AI Challengers: How AI Regulation Can Stimulate Innovation, Democratise Knowledge and Break Up Digital Monopolies

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Abstract

This essay deconstructs the prevailing Silicon Valley narrative that artificial intelligence (AI) regulation stifles innovation, showing how it is being employed to serve the extractive interests of dominant technology platforms and underscoring that the real debate is about who controls the infrastructure of knowledge production. Through theoretical analysis of epistemic infrastructure, neoliberal ideology and market dynamics, along with empirical examination of the European Union's Payment Services Directive 2 (PSD2) and its impact on innovation, this paper offers evidence of how targeted technical regulation can actually stimulate innovation by opening up data monopolies and creating competitive market conditions. PSD2 transformed oligopolistic banking into a competitive ecosystem worth over £4 billion to the UK economy, enabling so-called ‘challenger banks’ like Revolut and Monzo to emerge through mandated openness and interoperability. This essay argues that, while PSD2 is not an exact template for the AI market, well-designed interventions can redistribute power, favouring genuine innovation over rent-seeking behaviour. Rather than accepting a misrepresentative trade-off between regulation and innovation, this analysis demonstrates how regulatory intervention can protect epistemic integrity, allowing ‘AI challengers’ to emerge as seen in the banking market, offering alternatives that might serve democratic values rather than extractive corporate interests.

1. Introduction

During a midnight call in February 2025, billionaire and recent champion of 'government efficiency' Elon Musk demanded a “spring cleaning of regulation [to] get the government off the backs of everyday Americans so people can get things done [and] restore freedom" (Shuham, 2025). This narrative casts Silicon Valley as civilisation's liberator, with regulation as the primary obstacle to human flourishing. Musk's performative resistance to regulation reflects what Bradford (2024) describes as America's "uncompromised faith in markets and skepticism toward government regulation," where it is viewed as increasing costs and constraining innovation. This worldview has enabled market concentration across the entire AI stack, creating what Rikap (2023) calls 'intellectual monopolies' that control how societies access knowledge.

The tension between regulation and innovation has become one of the most emotive debates in AI governance, yet beneath this controversy lies a much deeper issue: monopolistic concentration of epistemic power. At the root of this issue is a category error: the debate treats foundation models, large language models (LLMs) and chatbots as ordinary commercial technology products subject to standard Clinton-era innovation versus regulation trade-offs (Stiglitz, 2006; Bradford, 2023). In reality, these systems are something far more consequential: the infrastructure through which private actors can exercise power over collective understanding. This misclassification has enabled what El Hajjar (2025) calls *cognitive colonisation*, the capture of knowledge production by powerful interests whose primary allegiance is to first-mover rents and shareholder value rather than to democratic discourse or cultural diversity. As Stiglitz (2024) aptly observes, "freedom for the wolves means death for the lambs."

Rather than accepting this category error, this analysis examines how different forms of market intervention shape power dynamics in emerging technology sectors. The empirical foundation for this investigation draws from regulatory interventions in adjacent technology-dependent industries, particularly examining how policy frameworks interact with market structures, incumbent resistance, and competitive dynamics. The emergence of new market entrants, dubbed 'challengers', following certain regulatory implementations provides insights into how policy interventions

can reshape innovation ecosystems and alter the relationship between established players and new competitors (Murinde et al., 2022).

The structure of this analysis proceeds as follows. First, it establishes a theoretical framework examining how AI functions as epistemic infrastructure, with layered technical architectures serving as sites for market dynamics to consolidate power. Second, it examines a relevant case study from financial services, analysing how regulatory intervention affected power distribution in technology-dependent markets. Finally, it explores pathways for AI governance that might stimulate different forms of innovation beyond the solely technical.

The stakes of this debate extend far beyond economic considerations. Four months after his call to end all regulation, Musk stated that he would use his AI model, Grok, to "rewrite the entire corpus of human knowledge, adding missing information and deleting errors" (Dillin, 2025). With free market “wolves” like this at the door, the urgent question becomes not simply whether regulation affects innovation, but what forms of innovation serve democratic societies and how policy frameworks might shape the development of technologies that increasingly mediate human knowledge and understanding.

