




# Why and how is the power of Big Tech increasing in the policy process? The case of generative AI

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## Abstract

The growing digitalization of our society has led to a meteoric rise of large technology companies (Big Tech), which have amassed tremendous wealth and influence through their ownership of digital infrastructure and platforms. The recent launch of ChatGPT and the rapid popularization of generative artificial intelligence (GenAI) act as a focusing event to further accelerate the concentration of power in the hands of the Big Tech. By using Kingdon's multiple streams framework, this article investigates how Big Tech utilize their technological monopoly and political influence to reshape the policy landscape and establish themselves as key actors in the policy process. It explores the implications of the rise of Big Tech for policy theory in two ways. First, it develops the Big Tech-centric technology stream, highlighting the differing motivations and activities from the traditional innovation-centric technology stream. Second, it underscores the universality of Big Tech exerting ubiquitous influence within and across streams, to primarily serve their self-interests rather than promote innovation. Our findings emphasize the need for a more critical exploration of policy role of Big Tech to ensure balanced and effective policy outcomes in the age of AI.

**Keywords:** generative AI, governance, artificial intelligence, big tech, multiple streams framework

The growing digitalization of society has led to a meteoric rise of large technology companies (Big Tech). Through their ownership of large digital platforms, Big Tech have amassed tremendous resources enabling them to redefine communication, commerce, and even culture. Big Tech's influence is further accelerated by potentially transformative breakthroughs in generative artificial intelligence (GenAI) and its impact on people and organizations worldwide (Dwivedi et al., 2023). Since most widely adopted models are developed, owned, or controlled by Big Tech, popularization of GenAI is further likely to enhance their influence.

Given their rising influence, Big Tech are actively shaping today's economic, cultural, and social milieu to consolidate their advantage (Zuboff, 2019). In this regard, an overlooked area of study is how Big Tech are fundamentally changing their relationship with the government. While studies have highlighted how governments increasingly rely on digital platforms and integrate AI into their day-to-day operations, existing studies downplay the comprehensiveness of Big Tech's influence in the policy process.

This study explores this issue by critically examining the increasingly dominant position played by Big Tech in policymaking. We use Kingdon's multiple streams framework (MSF) and argue that Big Tech are now crucial players in all streams of the policy process—a phenomenon further strengthened by the arrival of GenAI. We showcase this by developing the Big Tech-centric technology stream and exploring the role Big Tech in the problem, policy, and politics streams. Although our analysis focuses on the role of Big Tech in primarily Western democracies, given their ubiquitous presence and the universality of MSF, the findings can be extended to authoritarian or emerging economies as well.

Our findings identify three dimensions of Big Tech's influence on the policy process. First, Big Tech are increasingly prevalent in all the four streams in the MSF. Their active roles in the epistemic, instrument, and technology constituencies and in the advocacy coalitions highlight their role as “super policy entrepreneurs” in the policy process. Second, Big Tech are actively expanding beyond their traditional policy domains and manifest as ubiquitous force prevalent across diverse policy terrains. Third, their influence manifests not just across the three streams but also across different stages of the policy cycle. We further argue that critical examination of this influence requires revision of existing frameworks on the policy process, including the MSF.

The rest of the study is structured as follows. The background section introduces Big Tech, GenAI, and the MSF. The following section on Big Tech's overreach explores the changing nature of the relationship between government and Big Tech using the MSF. In the subsequent section, we present the Big Tech-centric technology stream and discuss its main features. The discussion section examines the implications of the findings, and the finally concludes.

## Background: Big Tech, GenAI, and the MSF

### Big Tech get bigger

We refer to “Big Tech” as group of companies that own or control important digital platforms; notable examples include Alphabet (Google), Amazon, Apple, Meta (née Facebook), and Microsoft (Birch & Bronson, 2022)<sup>1</sup>. While the domains and models of these companies' platforms are different, they are all characterized by their intermediating nature, providing matching services to providers and users of services in their platforms (Wörsdörfer, 2022). The platform economy is characterized by the *network effect*, where the larger the pool of potential buyers and sellers, the easier it is for actors to find their match, making larger platforms more attractive, in turn creating monopolistic markets (Jullien & Sand-Zantman, 2021). Platforms also allow tech companies to collect real-time data to estimate user preferences and predict user behavior, permitting targeted promotion strategies (Zuboff, 2019), and expand to other complementary markets (e.g., healthcare, education, transportation, or smart hardware). The result is a digital ecosystem that creates a self-perpetuating cycle of escalating benefits for Big Tech (Sharon & Gellert, 2023).

This *tech* dominance leads to highly concentrated sectoral markets that provide tech companies with enormous market and financial resources that make them *big*. At present, most Big Tech boast billions of users *globally*. Facebook has 2.3 billion monthly users worldwide, while Google operates in approximately 200 countries and territories. Similarly, the number of Microsoft Office and Windows users reached over 1.2 billion and 1.4 billion, respectively. A consequence of this large user base is accumulation of unprecedented financial resources. Together, these companies contribute to more than 22% of the market capitalization of S&P 500 companies, and their individual size exceeds the GDP of even some G7 countries such as Canada and Italy (Chowdhary & Diasso, 2022).

### GenAI and further consolidation of Big Tech's dominance

The emergence of GenAI compounds Big Tech's dominance. The development of GenAI requires three key components: talent, large training datasets, and computational power. Data from millions of users across various sectors allow Big Tech to build exclusive datasets. Likewise, access to financial resources allows them to hire the most proficient talents working in the sector. A recent study estimated that the five largest platform companies employed more than 33,000 people in AI research and development (R&D), with Amazon alone hosting more than 10,000 AI developers (Olson, 2023). Estimates suggest that computational and data requirements for training large language models have exponentially increased compared to 5–6 years ago and have doubled every 9 months (Sevilla et al., 2022). The third iteration

<sup>1</sup> Digital platforms provide interfaces that facilitate interactions between users, and enable collection and use of data about these interactions (European Commission, 2016).

of popular ChatGPT was estimated to require 10,000 graphical processing units with \$16 billion investments in chips annually (Tong et al., 2023). Studies also suggest a \$1 billion cost, split equally between hardware and model training, to develop GenAI (Goldman Sachs, 2023).

