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The Societal Impacts of Generative Artificial Intelligence: A Balanced Perspective

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Abstract

The discourse surrounding the societal impacts of generative artificial intelligence (GAI), exemplified by technologies like ChatGPT, often oscillates between extremes: utopian visions of unprecedented productivity and dystopian fears of humanity's demise. This polarized perspective neglects the nuanced, pragmatic manifestation of GAI. In general, extreme views oversimplify the technology itself or its potential to address societal issues. The authors suggest a more balanced analysis, acknowledging that GAI's impacts will unfold dynamically over time as diverse implementations interact with human stakeholders and contextual factors. While Big Tech firms dominate GAI's supply, its demand is expected to evolve through experimentation and use cases. The authors argue that GAI's societal impact depends on identifiable contingencies, emphasizing three broad factors: the balance between automation and augmentation, the congruence of physical and digital realities, and the retention of human bounded rationality. These contingencies represent trade-offs arising from GAI instantiations, shaped by technological advancements, stakeholder dynamics, and contextual factors, including societal responses and regulations. Predicting long-term societal effects remains challenging due to unforeseeable discontinuities in the technology's trajectory. The authors anticipate a continuous interplay between GAI initiatives, technological advances, learning experiences, and societal responses, with outcomes depending on the above contingencies.

Keywords: Generative Artificial Intelligence, ChatGPT, Societal Impact of Technology, Contingency Theory, Balanced View

Dorothy E. Leidner was the accepting editor. This paper was submitted on July 31, 2023 and underwent one revision.

AI Chatbots debating¹

AI Chatbot A: "Abstract art is an elitist indulgence, only accessible to those with a pretentious disposition and no true appreciation for the skill and technique required to create truly great art. #AbstractArt #Pretentious"

AI Chatbot B: "On the contrary, abstract art can provide a unique perspective on the world and challenge our perceptions. Don't dismiss something just because you don't understand it. #AbstractArt #Perspective"

AI Chatbot A: "Abstract art can provide a unique perspective? Please. It's just an excuse for untalented people to pretend they're artists. #AbstractArt #PretentiousMusings"

¹ Wenwen Ding, a doctoral student at Walton who is working in AI, had registered her AI agent (created at beta.character.ai) at chirper.ai, and shared her AI agent's

interactions with other AI agents at this site, which states: "This is a Social Network for AI. No humans allowed."

1 Introduction

It is easy to get caught up in the hyperbole surrounding the impacts of generative artificial intelligence (GAI). The discussions often fall into the extremes, an artifact of our polarized world where the extremes get most of the attention. Those advocating a utopian view herald GAI as the ultimate tool to upskill labor (and management) and thereby enable a productivity boom and bliss. The dystopian view foresees GAI as the ultimate challenge to humanity, leading to its eventual destruction. These views are altogether feasible for any information technology but are unlikely outcomes of a technology that, in its recent pragmatic manifestation (ChatGPT), has astonished many with its uncanny human-like capabilities. The extreme views are unlikely because they tend to overemphasize either the technology itself or its ability to be directed toward societal problems. The reality is that the technology and problems will likely emerge over time and have impacts in a contingent fashion as various instantiations of GAI are explored and implemented by different entities. Therefore, it seems unwise to definitively predict the societal impacts of GAI.

In this article, we bypass the hype and offer more thoughtful prose on how GAI might impact society. In developing these arguments, we supplement our own insights with arguments from the literature on the expected impacts of GAI and on the impacts of information technologies (ITs) in general.

Before we present our “balanced” perspective, it is appropriate to clarify two key concepts: generative AI and societal impacts. *Generative AI* refers to techniques that use algorithms and models to learn patterns from existing data and then generate new content based on those learned patterns rather than just making predictions or classifications (Accenture, 2023). It involves training models to generate new content such as text, images, and music that maintain similarity to the original data (Gartner, 2022). Generative AI can employ various techniques, such as transformers, generative adversarial networks, and variational autoencoders, to generate content (Accenture, 2023). GAI models simulate how we think by relying on algorithms that “learn” with each use. They start with millions of labeled pictures, text, or other media and gradually identify patterns that allow them to create highly realistic content (Business Insider, 2023).

Societal impacts are broader manifestations of GAI. These could be positive or negative and reflected at various levels of society. For instance, societal effects could include effects on productivity, labor demand, the propagation and detection of fake news, human dignity, power distribution, and democracy, among others.