2. Theoretical Framework: Epistemic Infrastructure and Power Strategies

2.1 The AI Stack: Layers of Epistemic Control

The AI ecosystem can be considered a complex adaptive system, "due to the multiple and diverse players involved, their evolving relationships and interactions, the use of new data, the introduction of new types of technologies, the finding of new applications, and changing regulations" (Janssen, 2025). However, this apparent complexity obscures increasingly monopolistic control over a layered technical architecture which lends itself to power accumulation. For the purposes of this analysis, I focus on conversational, generative AI systems: technologies designed to engage in natural language interactions with humans, including chatbots, virtual assistants, and large language models. These systems present a particular form of democratic risk because they directly mediate public knowledge (Wihbey, 2024),

functioning as what Coeckelbergh (2025) identifies as *rhetoric machines* where "the goal is to convince and influence, not to speak the truth."

As Foucault observed, "power and knowledge directly imply one another" (Foucault, 1988), and while the control of knowledge has been concentrated throughout history, from medieval scriptoriums to broadcast media, LLMs represent a distinctly new form of consolidation. Unlike previous powerful technologies such as electricity, the internet or smart phones, LLMs represent a form of epistemic infrastructure that serves "to see and navigate the space of knowledge" (Pasquinelli & Joler, 2021), doing so through synthesis and interpretation rather than access or transmission. Although the technology stack is similar to the multi-tiered client-server architectures of the internet era (Munn, 2020), AI infrastructure is not merely technical but deeply social, extracting statistical correlations to reshape how knowledge is produced and accessed in our society (Suchman, 2023) – creating new forms of intermediation that make the sources and processes of knowledge formation less transparent than traditional gatekeeping mechanisms.

Proprietary training data formats, closed-source model architectures, and incompatible inference APIs create a locus of capabilities which pose unprecedented threats to what can be understood as the *epistemic commons*, the shared foundation of knowledge that underpins democratic discourse, cultural understanding, and collective decision-making (Nieminen, 2014). Unlike physical commons, epistemic commons are characterised by their non-rivalrous nature: one person's use of knowledge does not diminish its availability to others. However, the governance of epistemic commons faces unique challenges related to access, quality, and diversity of knowledge production.

Chaudhary & Penn (2024) describe LLMs as "instruments of power" that can systematically undermine human agency and democratic discourse through multiple interconnected mechanisms. They explain how vertically integrated LLMs can pollute information environments by flooding them with low-cost, intelligible but potentially false content, enable the uniformisation of language and thought, and manipulate users through "mirroring and steering" techniques, creating a "snap to grid" effect that gradually aligns human expression with predetermined ideologies.

The real world is messy, inconsistent and pluralist, which has previously been captured by human systems of knowledge production, from libraries to Tumblr blogs. Suchman (2023) tells us this messiness is incompatible with knowledge production by AI, that with these systems, "anomalies must be cleaned up", "things that don't fit" are eliminated therefore complexity is reduced into categories created by the system. This categorisation imprints itself "in and through the worlds that it orders." Through this process, intellectual monopolies capture knowledge and flatten it, shaping and homogenising it in the process.

Homogenised epistemic infrastructure is already impacting our world in unexpected ways. Examples of how LLMs shape public understanding and decision-making are emerging across domains from education to healthcare to political discourse, from amusing hallucinations to xAI's Grok influencing US immigration policy through false narratives of "white genocide" in South Africa (Habeshian & Contreras, 2025). When monopolies control instruments of knowledge, narratives may be shaped through uniformisation techniques to benefit power interests rather than the common good. This can result in injustices, where individual truths are destroyed and marginalised voices overlooked, leading to a society lacking diverse perspectives and the collective understanding to address complex issues (Fricker, 2009). In the next section, I will discuss the underlying ideology that has shaped the technology sector and the power strategies it fuels.