Given their monopoly over all three components, the “essential building blocks” are inherently skewed in favor of Big Tech (Jacobides et al., 2021; Luitse & Denkena, 2021). The result is a “compute divide” between Big Tech and conventional R&D centers (such as universities), leading to increasing concentration of GenAI research in the hands of a few companies and prominent universities (Ahmed et al., 2023). Cases of OpenAI (investment by Microsoft, reinstatement of Sam Altman as CEO, and OpenAI removing ban on military applications of its GenAI tools) and Anthropic (investment by Amazon) illustrate that even in instances where developers have attempted to develop GenAI independently, lack of resources forces such companies to get co-opted by Big Tech (De Vynck, 2023; Field, 2024). As such, most of the top GenAI models developed thus far are entirely or partially owned or controlled by Big Tech.

Therefore, as GenAI becomes a general-purpose technology, the adoption and use of various GenAI models can expand the reach of Big Tech even further.

## MSF

In this study, we use Kingdon's (1984) MSF to understand the growing role of Big Tech in the policy process (Figure 1)<sup>2</sup>. Kingdon considers policymaking a nonlinear process consisting of three independent streams: problem, policy, and politics (Cairney & Jones, 2016). This division of streams enables us to explore the role of actors, their power and influence across multiple dimensions, allowing for a rich discussion on the multi-faceted role Big Tech can have on various stages of policymaking (Cairney & Jones, 2016).

In the MSF, the “problem stream” is characterized by processes involved in selecting societal issues that merit policy resolution. In the policy stream, various options are identified, evaluated, and narrowed down to feasible alternatives (Kingdon, 1984). The “politics stream” is shaped by factors such as public mood, political ideologies, and advocacy by interest groups. These factors set the broader context within which problems and policies can gain or lose momentum. Kingdon posits that while these three streams usually function independently, a window of opportunity arises when these streams intersect, allowing policy entrepreneurs to drive policy change (Goyal et al., 2021).

## The overreach across other streams in the Big Tech-centric technology stream

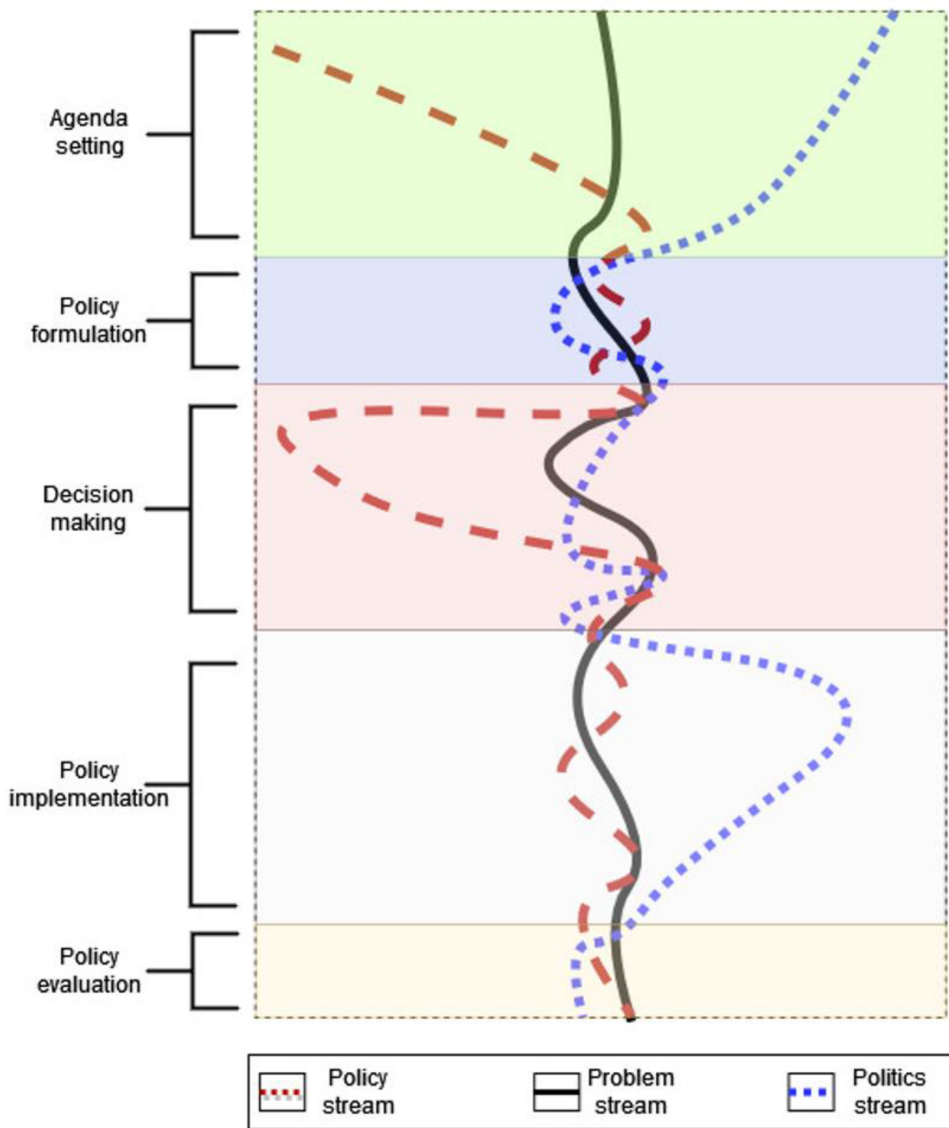
Big Tech have leveraged their prominence in the technology stream to permeate the problem, politics, and policy streams, thereby exerting a multidimensional influence that transcends their initial operational ambit. In this section, we discuss the changing dynamics between Big Tech and the key actors of the three streams: epistemic community in the problem stream, instrument constituencies in the policy stream, and advocacy coalitions in the politics stream.