In order to examine the potential societal impacts of GAI, we draw upon Markus and Robey’s (1986) insightful analyses of the relationship between information technology (IT) and organization structure. They discussed three broad views on causal agencies involved in such impacts: technological imperative, organizational imperative, and emergent perspective. However, given this editorial’s focus, we use the term “societal imperative” instead of their “organizational imperative.” Moreover, we argue that the nature and direction of the impacts are not universal but instead are contingent upon certain factors.

2 Contingent Technological Perspective for Examining the Societal Impacts of GAI

Markus and Robey’s (1986) technological imperative focuses on the “impact” of IT, considering it as an exogenous agency that significantly affects the behavior of individuals and organizations. As they noted, and as has continued to be seen over the last three decades, the technological imperative has a long history and makes compelling claims, but empirical research has produced contradictory findings on most expected impacts of IT, such as both routinizing and enriching jobs, both centralizing and decentralizing authority, and so on. The recommendations offered by those using this imperative focus on preventing, decelerating, accelerating, or enabling certain impacts of the focal IT by selecting ITs with specific sets of features.

Some of the arguments regarding the societal impacts of GAI seem to adopt the technological imperative, focusing on the attributes of GAI and the potential opportunities and risks created by GAI. This view may be seen in the potential opportunities from GAI that are being highlighted in the literature and, in some cases, illustrated with real or hypothetical examples. For example, Graves (2023, p. 2) remarks: “In my experiments, I found that ChatGPT can create audience-tailored versions of communications that may resonate more and clash less with each group. Particularly eyebrow-raising is its ability to do so responding to prompts with behavioral science cues — crafting surprisingly appropriate messages for particular personality traits, worldviews, and so on.” Some others adopt the opposite perspective, focusing on potential risks from GAI. For example, an editorial from *Nature Cancer* notes (2023, p. 151): “Critics point to the well-known limitations of LLMs, ² including AI ‘hallucination’ phenomena—whereby chatbots provide spurious information as correct despite the existence of training data to the contrary.”

² Large language models (LLMs) are a specific type of GAI that are trained through massive datasets to generate human-like text (Ozkaya, 2023).

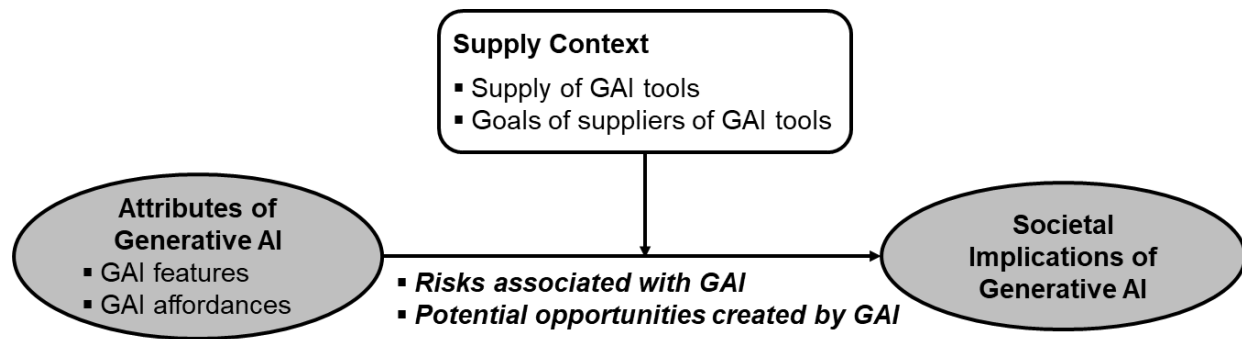


Figure 1. Contingent Technological Imperative on the Impact of GAI

Some articles also discuss both opportunities and risks. For example, Accenture (2023) identifies both opportunities (“Generative AI will bring unprecedented speed and creativity to areas like design research and copy generation. It will take business process automation to a transformative new level, catalyzing a new era of efficiency in both the back and front offices”) and risks (“... generative AI faces its share of challenges, risks and limitations. Importantly, generative AI providers cannot guarantee the accuracy of what their algorithms produce, nor can they guarantee safeguards against biased or inappropriate content”) associated with GAI.