2.2 The Silicon Valley Growth Narrative: Innovation as Power Strategy

Faith in innovation is strongly held across public and private sectors globally, typically framed not as mere desire but as imperative, often to an existential degree, and yet lacking clear definition. For many, innovation simply equates to unfettered growth and steep entrepreneurial rents (Acemoglu & Robinson, 2013). For some, technological growth is the key to ultimate economic progress and essential to civilisation's survival, claiming "societies, like sharks, grow or die" (Andreessen, 2023). Yet throughout this urgent talk of prosperity and owning the future, we must remember that innovation is a floating signifier with myriad meanings based on shared cultural imaginaries and collectively held beliefs about socio-technical growth and progress (Pfotenhauer & Jasanoff, 2017).

Schaake (2024) notes there exists a pervasive sentiment that innovation must be "prioritised above all else.” In this world view, technological advancement is analogous to individual freedom and externalities are overlooked (Stiglitz, 2006), a narrative aligning neatly with the interests of major investors who commit substantial capital to emerging industries (Bughin et al, 2019). Free market individualism exists in symbiotic relationship with the performative Schumpeterian mindset embodied by industry figures like Elon Musk and Peter Thiel and ultimately leads to extensive influence towards minimal regulatory oversight. Power and decision-making increasingly condense among a narrow cohort who benefit disproportionately, while the broader population bears the externalised costs, from algorithmic bias and platform addiction to job displacement and surveillance capitalism (Noble, 2018; Benjamin, 2019; Zuboff, 2019).

2.3 A False Reliance on Consumer Sovereignty

This singular focus on innovation at all costs may prove to be both strategically self-defeating and short sighted. This is because a cornerstone of neoliberal ideology is consumer choice, the belief that competition will be spurred by preference. The principle of consumer sovereignty, introduced by economist W.H. Hutt (1936), proposes that consumer choice ultimately dictates the production of goods and services in a market economy. Advocates contend that competition naturally incentivises companies to build trustworthy products, as consumer backlash would damage brand reputation and market share.

However, this principle falters when consumers lack complete information about products. As Pasquale (2015) explains, the “black box” nature of these technologies leaves consumers with only a vague feeling of “creepiness”, rendering them unable to assess potential harm until it's too late. Tech giants may counter that consumers can compare AI models, selecting for price, personality and accuracy. For instance, one might opt for a model like Claude, which incorporates built-in safeguards against harm, as opposed to a model like Grok, which has been described as "rebellious" and lacks robust guardrails (Knight, 2023). However, unlike traditional products where quality and features are easily observable, consumers cannot meaningfully assess training data, algorithmic processes, or potential biases. While smartphone selection, for example, is driven by individual preferences among

functionally similar options, AI model choice increasingly determines an individual's information sources and how complex topics are framed, perpetuating what Nguyen (2023) terms "epistemic bubbles" and "echo chambers" that restrict information flow and discredit new ideas. This theory has been proven, as illustrated by tragic instances where individuals have experienced severe consequences, including suicides, after following AI-generated advice (Rissman, 2024). The technical complexity of machine learning systems creates an inherent information asymmetry that prevents genuine consumer sovereignty from functioning. Strong financial and power incentives encourage tech advocates to downplay this asymmetry (Field, 2024), leading to market dynamics that further entrench the power of intellectual monopolies.

2.4 Market Dynamics: Concentration of Power & The Preemption Game

The layered architecture of AI enables both horizontal specialisation and vertical integration, with major players aggressively pursuing full-stack integration to consolidate different layers of the AI value chain. Network effects create barriers throughout this chain, from data acquisition to cloud computing resources (Bessen et al., 2018).