### Big Tech and the problem stream

In the problem stream, the epistemic community—comprising policy experts, scholars, NGOs, media, and others—play a critical role in identifying, framing, and legitimizing societal issues for policy action (Mukherjee & Howlett, 2015). Ideas and discourse play critical role in this process (Ulnicane & Erkkilä, 2023). They form the basis of our understanding of societal problems; they influence political debates and serve as a magnet for policy and political coalitions (Béland & Cox, 2016). Big Tech's influence in the problem stream is manifested in several ways, including but not limited to identifying issue areas, shaping online discourse in their platforms, and shaping knowledge discourse through their interventions in research. This section will discuss how these mechanisms allow Big Tech to exert considerable influence over the priorities of epistemic communities. The emergence of GenAI is only likely to entrench this effect.

Big Tech have become pivotal in shaping ideas that identify and prioritize issues as “problems” (Young, 2019). Big Tech exert influence primarily by controlling information in digital platforms like

<sup>2</sup> Figure 1 also details the involvement of the three streams in the policy process where streams close to the “center” are closely involved in particular phases of the policy process. For instance, the policy stream is less utilized in the decision-making stage while the politics stream is not invoked in the implementation stage.



**Figure 1.** Multiple streams framework.

Source: Authors' work based on Mukherjee and Howlett (2015).

social media and search engines. These platforms allow Big Tech to selectively control the visibility of content online, effectively influencing which issues receive public and scholarly attention. Such selective prioritization includes political discourse, narratives, and contested social issues. Stjernfelt and Lauritzen (2020) provide multiple examples of digital censorship of specific religious and ethnic groups and content moderation of right-wing groups on popular platforms such as Facebook and AdSense. Given that more than half of the population in certain countries rely on digital platforms as their primary sources of information, Big Tech have become arbiters of knowledge (Shearer, 2021; Srivastava, 2023).

Big Tech have also increasingly become a major source of academic and policy research. Big Tech influence research through at least three mechanisms: (a) conducting direct research themselves; (b) funding research in academic and research institutions; and (c) creating a revolving door between themselves and research organizations. Indeed, evidence shows that the share of research directly conducted

or supported by industry in total AI research is steadily rising (Hagendorff & Meding, 2023; Jurowet-zki et al., 2021). Furthermore, Big Tech have become major employers for experts in AI research and ethics (Jacobides et al., 2021). Given the increasing compute and data requirements associated with training large language models, the consolidation of research capacity within Big Tech and supported universities is likely to continue. This dual role as both contributors to and beneficiaries of scholarly work in AI presents potential conflicts of interest and raises ethical concerns about AI research. This conflict of interest was apparent in the case of Google's firing of Timnit Gebru, who had expressed concerns about the risks of AI (Metz & Wakabayashi, 2020). The effects of their research influence can be seen in the "ethics washing" of AI research, moving the discussion away from government regulation to self-regulation by companies (Wagner, 2018).

Big Tech also shape the problem stream by influencing media sources. They are one of the most important funding sources for media outlets (Brownsell & Petio, 2021). One of the most influential news outlets, the Washington Post, is owned by Amazon. Concomitantly, Apple has been augmenting its focus on the media sector as a strategy for revenue diversification. The company launched Apple News and Apple TV in 2015 and 2016, respectively, and initiated the News Partner Program in 2021, further solidifying its foothold in the media industry. On the other hand, the media outlets themselves rely on digital platforms for their readership and, therefore, need to design their content to ensure algorithms in the digital platforms prioritize their content. A study of over 700 articles related to Big Tech and the anti-trust movement from 2019 and 2020 shows how news media tend to stress more of the benefits of Big Tech compared to the cost (Dyer-Witthoford & Mularoni, 2022).

The emergence of GenAI enables Big Tech to transform from content arbiters to content providers. Narratives and information generated by GenAI technologies are challenging for the general public to distinguish as being machine-generated (Galaz & Daume, 2023). GenAI's capacity to create content that seamlessly blends with human-generated information amplifies Big Tech's role in defining societal problems. Furthermore, GenAI can analyze vast amounts of data to identify emerging policy issues and give Big Tech a first-mover advantage in framing these issues. Using GenAI by researchers and policy experts adds another dimension to Big Tech's influence within epistemic communities. As these AI technologies become indispensable tools for research and generating knowledge, the companies that develop and control them gain further influence (Young, 2019). In essence, Big Tech become gatekeepers, not just for what is known but also for how it is known, thereby exerting influence on the epistemic foundations of policymaking.

## Big Tech and the policy stream

Kingdon (1984) conceptualized the policy stream as a "primaevial soup" of competing policy solutions that are evaluated based on their "technical feasibility" and "value acceptability." Instrument constituencies play an important role in this "selection" process by advocating and legitimizing specific policy instruments amongst the alternatives (Voß & Simons, 2014). The legitimization process goes beyond the functional evaluation of instruments and extends to the epistemic lens through which we understand the nature of the problems, underlying institutional and social relations, and the role the instruments can play within such structures (Lascoumes & Le Gales, 2007).

The rise of Big Tech as actors within the instrument constituency must be understood in the context of changing social structures that have promoted technology as a solution to the broader social, economic, political, and environmental challenges (Ulnicane & Aden, 2023; Zuboff, 2019). This "technocratic power" legitimizes Big Tech and their technological fixes. Ferrari (2020) argues that two central logics of modern-day technologies drive technological solutionism: (a) belief that technologies are democratic and support autonomy; and (b) mutually reinforcing relationship between platform economy and the neoliberal economic logic. These factors have increased the "value acceptability" of Big Tech as legitimate actors and digital platforms as instruments in policymaking (Sharon & Gellert, 2023). The "technical feasibility" of digital solutions comes from the increased accessibility and affordability of digital technologies (Morozov, 2013).