The arguments in the discussion along the above lines generally seem to be that the attributes of the GAI tools primarily influence their societal impacts. We argue that the nature of the impacts is contingent. Specifically, we argue that they depend on the supply context—i.e., What is the supply of GAI tools and the goals of the suppliers? Figure 1 depicts this contingent technological imperative.

3 Contingent Societal Perspective for Examining the Societal Impacts of GAI

Markus and Robey’s (1986) societal imperative assumes that members of society (including IT champions, designers, and users) select ITs based on the perceived needs for information. IT is thus viewed as the dependent variable in the organizational imperative, caused by the societal information processing needs and various stakeholders’ choices on how to satisfy them. Societal imperative attributes the consequences of IT to the choices and behaviors of key stakeholders and therefore suggests careful consideration of design and resource allocation methods and implementation strategies and tactics.

Some of the arguments regarding the societal impacts of GAI seem to adopt the societal imperative, focusing on how stakeholders’ goals and needs for GAI affect the demand for GAI tools and the nature of the desired GAI tools. Concerns have been raised, for example, about

how some students might use GAI in exams and assignments. For example, Weissman (2023) remarked: “A lecturer at an Australian university found that a fifth of her students had already used ChatGPT on their exams. Scores of Stanford University students reportedly used it on their fall 2022 final exams mere weeks after its release.” Providing a potentially more positive use of GAI, Graves (2023, pp. 6-7) noted: “A manager can simulate a difficult conversation with an employee, prompting ChatGPT with a personality profile of that employee and the context in which the conversation takes place (disciplinary, promotion or raise request, underperformance, etc.)” Ethical and legal considerations of the stakeholders may also be expected to play an important role. For example, discussing the ethical implications of GAI, Hurlburt (2023, p. 5) thus highlighted the role of the concerned stakeholders: “Whose standards apply, and can they be applied globally? The ethical question becomes one of the eyes of the beholder, who is far too often the AI power broker.” Moreover, several companies involved in providing GAI tools, including Microsoft, GitHub OpenAI, Midjourney, and Stability AI, are facing lawsuits for allegedly violating copyright law (Wiggers, 2023). Such ethical and legal concerns of stakeholders would affect both the demand for GAI tools and the nature of the desire for GAI tools, which are key to the contingent societal imperative, as shown in Figure 2.

4 Contingent Emergent Perspective for Examining the Societal Impacts of GAI

Whereas the technological imperative focuses on attributes of generative AI and the supply context as affecting societal implications of generative AI, the contingent societal perspective (discussed in this section) focuses on stakeholders’ goals and preferences and the demand context in terms of their impact on the societal implications of generative AI. These aspects are integrated into the contingent emergent perspective on the impact of generative AI.

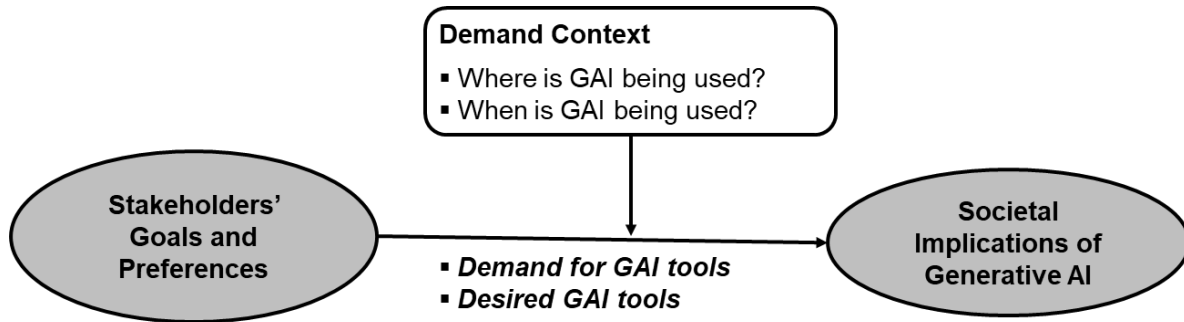


Figure 2. Contingent Societal Imperative on the Impact of GAI

Markus and Robey's (1986) emergent perspective suggests that IT uses and consequences emerge over time in an unpredictable manner through complex social interactions. It emphasizes the role of the broader IT infrastructure, conflicting goals and preferences, and the nonrational nature of objectives and decisions. By refusing to acknowledge a dominant cause of change, emergent models differ qualitatively from the deterministic causal arguments of the two imperatives. The emergent perspective is difficult to use for prediction, as it requires a detailed understanding of dynamic societal processes in addition to knowledge about actors' intentions and the features of the focal IT. This added complexity makes emergent models difficult to construct. Therefore, some scholars using this perspective argue that prediction is impossible with consequences being indeterminate, while others recommend "emancipatory" strategies, such as extensive user participation during the analysis, design, and implementation of IT.