The triple role of Big Tech companies – as compute providers, foundation model trainers, and AI product developers – creates particularly risky dynamics. Discriminatory cloud partnerships, data control, and API specifications create what Ezrachi & Stucke (2016) term a "twilight world of virtual competition," favouring established players. Strategic acquisitions present another consolidation pathway, as dominant firms acquire critical applications and startups to expand control rather than compete through innovation (Hemphill, 2019). Nvidia exemplifies this strategy, investing its $3.4T+ market cap in companies using Nvidia hardware to rapidly expand vertical integration through network effects (Archibald, 2023; Leswing, 2024).

While some argue this reflects natural market functioning where 'fast-second' innovators enact creative destruction (Buisson & Silberzahn, 2010), the AI industry context is skewed by preemption effects. Full-stack first movers rush to gain integrated advantage, cementing monopolies and locking out meaningful competition. They engage in what Hoppe (1997) describes as 'rent-dissipating'

behaviour, moving aggressively to avoid being preempted, even though this collective rush may reduce total available profits (Fudenberg & Tirole, 1985).

Breaking the preemption game requires policy intervention. Stiglitz (2024) notes that "a free-market, competitive neoliberal economy combined with a liberal democracy does not constitute a stable equilibrium, not without strong guardrails." Despite anti-regulatory sentiment, even Republican politicians recognise the need for market certainty. At the recent hearing, "Winning the AI Race: Strengthening U.S. Capabilities in Computing and Innovation" (2025), one Senator decried "busybody bureaucracy" while proposing "a regulatory sandbox for AI … that will remove barriers to AI adoption, prevent needless state overregulation, and allow the AI supply chain to rapidly grow." However, this overlooks the dangers of AI supply chain power centralisation.

Blind (2012) defines regulation as "implementation of rules by public authorities and governmental bodies to influence market activity and the behaviour of private actors in the economy" to maximise collective welfare. Geopolitical tensions and market dynamics create challenges for policy interventions that might restore healthy competition and market certainty with functional consumer sovereignty. What follows is a case study offering a potential way forward.

3. Case Study: PSD2 as a Model for Power Decentralisation

The theoretical framework outlined above reveals the complex nature of epistemic power concentration in AI systems. Market dynamics characterised by preemption games, vertical integration strategies, and network effects entrench incumbent dominance, creating barriers to entry. Ideological stances resist intervention efforts, imposing high costs on our shared knowledge infrastructure. These dynamics present seemingly intractable challenges to policymakers. However, technology regulation history shows that market dominance and technical complexity are not insurmountable. From electricity to radio to telecommunications, contextually sensitive systemic interventions, when properly designed and implemented, can transform closed, extractive systems into open, competitive markets that better serve public interests while maintaining innovation incentives.

To understand how such transformations work in practice, I now examine a case of successful regulatory intervention that opened a previously closed technical ecosystem to new entrants and decentralised market power. While not a precise template for AI regulation due to technological and market differences, this empirical analysis can inspire policy aimed at redistributing power and creating conditions for diverse AI innovation.

3.1 European Banking Oligopolies: A Catalyst for Market Intervention

The Payment Services Directive 2 (PSD2), implemented across the European Union in January 2018, represented a regulatory shift that addressed concentrated banking power. Prior to PSD2, the European/UK banking sector was an oligopolistic market structure that had remained largely unchanged for decades, with power dynamics similar to today's AI landscape. The UK Competition and Markets Authority (CMA) investigated the retail banking market in 2016, finding that incumbent banks had consistently retained approximately 80% market share (Competition and Markets Authority, 2016), with impact strongest in retail banking where customer switching rates remained low. Changing banks was prohibitively complex due to lack of interoperability between banking systems. The CMA found that barriers to entry created lock-in effects, where incumbent banks could maintain high fees without competitive pressure (Competition and Markets Authority, 2017).