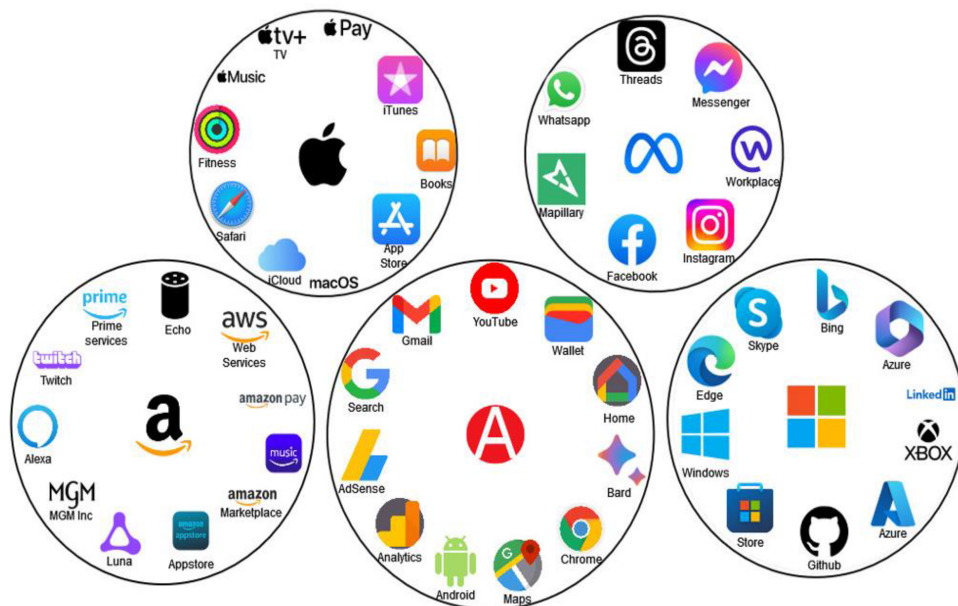
Beyond this epistemic change, discussion on the role of Big Tech in the policy stream must occur at the infrastructural and sectoral levels (see Figure 2) (van Dijck et al., 2018). Infrastructural services entail "search engines and browsers, data servers and cloud computing, email and instant messaging, social networking, advertising networks, app stores, pay systems, identification services, data analytics, video hosting, geospatial and navigation services, and a growing number of other services" (van

Dijck et al., 2018, p. 13). Unlike the essential physical infrastructure of the past, such as the railways or highways, which involved either direct government ownership or some form of public-private arrangement, today's digital infrastructure is entirely owned by Big Tech (Sharon & Gellert, 2023). Given the widespread public use, governments are actively enmeshed in using such digital infrastructure. For example, using cloud and data management services or even social media platforms provided by Big Tech are now a standard practice among governments worldwide (Chan & Miller, 2023).

These infrastructural services enable data collection and analytics that can inform policy in various sectors. A good illustration comes from the pandemic. Sharon (2021) notes how the UK government invited representatives from Big Tech to assist in designing policy solutions for managing COVID-19. Consequently, Big Tech were involved in designing contact tracing tools, creating "Disease Prevention Maps," tracking medical capacity, and even using AI to develop medicines and vaccines (Sharon, 2021). Governments are leveraging Big Tech services into other domains, such as internal knowledge management, taxation, environmental protection, and voter verification and registration (Sharon & Gellert, 2023).

The popularization of GenAI is further likely to augment Big Tech's already expansive influence in multiple policy domains. As governments seek to integrate GenAI solutions, they also leverage digital infrastructure provided by Big Tech. For instance, SecureGPT, being developed under Singapore's Integrated Health Information System, is likely to be built on the Microsoft Azure platform (Abdullah, 2023). The Japanese government's agreement with Microsoft on designing an in-house GenAI rests on a similar understanding (Nussey, 2023). Moreover, since GenAI relies on training on vast amounts of data, its meaningful use within government depends on datafication of information that were not available to Big Tech: administrative records of the citizens, internal organizational rules, and routines. Access to such information can potentially help further consolidate Big Tech's advantages by granting access to institutional memory and knowledge of government bodies.

Big Tech are also emerging as direct providers of policy services that were conventionally considered as governments' prerogatives. Owing to financial resources at their disposal and increasing demand for social responsibility, Big Tech are increasingly turning towards philanthropy (Goldenfein & Mann, 2023). This includes their foray into providing subsidies for education, research and development, seed capital and other forms of investment for smaller firms, and capacity-building opportunities for researchers (Goldenfein & Mann, 2023). For instance, Google has committed more than \$250 million since 2005 to



**Figure 2.** Digital infrastructure services provided by some of the largest constituents of Big Tech. Source: Adapted from van Dijck et al. (2018).

**Table 1.** Sentiment of American respondents on the favorability of specific tech companies.

	2012			2022/2023		
	Favorable	Unfavorable	Don't know	Favorable	Unfavorable	Don't know
<b>Google</b>	82	9	10	70	26	4
<b>Apple</b>	74	13	14	61	27	12
<b>Twitter</b>	58	28	14	41	47	12
<b>Meta</b>	34	36	31	37	47	17

Source: [Washington Post \(2012\)](#); [YouGov \(2023\)](#); [YouGov & CGO \(2022\)](#).

tackle global education gaps. Beyond education, the Bill and Malinda Gates Foundation (BMGF), since its launch in 2000, has spent more than \$50 billion in direct interventions by a wide variety of policy instruments in areas such as public health, agriculture, and social services, mostly in developing countries ([Chung, 2019](#)). This turn towards social services challenges the role of governments. Studies have shown that the pan-national BMGF has undermined the government's role and facilitated the entry of large private sector companies into the domain of international development ([Birn, 2014](#)), its initiatives, such as the Global Fund to Fight AIDS and the GAVI Alliance, replace the role of traditional international actors, such as the United Nations, and bring in powerful private actors into the negotiation table with governments in developing countries ([Moran & Stone, 2016](#)).

### Big Tech and the politics stream

Unlike the problem and the policy streams, which are primarily nestled at the policy subsystem level, the politics stream is situated at a macro-political level. The politics stream consists of a few important elements: (a) national mood around a particular policy issue; (b) national ideology governing the policy issue; and (c) influence of issue-specific interest groups (advocacy coalitions) ([Zahariadis, 2015](#))<sup>3</sup>. Examining these elements is crucial to fully grasp Big Tech's engagement with the politics stream.