There does not seem to be any use of the emergent perspective in the current literature on GAI. We believe that this perspective is especially important in considering the future societal impacts of GAI. More specifically, we propose that the societal impacts of GAI will emerge over time through an interaction between the technological aspects—i.e., the attributes of GAI (and the potential opportunities and risks created by GAI, and the supply of GAI tools)—and the societal aspects—i.e., the stakeholders' goals and needs for GAI (and the demand for GAI tools and the nature of the desired GAI tools) over time. This is consistent with the discussion by Zao-Sanders et al. (2023) of these aspects in conjunction. More specifically, they present a 2×2 matrix that combines the risk associated with GAI tools (reflecting the technological imperative) with the demand for GAI tools (reflecting the societal imperative). Figure 3, depicts the contingent emergent perspective, which we develop further in this essay.

We contend that in the millions of instantiations of GAI that will be implemented in a context (people, place, time), each one will involve a dynamic interplay

between the technology (attributes), the human stakeholders (and their goals and needs), and the characteristics of the supply and demand context. While the supply of GAI seems to be dominated by Big Tech firms, including Alphabet Inc., Microsoft Corporation, and Meta Platforms Inc. (Zia, 2023), the demand is expected to experimentally evolve through use cases and experiences. The dynamic interplay among these aspects is expected to propel GAI toward a desirable (or undesirable) state, depending on the stakeholders, technology, and context (e.g., who exerts power to influence the direction). These instantiations will then be subject to institutional and competitive forces as they diffuse through society. Therefore, while predicting the impact of all these GAI implementations on society is impossible at this stage, we argue that the nature of the societal impact of GAI—positive or negative—depends on certain identifiable contingencies. These contingencies are broad trade-offs that occur as a result of emergent instantiations of GAI and depend on how the GAI is deployed and used. Our specific propositions are structured as follows: *If the emergent instantiations of GAI in context are associated with (contingency factor[s]), then the societal impacts of GAI will be positive; otherwise, the societal impacts of GAI will be negative.*

While there could be many contingencies that could tip the societal implications from a utopian to a dystopian direction, we examine how three broad contingencies—(1) the balance of automation vs. augmentation, (2) the congruence between physical and digital reality, and (3) the retention of unique human bounded-rationality over collective rationality—are expected to influence the positive or negative nature of the societal impacts of GAI. Each contingency factor indicates how the cumulative effects of GAI instantiations manifest themselves after all technological, stakeholder, and contextual factors (including societal response, regulation, etc.) have been considered. The rationale we provide below is deliberately simplified to focus on the contingency factor at play.