3.2 Mandating Openness to Decentralise Power

The first regulatory step allowed customers to share their account data with trusted third parties, with the CMA eventually mandating major banks to agree on common open banking data formats, security protocols and API standards to facilitate this data sharing. Resistance from incumbent banks was strong, with 39% citing open banking regulation as the biggest threat to their business model and 56% believing customers would be encouraged to switch banks (Rolfe, 2019). Indeed, this standardisation allowed new market entrants to develop applications to consistent industry standards. This approach altered competitive dynamics, facilitating the emergence of challenger banks like Revolut, N26, and Monzo along with new sub-market entrants like Plaid.

Major banks soon pivoted from resistance to new strategies for competing in a more open market. By 2019, 68% recognised the need to proactively improve their products to retain customers, and 61% believed that doing the bare minimum to comply with PSD2 would not be enough to outstrip challenger banks (Rolfe, 2019).

3.3 Innovation Through Power Redistribution

Since PSD2's launch, the industry has seen steady growth. The open banking ecosystem has created over 4,800 jobs and is now worth £4.1bn to the UK economy (Reid & King, 2025). The impact extends across public and private sectors, with HMRC collecting £3.5 billion in tax payments via open banking (King, 2024). Beyond traditional banking, PSD2 has stimulated development of a broader ecosystem. In the UK, there are now nearly 250 approved open banking providers, all building capabilities around specific use cases (FICO, 2024). This demonstrates how breaking down incumbent control has enabled diverse innovation across multiple use cases. This growth and adoption evidences the economic value generated through regulatory intervention that redistributed market power.

3.4 Regulatory Evolution and Future Framework

The regulatory framework continues evolving to support this growing ecosystem, with relationships between first and second movers shifting "from combative and contentious to collaborative" (Reid & King, 2025). In September 2024, CMA confirmed full completion of the Open Banking Roadmap (Grubb, 2024), marking a significant milestone in the regulatory intervention that began with PSD2.

The completion of the Open Banking Roadmap means all major incumbents in the banking market have successfully developed open APIs accessible across the entire open banking market. This shows how well-designed regulatory intervention based on openness principles can redistribute, rather than constrain, market power and stimulate innovation. Although implementation has had challenges, the framework's overall success has positioned the UK to expand this approach into broader financial services through initiatives like open finance.

4. Policy Framework: From Financial Services to Epistemic Infrastructure Governance

The PSD2 experience provides several key insights for AI governance that challenge conventional assumptions about the relationship between regulation, innovation, and power. The parallels between the pre-PSD2 banking sector and the current AI landscape are strong, including oligopolistic market structures, high barriers to entry based on data and infrastructure advantages, and limited interoperability between different providers. Applied to the current AI preemption game, systemic levers which create market certainty could serve as a coordination mechanism to break the rent-dissipating cycle.

The EU and China already have AI regulation in place, and there is now an opportunity for policymakers in the US and UK to devise interventions to channel investment flows currently trapped in preemptive behaviour toward more distributive, socially optimal outcomes. These interventions could create the conditions for an opening of second movers similar to the challenger banks seen with PSD2. An initial step might be establishing epistemic infrastructure as commons.

4.1 Democratising Epistemic Infrastructure

The PSD2 model of open infrastructure cannot be directly applied to AI because it focuses on opening individual personal data rather than collective knowledge resources. As Dietz et al. (2003) points out, a new institutional arrangement is required for "the way in which humans organise themselves to extract resources from the environment and eject effluents into it." This metaphor, though designed for natural resources, applies to knowledge commons threatened by extractive corporate power. The necessary ideological shift involves treating knowledge production as shared resources that benefit society and any new arrangement should legally treat epistemic infrastructure as a public commodity, similar to electricity or water.

Protecting the epistemic commons requires attention to the research and development ecosystem that produces AI capabilities. Technical safeguards could include federated learning protocols that enable collaborative model training without

centralising sensitive data, distributed ledgers to track training data origins and ensure attribution, and decentralised inference networks that distribute computational load across multiple providers. Open-source foundation models hosted on public infrastructure could serve as trusted base layers, while standardised APIs would prevent vendor lock-in. Regulatory implementation might also include public funding for AI research infrastructure, requirements for sharing training data and computational resources, and sandboxes that enable experimentation with alternative AI governance models.