Big Tech have historically enjoyed high levels of trust and popularity ([YouGov, & CGO, 2022](#)). However, recent years have seen a rise in unfavorable attitudes towards them (see [Table 1](#)). There are several reasons for this shift ("techlash"). First, there is an increasing consensus that tech companies are getting too big, thereby inhibiting competition and stifling innovation ([Hart Research Associates, 2022](#)). Second, incidents like the Cambridge Analytica scandal, partisan censorship, and the January 6th Capitol attack have shown that digital platforms are not politically neutral entities ([Alizadeh et al., 2022](#)). Third, it is increasingly evident that Big Tech deliberately influence their users and are, at best, insufficiently capable or, at worst, unwilling to put an end to fake or harmful content within their platforms ([Isaac, 2021](#)). Big Tech would have hoped that launch of GenAI could potentially steer the conversation away from unfavorable perceptions and shift the national mood. Analysis of news and social media content shows that GenAIs, since their launch, have dominated the news cycle and are viewed favorably by the public ([Haque et al., 2022](#); [Karanouh, 2023](#)).

Nonetheless, opinion polls suggest that despite a positive perception of GenAI, distrust of the technology is high, as are concerns associated with the impact of AI on society ([YouGov, 2023](#)). Therefore, considerable public support for regulating AI (including GenAI) exists ([YouGov, 2023](#)). Indeed, this sentiment has been reinforced by experts, industry leaders, and developers of the technology, so it remains unclear if GenAI can provide any shift in the national mood towards Big Tech.

The direct involvement of Big Tech in the political arena merits greater scrutiny. Although the traditional "technolibertarian" position of many actors in Big Tech, such as Bill Gates and Steve Jobs, was to shy away from politics and lobbying, over the years, the threat of regulation and the possibility of incentives have motivated Big Tech towards influencing policy and politics ([Chandrasekaran & Mintz, 1999](#); [Zachary, 2010](#)). Big Tech are involved in the political sphere through a variety of mechanisms: (a) direct consultations with the government; (b) lobbying; (c) hiring experts closely working with the governments (revolving door); (d) and funding influential think tanks, universities, and experts ([Lindman et al., 2023](#)). Due to their size and technological expertise, tech companies are important political actors. Governments frequently need to work with Big Tech as economic, social, or, as the case of GenAI illustrates, knowledge agents ([Sharon, 2021](#)). The lobbying activities of Big Tech further strengthen their

<sup>3</sup> We have highlighted the ideology of technocracy under the policy stream.

**Table 2.** Contribution to the lobbying by Big Tech in the US over the years.

	2016	2016	2018	2018	2020	2020	2022	2022
	Rank	Amount (mils)	Rank	Amount (mils)	Rank	Amount (mils)	Rank	Amount (mils)
<b>Alphabet Inc</b>	11	15.4	8	21.8	39	8.9	19	13.1
<b>Amazon</b>	20	11.0	14	14.2	8	17.9	6	21.4
<b>Apple</b>	99	4.7	59	6.7	58	6.7	43	9.4
<b>Meta</b>	37	8.7	18	12.6	6	19.7	10	19.2
<b>Microsoft</b>	35	8.7	36	9.6	34	9.5	35	10.5

Source: [OpenSecrets \(2023\)](#).

position in the political sphere. Big Tech have been salient political financiers in the EU and the US in recent years, donating across parties, individuals, and political levels ([Table 2](#)) ([Bank et al., 2021](#); [OpenSecrets, 2023](#)).

Furthermore, the role of the revolving door also requires attention. A recent study found that 18% of total appointees in the Department of Commerce were registered lobbyists, including key staff from various Big Tech firms ([Warren & Jayapal, 2022](#)). A parallel trend can be noticed in the UK and Europe, where Big Tech have hired ex-politicians, civil servants, and political advisors as their political strategists ([Bristow & Clarke, 2023](#); [LobbyControl, 2022](#)).

Finally, Big Tech also directly fund or employ experts and expert groups that form part of consultative interest groups around policymaking. This includes funding academic research for “ethics washing” and generating support, supporting influential think tanks, or even working together with industry associations that support their interest ([Goldenfein & Mann, 2023](#); [Schyns, 2023](#)).

The recent AI Bill introduced in Europe illustrated the effect of this political capital. After the launch of ChatGPT, lawmakers in Europe debated the extent of risk and nature of governance to be imposed on GenAI. However, Big Tech mobilized their lobbying, discursive and consultative power, and their wide-reaching relationship with other influential interest groups to tone down the requirements prescribed in the proposed act ([Schyns, 2023](#)).

## The technology stream and the influence of Big Tech

More recently, scholars have added a “technology stream” in the MSF, where activities promoting technological development occur (see for instance, [Elzen et al., 2011](#); [Goyal & Howlett, 2020](#); [Goyal et al., 2021](#); [Haakman et al., 2020](#); [Kulmer et al., 2022](#)). [Goyal et al. \(2021\)](#) argue that technology stream, which depicts the context and activities that contribute to technological innovation, adds a distinct dimension tailored to encompass technological development, thus enhancing the analytical power of the MSF. The “technology stream” is driven by the imperative to foster technological innovation and diffusion, and focuses on activities contributing to innovation—ranging from R&D to market creation and technology transfer ([Goyal et al., 2021](#)). This stream operates under the auspices of technology constituencies comprising of technology developers, manufacturers, suppliers, service providers, users, lobby groups, political actors, and academics ([Goyal & Howlett, 2018](#)). The hallmark of this stream is the creation of diverse technological alternatives through concerted R&D. With its roots in the transition literature and primary focus on innovation, the technology stream proposed by [Goyal and Howlett \(2018\)](#) can be considered an “innovation-centric” technology stream.

### Technology stream: from innovation-centric to the Big Tech-centric

The innovation-centric technology stream provides a valuable framework for understanding technological innovation and its diffusion across various sectors. However, for the purpose of our analysis, the innovation-centric technology stream presents several challenges. First, the innovation-centric stream does not adequately address the disproportionate influence exerted within the technology stream by Big Tech in shaping the technological, political, and policy landscapes ([Luitse & Denkena, 2021](#)). These companies actively engage in various activities to influence policy decisions to create an environment conducive to their long-term objectives. Second, analysis of innovation-centric technology stream is often rooted in policy subsystems, focusing on specific sectors or issue areas. This approach downplays the growing role that Big Tech play across various policy fronts and geographical boundaries. With



their global reach and cross-sectoral influence, Big Tech often transcend traditional policy subsystems, rendering localized analysis increasingly inadequate. Third, the innovation-centric technology stream assumes that actors in the technology constituencies are united by their motivation to promote innovation. This perspective overlooks the fact that for some of these actors, particularly Big Tech, innovation is often a means to other ends—such as profits or influence. Technological advancements are deeply embedded in broader goals to shape markets, regulations, and even societal norms to achieve these ends.