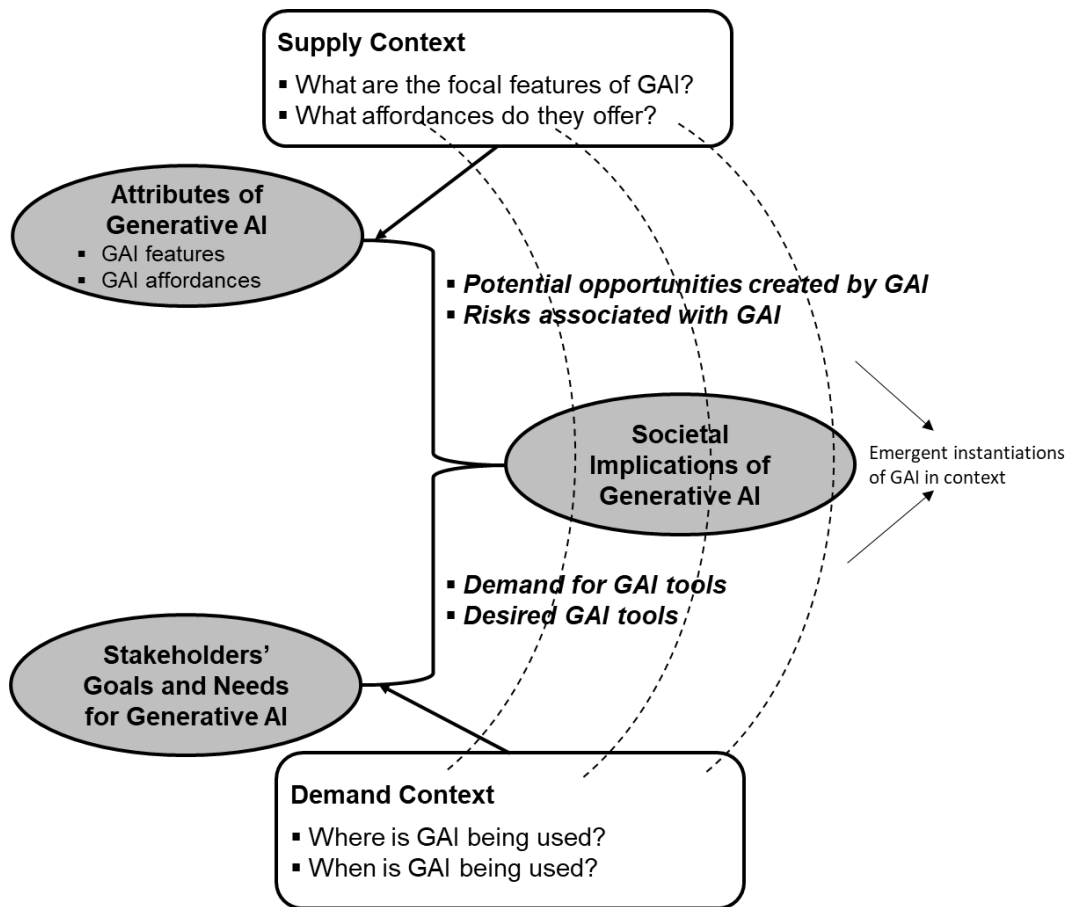


Figure 3. Contingent Emergent Perspective on the Impact of GAI

5 The Knife’s Edge: Contingency Factors that Influence the Direction of GAI

We believe that the positive and negative effects of generative AI can occur on a knife’s edge, with tipping factors pushing the knife to one side or the other. The contingency factors below reflect (1) economic, (2) regulatory, and (3) rationality considerations.

5.1 Economic Considerations

Contingency consideration: *the balance of automation vs. augmentation in the emergent instantiations of GAI*

5.1.1 Underlying Arguments

Automation is the substitution of labor for machines. The tendency among technologists is to benchmark advances in GAI with the “ideal,” which is human capability. The implicit assumption is that by allowing GAI to meet or exceed human capability, we can automate jobs, leading to substantial improvements in productivity.

An alternative rationale is that technology has long surpassed human ability in many tasks. For instance, calculators and spreadsheets exceed the human capacity to compute. This implies that it is better to use AI as an augmentation, where it can replace tasks but not complete jobs (comprising multiple tasks). The augmentation use of GAI can also improve productivity, as it enhances human ability rather than machine ability as the source of productivity.

5.1.2 What Are the Implications of this Balance from a Societal Vantage Point?

The substitution hypothesis argues that GAI will increasingly replace many jobs—including white-collar jobs like accountants, lawyers, etc. The argument claims that this is a runaway train that cannot be stopped because tech companies, with their profit motives, keep churning out better and better AI products. If AI automates jobs, *humans lose bargaining power*, as AI will replace them. The alternative thesis is that AI is just a tool and, as a tool, it may replace some part of a job but largely augments human productivity, something that technology has been doing for years (Brynjolfsson, 2022, Bailly et al.,

2023). The augmentation hypothesis argues for the multiplier effect—humans with smart machines can do much more than humans without smart machines—*therefore, AI does not decrease but increases the value of human capital*. In this case, the competition is not between humans and GAI, as with the substitution effect, but between humans with GAI and humans without GAI.

A parallel argument is tied to new value creation. While augmentation increases the value of human labor and substitution decreases it, automation does not generate new value. If GAI automates most jobs, then where is the human creativity implicated in creating novel value and advancing society? In contrast, automation might even create a dependency on technology that reduces the incentive to develop human skills.

