations. Doing so can help to illuminate why the cases below are successful. This section provides a high-level framework for and diverse examples of an equitable AI economy, complete with insights gained and considerations going forward.

Inclusive AI development entails utilizing sociological insights when training and designing the growing number of automated systems that mediate life. Guidance for enacting inclusive AI training includes: (i) training attached to creating spaces for open discussion about structural barriers, discrimination, and bias episodes; spaces like stand-

alone trainings, dedicated time within regular programming, and conferences have all worked; (ii) content focused on the historical and present structural foundations of disparities, strategies for interrupting bias, diverse policy framework, allyship and resistance, and the ethical considerations when collecting, sharing, and analyzing data; (iii) training aimed at decision makers and those with power within a system so they can better structure the environments in which potentially harmful decisions are made (Floridi et al., 2020). These guidelines have been central to the success of several case studies illustrating the power and necessity of AI for economic systems that are just and serve the public (Tena-Meza et al., 2021). They suggest that the development of an equitable AI economy should be community-led, closely monitored by those most impacted by outcomes, and easily adaptable to the traits and requirements of any given economic system.

6.1. Successful Implementation Models

Sociologists have long recognized the influence of economic forces on individual and collective behavior and the role of power and social organization in economic life. As AI is powered by vast amounts of data and decision-making processes that often take place behind a "black box", there is a need to harness insights from sociology to democratize data systems, make sure that they are ethically transparent and accountable, and prevent bad outcomes for society. This includes careful examination of how AI is integrated into economic policies and how data systems inform the charitable sector and welfare policymaking to ensure that effects are equitable and promoting the greater good. Harnessing an interdisciplinary approach matters because the impacts from AI on the economy and society involve diverse levels and dimensions (Hsu et al., 2022).

The Sociological Science journal has released interdisciplinary research that addresses the impacts of AI-driven systems in the economy and society across multiple sectors and social norms (Floridi et al., 2020). Many of them suggest that integrated measures grounded on findings from sociology not only enable the opportunities of the AI revolution but also regulate some of the potential harms caused by AI. There are significant possibilities for beneficial synergies across scientific research and productive processes that can be explored for the design of policies and the development of AI technology towards equitable economic outcomes. This is conceivable since it allows for a better understanding of the impacts of the use of AI within economic processes in order to regulate positive drives and to avoid marginalization of weaker players.

7. Future Research Directions

AI systems, technological infrastructures, and economic systems are co-constituted in ways that are not well understood. To contribute to stronger interdisciplinary discourse, this article first bridges perspectives from three fields that are usually siloed: AI systems are shaped by sociotechnical infrastructures that condition their material effects; this infrastructure is shaped by political, economic processes, embedded within socioeconomic fields; AI systems play a role in distributing profit and power that drive these fields (Zajko,

2020). These insights suggest a different regulatory and developmental approach to AI systems than commonly discussed, emphasizing the changing nature of broader conditions of operation. Then, the possible transfer of this framework to the analysis of broader political and economic processes is discussed. This initial conceptual work is meant to inspire a range of empirical research questions and approaches across social science disciplines, beyond AI studies, to engage with and steer technological development in ways that do not reinforce existing models of power. Further, this view of sociotechnical fields suggests a different way of conceptualizing the social shaping of AI that does not fall into simplistic views of straightforward political or economic pressures, but through a more complex set of relations. Finally, the scholar encourages further reflection on interdisciplinary collaboration to answer these complex questions and propose research that investigates the broader terrain of relations within which AI technology is enmeshed, both as input and as output of its development.

7.1. Emerging Trends

Emerging trends related to artificial intelligence (AI), developments of the economic landscape, and respective policies, and reflections with annotated sociological insights are pointing to some possible societal and equity-driven next steps. A clear trend is the increased intensity of policy initiatives, strategies, or proposals that address both the transformative potential of AI and the rapidly reshaping economic and employment landscape. Policy documents have been analyzed from a range of sources, including international organizations, European institutions, think tanks, national governments, and parliamentary committees in the UK and Ireland. Economic and social outcomes, employment impact, job dynamics, challenges for workers, the future of work, industrial, and innovation policies, poverty, inequality, and basic socio-demographics are the most prevalent topics about AI (Roche et al., 2022). A second trend involves the strong emphasis placed on ethics and fairness in AI design, deployment, and regulation. Here, diverse topics are encompassed, going from semantic biases in machine learning and machine ethics to gender bias. National strategies and policy proposals also address the need to exploit AI in different sectors, provided that the predominance of policies put forward by governments highlights a certain consensus around a policy narrative that expects AI and related technologies to deliver similar goals and address the existing challenges. This narrative is transmitted in a globally positive way and promoted as the answer, possibly as the only answer, to the problems that affect society across a wide range of sectors. So, that AI is expected to revolutionize these sectors and also to contribute to addressing some of the current social and environmental concerns as well as the most pressing challenges, such as fighting hunger. The same narrative seems to percolate from research and non-governmental organizations (NGO), thus resulting in a more balanced picture of the transformative potential of AI.