These limitations of the innovation-centric technology stream call for a more nuanced understanding of the complex interplay between Big Tech, technology, power, and policy when the Big Tech are active in the technology stream. We argue for a *Big Tech-centric technology stream*, which offers a divergent set of priorities and operational dynamics. Unlike the innovation-centric model, the Big Tech-centric technology stream is not a collective enterprise unified by a common goal to promote innovation. Instead, the stream is predominantly orchestrated by Big Tech, serving as pivotal actors within the technology constituency across diverse policy domains and jurisdictions. The primary activity in the stream is not necessarily to promote innovation but to promote the interests of Big Tech. Innovation can be instrumental or detrimental to this cause. Indeed, Big Tech might also try to stifle innovation to preserve their dominance by pursuing anti-competitive practices (Bessen, 2022). For instance, in September 2023, the US Department of Justice charged Google for spending \$10 billion yearly to maintain its internet search market dominance by locking out competitors and smothering innovation (Nylen & Alba, 2023).

### Main features of the Big Tech-centric technology stream

Table 3 highlights the divergent characteristics of the multiple streams. Differences between the Big Tech-centric technology stream and the problem and politics streams are relatively straightforward. Hence, our analysis concentrates on the distinctions between the Big Tech-centric technology stream and the policy stream and contrasts the Big Tech-centric and innovation-centric technology streams.

There is a partial convergence of activities and actors in technology and policy streams (Goyal & Howlett, 2018). However, substantive differences are evident. The policy stream serves as a forum for instrument constituencies who actively formulate policy solutions and advocate specific policy instruments as solutions to societal challenges (Cairney & Jones, 2016). Conversely, the technology stream depicts the context and activities contributing to the diffusion of technology or technological actors in other streams regardless of societal problems (Goyal et al., 2021).

This distinction becomes more pronounced when Big Tech dominate the technology stream. Unlike the innovation-centric technology stream, which is aimed at technological advancements and innovative solutions, the Big Tech-centric technology stream is calibrated to serve two interrelated goals. The first goal is to create political, policy, and sociocultural environment that is intrinsically favorable to the existence and expansion of Big Tech (Luitse & Denkena, 2021). Often, this leads to self-governance mechanisms and a regulatory landscape characterized by minimal governmental oversight (Dyer-Witthford & Mularoni, 2022). The second goal is to accelerate the diffusion of specific technologies, most recently GenAI, across diverse sectors of society. The overarching objective is not so much the democratization of technological innovation but rather the strategic expansion of Big Tech's influence both vertically within their core sectors and horizontally across new, often tangential sectors (Solano et al., 2022).

Consequently, unlike the innovation-centric technology stream, where technology constituencies may be absent or operate independently in specific policy areas, the Big Tech-centric technology stream exerts a pervasive influence. This stream is not confined to particular policy sectors or localized governance arrangements. Instead, it manifests as an increasingly ubiquitous force prevalent across diverse policy terrains and nation-states (Coleman, 2018).

Furthermore, unlike the innovation-centric technology stream, which tends to limit the activities of technology constituents to the technology stream, under the Big-Tech-centric stream, Big Tech have been actively engaging with actors in the problem, policy, and politics streams, thus extending their influence in these streams.

**Table 3.** Summary of main features of different streams

Streams		Activities	Actors	Composition	Characteristics
<b>Problem</b>		Developing con-ceptions of problems and goals	Epistemic community	Scientists, policy experts, NGO activists, and public agencies	Knowledge-based
<b>Policy</b>		Developing policy solutions	Instrument constituencies	Administra-tors, scientists, design experts, consultants, and technicians	Tool-based
<b>Politics</b>		Developing iden-tities, interests, and ideologies	Advocacy coalitions	Politicians, par-ties, legislators, interest groups, media	Interest/legisla-tive/ electorally based
<b>Technology stream</b>	Innovation-centric	Developing inno-vative means or approaches	Technology constituencies	Technology developers, lobby groups, political actors, civil society organizations, and users	Innovation-based
	Big Tech-centric	Developing favor-able conditions for Big Tech to expand	Technology constituencies	Big Tech and others	Expansion-based

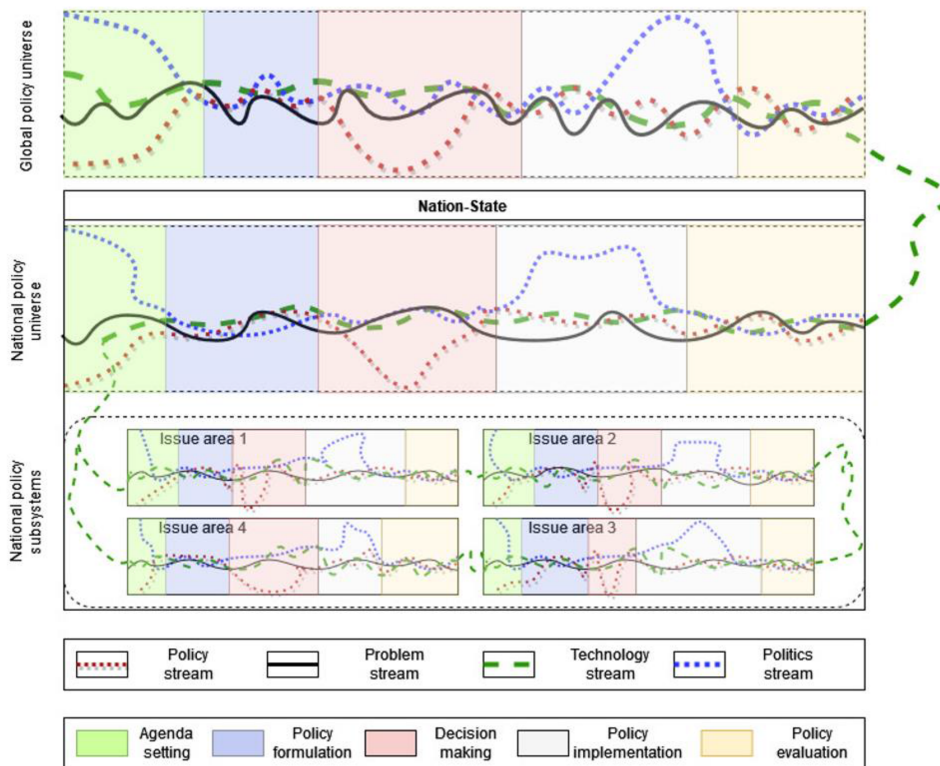
Source: Authors' work which builds on (Simons and Vofß, 2018) and Béland & Howlett (2016).