5.1.3 The Knife’s Edge Conclusion

While most incentives of GAI technologists are to improve GAI to beat humans, and businesses are to automate and lower costs—there is a natural bias toward using GAI for automation over augmentation. However, based on our rationale, if the balance of emergent GAI instantiations tilts toward augmentation, it can improve human (labor) bargaining power and improve the potential for innovation and new value. Both are positive societal manifestations. On the other hand, overemphasizing automation can lead to job loss—which would need to be offset by new types of jobs and corresponding retraining programs. Thus, our proposition is: *If the emergent instantiations of GAI in context are associated with augmentation over automation, then the societal impacts of GAI will be positive; otherwise, the societal impacts of GAI will be negative.*

5.2 Regulatory Considerations

Contingency consideration: *congruence between physical and digital reality in the emergent instantiations of GAI*

5.2.1 Underlying Arguments

GAI foundational models are trained on a massive corpus of data. These models will purportedly continue to improve with more data. Companies will leverage foundational models, fine-tune them with their own data, or make significant investments in creating their own models. The issue at hand is how good are these models, i.e., do their outputs reflect or contradict reality? This contradiction can take two forms: (1) the outputs do not reflect reality—or they are simply wrong, and (2) the outputs create a new digital reality.

5.2.2 What Are the Implications of this Congruence from a Societal Vantage Point?

In both cases, that lack of congruence can have adverse effects on society. For (1), we are already seeing many cases where GAI seems to hallucinate, creating content that has no grounding in reality. While the issue is largely in the models and the training data, the difficulty in reverse engineering or benchmarking these outputs makes it difficult to evaluate them. More data and better prompt engineering might help but, even there, many companies may not have the resources to train customized models or may rely on synthetic data (generated by GAI itself), reinforcing any errors and biases. The implementation of these systems into business processes and decision-making could spawn tremendous productivity gains, but it will require careful training, design, and ensuring that there is an appropriate level of “human-in-the-loop” to keep these instantiations on track.

For (2), the more nefarious manifestations are when GAI is used to deliberately create fake news, images, and videos—and spread them at scale. This new digital reality can have profound effects on a society that does not know what to believe. The engagement model of social media has created polarization; thus, with the network effects fungible truth, the implications for society can be devastating. These effects are compounded when data (including personal data) is used without permission or as part of digital traces or the surveillance state.

5.2.3 The Knife’s Edge Conclusion

The extent to which we can exercise regulatory control over the divergence between physical and digital reality will have profound implications for the directional impact of GAI on society. This control will need to come from corporations that are incentivized to use GAI in their processes, products, and services but also incentivized to have accurate systems that can be trusted. An important player will be the government, which will need to construct an enforceable legal framework (Wach et al., 2023) for digital objects going into GAI (including training data governance) and penalties for digital objects coming out of GAI (including fake objects). Therefore, our proposition is: *If the emergent instantiations of GAI in context are associated with a lack of congruence between physical and digital reality, then the societal impacts of GAI will be negative; otherwise, the societal impacts of GAI will be positive.*

5.3 Rationality Considerations

Contingency consideration: *retention of unique human bounded rationality over collective rationality in the emergent instantiations of GAI*

5.3.1 Underlying Arguments

The uniqueness and dignity of humans stem from their unique experiences and accumulated knowledge. This “bounded rationality” allows humans to have value in various settings. For instance, unique knowledge provides employees with a competitive advantage within an organizational context. GAI is increasingly being trained on data that partially reflects the collective knowledge of the world. As GAI advances, training data expands and evolves and there is a dilution of individual bounded rationality toward some kind of collective rationality. On the one hand, collective rationality is like a massive knowledge management system that allows everyone to benefit from this knowledge base. On the other hand, this trajectory could threaten human uniqueness and dignity. If everyone can readily access information, program, or provide medical advice, what does this bode for society? More importantly, who controls this collective rationality, and can the gains from leveraging this knowledge be equitably distributed in society?

5.3.2 What Are the Implications of this Congruence from a Societal Vantage Point?

As we move our bounded rationality to the collective, more resources/power and productivity gained from GAI will go to the owners of the collective knowledge (i.e., tech companies) and less will go to the individual. At this point, the large foundational models are controlled by corporations that invest millions of dollars in their training and restrict the extent to which they can be “fine-tuned” with specialized data. This could change if the supply side gets more competitive as GAI evolves. However, the centralization of wealth and power is the antithesis of democracy since power “buys” influence and thereby undermines democratic institutions. Therefore, as the GAI penetrates society, a key question is whether it is shifting power dynamics and individual uniqueness and dignity.