8. Conclusion and Call to Action

At this pivotal moment in the development and deployment of artificial intelligence (AI), the theoretical and evidentiary toolbox of professional sociologists is needed now more than ever. Dialogue within the AI research field concerning the potential social, political, and economic consequences of major advances in advanced machine learning systems grows more urgent as these technologies become more prevalent and intrenched within society. The present moment presents a pressing opportunity and responsibility for policy makers, technologists, and communities to harness those sociological understandings in pursuit of economically distributive and sectorally transformative policy outcomes. Here, the major frictions and ethical challenges arising from the automation of aspects of work are discussed; the economically transformative potentials and resonances of AI policies from a sociological perspective are briefly explored; and the urgency of developing institutions, norms, and structures of regulation that help mitigate these tensions and harness the transformative potential of these policies in an economically productive way is underscored.

By 2025, AI technologies are projected to generate between $5.2 and $6.7 trillion a year globally in new economic activity across a range of sectors, from manufacturing and transportation to health care and agriculture. As well as being a driver of economic growth and efficiency, AI systems are increasingly having real and potentially life-altering impacts on individuals and communities. AI predictive technology is a fundamental tool in stock markets as it is used by even the best investors and traders. AI tech is dominating search engines, business operations, and the digital landscape, crypto-investing platforms, social media pages, AI-based software applications have flooded the support centers, and it is professionalizing the analysis of financial markets with the help of high-quality platforms and tools. On a welfare level, AI is being applied in the development of self-driving vehicles, machine communication and translation, drones, and the implementation of automated controls in airplanes and nuclear plants with the help of the leading AI-based software companies. This good and evil twin structure makes it extremely challenging to develop and implement policies that mitigate harm and inequality while promoting distributive justice and positive social outcomes . It is the generation of economic growth that comes at the expense of increasing disparity and precarity for many within and across economies and sectors. Ethical considerations become more prominent with the increasing influence of AI systems in life altering areas. Unjust, biased, or otherwise problematic training data may be inconsistently flagged. It exacerbates divides between those communities and regions with the resources, capabilities, and knowledge to deploy, harness, and regulate AI technologies for economic growth, and those unable to do so. AI ‘race to the top’ outcomes may therefore exacerbate and enshrine existing sectoral inequalities. But the regulation and restriction of AI technologies in life altering sectors also carries its own risks. Not only it may fail to prevent the displacement of old tasks and the creation of new task-based jobs that the possible change in the types of aided works

entails. Moreover, creating inhibitors, quotas, and constraints precludes the realization of more positive and transformative potentials in these sectors and risks foreclosing AI economic growth in ways that are economically detrimental. On anticipatory, more fundamental level, it reinforces broader calls for interdisciplinary engagement within the AI research and development community more generally. This involvement stands to not only inform more equitable and transformative policy development, implementation, and regulation, but also create a set of distributed norms and expectations as these technologies become more prevalent throughout sectors of work and society.

8.1. AI development

This essay has made the case for AI development and economic policies that are designed in ways that are attuned to insights generated by sociological research, forecasting a future of human and AI interaction and co-evolution. A review of the sociological literature has identified a number of these insights, particularly in terms of inclusive practices, the development of ethical frameworks to handle biases in AI systems, and the vital importance of an 'intersectional approach' to address social inequality. The mimicry of, or reliance on, delay tactics will have profoundly negative social and economic consequences. Similarly, the use of AI and automated decision-making systems for the beneficial distribution of resources in response to the current and future crises of the economy, democracy, and the welfare state is now linked to post-democratic authoritarianism.

Taken as a whole, the insights gathered in this research reignite a view on the interconnectedness between technology and society, arguing that increased attention to this interconnectedness is necessary to generate socially robust outcomes. It is an interconnectedness that is often dismissed by both technology advocates and critics, given that the former capture technology as autonomous and neutral tools, while the latter are blinded by deterministic and often apocalyptic scenarios. Moreover, it is hoped that the consolidation of these insights can provide a clear take-away. It underlines that while the development of AI and data-based systems shows great potential for improved living conditions for all citizens, the development and use of such systems must be critically engaged. Knowledge should be actively fed into this process to hold proposers of such developments to account and ensure that they forego bias and discrimination. Engaged studies and scrutinise expertise can play a valuable role in informing democratic decision-making, and help ensure the development of such systems is transparent and adheres to public interest goals (Roche et al., 2022). In addition, this study can provide rich empirical material that informs such scrutiny while indicating to a number of directions for future research, suggesting that this is a field where policymakers and social scientists need to collaborate. Through such collaboration, there is the prospect of more informed policy decision-making (Zajko, 2020).

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