## Discussion

### Big Tech transverse multiple streams, issue domains, and policy stages

The growing dominance of Big Tech in the technology sector and their expansion into various policy domains and territories requires a re-evaluation of conventional frameworks, such as the MSF, that have informed our understanding of the policy process. In the original MSF, the policy process is conceptualized as consisting of three distinct independent streams, interacting under specific conditions—often termed as “policy windows.” However, our research proposes a significant alteration to this well-established model. In addition to introducing the “Big Tech-centric technology stream” as a form of technology stream where Big Tech are actively involved, we posit that Big Tech have become crucial players in the entire policy process. As can be seen in Figure 3, the technology stream features centrally in all policy stages across specific policy subsystems, national policy universe, as well as global policy universe. We identify three dimensions of their influence on the policy process. These dimensions include their prevalence in other streams, their infiltration of various policy domains, and their presence across various stages of the policy cycle.

Within the four streams, Big Tech are not mere observers in the epistemic communities, instrument (and technology) constituencies, and advocacy coalitions but are active “entrepreneurs” directly involved in bringing about policy change in their favor. They act as problem brokers in the problem stream, highlighting certain issues as problem areas compared to others (e.g., their demand for regulation of GenAI or TikTok in the US) while suppressing others (e.g., ethics washing of AI) (Wagner, 2018). They act as policy entrepreneurs by advancing the use of digital platforms to solve policy problems (e.g., creating contact tracing apps during COVID). They also act as political entrepreneurs, actively mobilizing their resources to shape political institutions and actors to further their interests (e.g., lobbying to kill the American Innovation and Choice Online Act and the Open App Markets Act) (Cortellessa, 2022). Given their role in developing digital platforms and R&D, the role of Big Tech as technology innovators does not require much elaboration. The traditional MSF model posits that these streams are independent, and policy entrepreneurs can exploit policy windows to couple the streams to push for policy change. However, Big Tech's omnipresence increasingly synchronizes these streams. Their reach and



**Figure 3.** Modified multiple streams framework in the shadow of Big Tech.

Source: Authors' reconceptualization of the MSF.

influence render Big Tech as “super policy entrepreneurs.” They possess the resources and the technological prowess not only to shape and exploit but also to potentially create focusing events, thereby dictating the timing and nature of policy windows.

Likewise, Big Tech are not confined to specific policy domains. Increasingly, they manifest as ubiquitous force prevalent across diverse policy terrains (Coleman, 2018). Beyond their presence in more traditional sectors such as information and communication, finance, marketplace, or digital hardware, their sectoral expansion now includes non-traditional domains such as transportation (see Waymo or Apple Car), healthcare (see Amazon Clinic), and agriculture (see Microsoft FarmBeats). Even before the launch of ChatGPT, governments were already leveraging AI solutions within the public sector (van Noordt & Misuraca, 2022). Since the launch of GenAIs, robust models have been under trial in sectors such as education, health, and even defence, providing learning, assessment, and simulation tools within the government (Abdullah, 2023; Rochford, 2023). Similar applications are now being tested in administrative record keeping, analytics, and designing chatbots (Min, 2023; Nussey, 2023).

Similarly, Big Tech have also been establishing their presence across different stages of the policy cycle, directly through the extension of the technology stream and indirectly through the transversion into other streams. Although Kingdon's MSF was developed with a focus on the agenda-setting stage of the policy cycle (Béland & Howlett, 2016), over the past decades, studies have shown that problem, politics, and policy streams continue to exist at other stages of the policy cycle, though some streams are more prominent than others at different stages (Herweg, 2023; Howlett et al., 2015). Equally, the Big Tech-centric technology stream can be found at various policy cycle stages. As compared with the policy stream and politic streams, the relative prominence of which are subject to ebbing and flowing across different stages (see footnote 2), the Big Tech centric technology stream is centralizing its role alongside the problem stream at all stages of policy cycle.

Correspondingly, Big Tech have assumed roles that extend far beyond agenda setting, infiltrating other policy cycle stages. With their advanced analytical capabilities, ownership/control over popular digital tools, and their ability to position themselves, their lobbyists, their researchers, and their past (or future) employees in key positions, Big Tech are able to redefine societal problems and propose innovative policy solutions at the policy formulation stage. In the decision-making stage, in addition to exerting influence on politicians (as discussed under Big Tech and the politics stream), Big Tech, with their financial power and control over digital infrastructure, data, and information, have increasingly assumed the role of decision makers by inserting themselves in various issue areas. In terms of policy implementation, in this growing tech-centric world, it is hard to imagine a policy program without the involvement and reliance on the technological tools or infrastructure developed or controlled by Big Tech. During the Covid pandemic, Big Tech partnered with telecom corporations and public health authorities worldwide to control the spread of the various (Storeng & de Bengy Puyvallée, 2021). Cloud services from Amazon or cybersecurity solutions from Microsoft and increasingly GenAI have become central to government operations worldwide. In addition, Big Tech often must implement and enforce regulatory decisions within their own platforms, giving them considerable control over how policies are actualized in the digital space and beyond. Moving on to policy evaluation, the role of Big Tech has become increasingly prominent in the age of GenAI. Credit to their control and ability to analyze vast amounts of data instantly and generating high-quality reports, ChatGTP and other GenAI models have already been applied for policy analysis and evaluation, which affects the termination or continuation of a particular policy program. This allows Big Tech to potentially influence the evaluation process by deciding which data to provide and how the data are analyzed and then reported.