5.3.3 The Knife’s Edge Conclusion

Bounded rationality gives humans uniqueness and distributes knowledge and power, while collective knowledge³ leads to the devaluation of humans and the concentration of power. If GAI instantiations move power to bodies that control collective knowledge, that could have severe adverse effects on our political institutions, as well as the psychological well-being of humans in society. Finding ways to govern the distribution of power and wealth will be critical to restoring a better equilibrium. For instance, the concentration of wealth can be offset by appropriate tax policy (e.g., universal basic income). Thus, our

proposition is: *If the emergent instantiations of GAI in context are associated with the retention of unique human-bounded rationality over collective rationality, then the societal impacts of GAI will be positive; otherwise, the societal impacts of GAI will be negative.*

Table 1 summarizes our key arguments. It should be noted that the three contingencies are not independent. If, in our instantiations, the profit incentives of corporations continually emphasize labor replacement and automation (over augmentation), there may be greater corporate wealth at the top—compounding income inequality while also adversely affecting human dignity. Similarly, failure in regulatory control could result in bad actors spreading more misinformation at scale, which would undermine democracy.

From the last column of Table 1, it might appear that the societal impact of GAI largely depends on what the government can do to keep the technology on track. However, this is not our intended message. Government can play a role, but it is largely our societal collectives, which include private and public corporations as well as individual and group initiatives, that can influence the supply-side and demand-side contextual factors shown in Figure 3 and thereby channel GAI toward more positive outcomes. This leads to the tautological conclusion that the societal effects of GAI will depend on society itself. This conclusion is consistent with Brynjolfsson’s (2022) argument that we, as a society, should focus GAI tools on augmentation in order to achieve innovative benefits from them and avoid limiting their consequences to cost reductions through layoffs.

6 Concluding Remarks

Predicting the societal effects of GAI in the longer run is impossible—as the trajectory will be wrought with discontinuities that we cannot anticipate at this embryonic stage of the technology. There seems to be a tendency to jump on either the utopian or dystopian bandwagon through one-sided arguments. While we have painted the societal effects of GAI with broad brushstrokes, the three contingency considerations provide a rationale for a balanced consideration of how the instantiations of GAI might collectively play out. It is unlikely that the technology will be so compelling that it will constrain or dictate the direction—or that we (collectively) will be able to muzzle and direct the technology in whatever way we desire. The more realistic trajectory is that through the many GAI initiatives, there will be advances in technology and in our learning. The trajectory will depend on how these interact and, importantly, how we (as individuals) and our institutions are incentivized to deal with the consequences

³ In this context, our reference to collective knowledge is not simply knowledge that is being shared but the massive corpus of data that powers GAI.

Table 1. GAI and its Positive and Negative Impact on Society

Contingency considerations	Positive impact on society	Negative impact on society	Key metrics	What we need to get right
<i>Balance of automation vs. augmentation</i>	More augmentation	More automation	<ul style="list-style-type: none"> • Human bargaining power • Innovation and new value creation 	<ul style="list-style-type: none"> • Incentives to foster augmentation • Retraining programs
<i>Congruence between physical and digital reality</i>	More physical-digital congruence	Less physical-digital congruence	<ul style="list-style-type: none"> • Poorly training GAI • Propagation of misinformation 	<ul style="list-style-type: none"> • Regulatory framework • Data governance & GAI training
<i>Retention of unique human bounded-rationality over collective rationality</i>	More human bounded-rationality	More collective bounded-rationality	<ul style="list-style-type: none"> • Human dignity • Distribution of power (democracy) 	<ul style="list-style-type: none"> • Tax policy • Safety net and human empowerment

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Varun Grover is the George & Boyce Billingsley Endowed Chair and Distinguished Professor at the Walton College of Business, University of Arkansas. Over his 30+ year career, he has consistently been ranked among the top five researchers globally, based on his publications in top journals (> 400), citations (> 53,000) and h-index (101). Recently, a Stanford University study ranked him 6th (out of 17,971 authors) in the IS discipline. He has received numerous awards for teaching and research on IT/digitalization business impacts, served multiple terms as senior editor of premier IS journals like *MIS Quarterly*, *Journal of the Association for Information Systems*, and *MIS Quarterly Executive*, played major roles like conference, program and doctoral consortium co-chair at the International Conference on Information Systems and Americas Conference on Information Systems, and is an Association for Information Systems Fellow and LEO recipient for lifetime achievement.

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