## Big Tech and the government

Big Tech have become omnipresent and omnipotent in the policy process. Their influence and resources have made them almost semi-autonomous and semi-sovereign entities enjoying considerable global authority. Sovereign states are also beginning to treat Big Tech like sovereign actors. Governments worldwide have started assigning diplomats to work exclusively with Silicon Valley. These “tech ambassadors” are tasked with liaising with tech companies and representing their country’s interests (Satariano, 2019). This diplomatic recognition further underscores the state-like status that Big Tech companies have achieved globally.

We are progressively entering a duality where we are not just citizens of our respective countries but also subjects in what are termed “net states”—massive tech companies with global influence. As these Big Tech accumulate wealth, global influence, and cross-border interests on a scale which is historically reserved for nations, they have become not merely participants in the arena of international politics; they frequently serve as the very stage on which such politics unfold (Kitchen, 2021). They wield substantial influence over local economies and policies through data centers, digital services, and even partnerships with developing states (Coleman, 2018). For instance, Kwet (2019) points out that US Big Tech exercise control at the architecture level of the digital ecosystem of developing countries. The elevation of Big Tech companies into state-like or quasi-state entities signifies a structural shift in the locus of power, warranting a comprehensive re-evaluation of how we perceive public policy at national and global levels.

While some scholars have speculated that their rise in power points towards an inevitable clash with the sovereign governments, others point to a more varied possibility (Monsees et al., 2023; Srivastava, 2023). Figure 4 above represents the variations of the possible relations between the Big Tech and the

		Regulatory Stance of Big Tech	
		<i>Resistant</i>	<i>Cooperative</i>
Government's regulatory approach	<i>Strict regulations</i>	Competition	Co-option
	<i>Laissez Faire</i>	Capture	Collaboration

**Figure 4.** A matrix of Big Tech’s response to government’s regulatory approach.

Government. While there are several instances of clash happening between the two entities around the world (see Meta's case in Australia and Canada, for instance, or Twitter's row in India) where the rules of governance of the sovereign and Big Tech come in direct conflict with each other (*competition*), in multiple cases, we notice Big Tech maneuver their strategy to align with that of the government (*co-option*) (The Guardian, 2023). This might involve assistance in state surveillance (the role in Palantir in policing or the role in Meta in transferring personal data to the US), selective censorship (Twitter's role in Turkey or Google's role in China), or investments in areas of strategic interest (Baidu's or Alibaba's investments in chip manufacturing following the crackdown on Alibaba) (Yilmaz, 2023; Zhang, 2023).

In many instances, though, we find Big Tech and the government working together in areas of mutual interest (*collaboration*). This involves the government working with Big Tech to integrate their services and infrastructure in areas of government's interest and Big Tech working with the government to design international institutions that promote the strategic interests of both nations and Big Tech (especially the US). Big Tech have managed to position themselves as actors of immense strategic interest, with the competition between nation-states playing out not only on the security front but also on the technological front. The recent initiative by OpenAI to allow military use of its GenAI tools is a good illustration of this collaborative approach. Indeed, contestation over the framing of GenAI development through the lens of national security and geostrategy perfectly captures this phenomenon.

Lastly, we also notice the presence of regulatory *capture*. Even in powerful states such as the US, where regulations with bipartisan support such as the American Innovation and Choice Online Act and the Open App Markets Act failed to materialize, or in Europe, where contents of the AI Act were watered down, we increasingly notice Big Tech enforcing their own interests through various mechanisms (Cortellessa, 2022). However, this effect is more prominent in developing countries with small markets where the governments do not have the analytical, operational, or political capacity to regulate Big Tech (Wu et al., 2015). As Big Tech are increasingly extending their operations in developing countries, they often act as sovereign-state-like entities (Kwet, 2019; Monsees et al., 2023), wielding substantial influence over local economies and policies through data centers, digital services, and even partnerships with developing states (Coleman, 2018).

## Conclusion

The transformative impact of Big Tech on public policy theory development, which is further propelled by advancements in GenAI like ChatGPT, demands close and comprehensive academic scrutiny. As discussed in this article, Big Tech have dominated the technology sphere and are increasingly expansive, becoming central players in domestic policy domains and emerging as state-like actors on the global stage. The traditional frameworks for understanding policy formulation and governance are undergoing seismic shifts. The transformation of Big Tech into "super policy entrepreneurs" is a clear indicator of these changes. Therefore, scholars, policymakers, and civil society must examine these evolving dynamics critically. This article serves as a call to action, urging a re-evaluation of traditional policy theories and adapting governance frameworks accordingly.

## Acknowledgements

A.T. is grateful for the support provided by the Lee Kuan Yew School of Public Policy, National University of Singapore.

## CRedit authorship statement

Conceptualization, A.T.; methodology, A.T., S.K., H.Z.; validation, A.T.; visualization, S.K.; investigation, S.K., H.Z., A.T.; resources, A.T.; data curation, H.Z., S.K.; writing first draft, S.K. H.Z., A.T. writing—editing, A.T.; supervision, A.T.; project administration, A.T.; funding acquisition, A.T. All authors read and agreed to the published version of the manuscript.

## Funding

This research/project is supported by the Ministry of Education, Singapore, under its MOE AcRF TIER 3 Grant (Award Number: MOE-MOET32022-0001) and the National Research Foundation Singapore under

its AI Singapore Programme (Award Number: AISG3-GV-2021-002). Any opinions, findings and conclusions, or recommendations expressed in this material are those of the author(s) and do not reflect the views of Ministry of Education, Singapore or the National Research Foundation, Singapore.

## Conflict of interest

None declared.

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*Policy and Society*, 2024, **00(00)**, 1–18

DOI: <https://doi.org/10.1093/polsoc/puae012>

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