4.2 Regulatory Framework for AI Epistemic Infrastructure

Translating these principles to applied governance requires contextual adaptation to the unique characteristics of the moment. Approaches can be borrowed from successful interventions beyond PSD2 to facilitate this, including from telecommunications and pharmaceutical regulation and standardisation. The following are a few examples of potential policy interventions.

Foundation Model Access Requirements	Drawing from telecommunications common carriage principles (Carr, 2025), AI companies operating foundation models above specified capability thresholds could be required to provide standardised model interfaces, inference API access and data formats at regulated rates. Rate regulation would prevent discriminatory pricing that favours vertically integrated applications while ensuring sustainable business models for foundation model providers.
Epistemic Data Portability Rights	Users would gain legal rights to export their training data contributions, conversation histories, and preference profiles in standardised formats.

Interoperability Standards	Technical standards would need to ensure AI applications can operate across different foundation models, preventing vendor lock-in. This could include standardised input formats, output schemas, and security protocols that enable third-party developers to build applications deployable across multiple AI platforms.
Research Access Provisions	Following pharmaceutical compulsory licensing models (Qunaj et al., 2022), AI companies could provide academic and civil society researchers with access to foundation models and training data under specified conditions, creating pathways for independent research into bias, safety, and social impacts while protecting legitimate commercial interests. Research access prevents the “epistemic monoculture” that emerges when only private actors can afford to study advanced AI systems (Koch & Peterson, 2024).

The following table illustrates the parallels between PSD2 and the AI stack as sites for regulatory or policy intervention.

Infrastructure Layer	**PSD2 Open Banking**	**AI Regulatory Equivalent**
Governance	FCA oversight	New governing body needed
Application	3rd party payment apps, budgeting tools, lending platforms	Chatbots & specialised AI applications
API	Standardised PSD2 compliant API structures	New standards needed for inference APIs
Data	Customer account data (transactions, account balances, payment history)	Training data, user interaction data, data structures - new data portability policy needed
Platform	Core banking systems, payment rails, clearing networks	Cloud compute, GPU clusters, model hosting infrastructure - rate regulation needed

Provided the AI ecosystem and markets can be opened up, and the epistemic commons governed in new and collectively beneficial ways, AI challengers become free to move into the market, bringing new concepts of innovation.

4.3 The Four Breakthroughs Framework

New concepts of innovation will be critical to a flourishing of AI challengers. Buisson and Silberzahn (2010) point to four types of breakthroughs that can operate separately or simultaneously, of which technological innovation is but one aspect:

1. **Technological** breakthroughs represent the traditional focus of innovation discourse – new technology that displaces incumbent solutions. However, as Christensen (1997) notes, technological superiority alone does not guarantee market success, particularly when disruptive technologies initially perform worse than established ones.
2. **Business model** breakthroughs involve developing innovative and alternative ways to create value through customer-needs analysis (Amit & Zott, 2001;

Markides, 2006). This breakthrough type often proves more sustainable than pure technological advancement because it alters the competitive landscape.

3. **Design** breakthroughs reimagine the product-customer interface without necessarily requiring new technology. As Sahay and Riley (2003) note, the interface between product and customer represents a critical factor in adoption that transcends technical capabilities. Design breakthroughs demonstrate how repackaging existing technologies can create entirely new market categories, as seen with the iPhone.
4. **Process** breakthroughs encompass new approaches to manufacturing, logistics, and value chain management. These innovations often provide the scalability and cost advantages necessary to dominate markets, as demonstrated by Ford's assembly line innovation that accompanied the Model T (Utterback, 1994).

Alternative breakthrough models allow AI challengers to reimagine utility. Consider how Uber transformed transportation not through technological innovation (GPS and mobile communications already existed), superior design (the app initially offered basic functionality), or novel business models (taxi services were well-established), but by reimagining utility — transforming transportation into an on-demand service accessible through simple digital interaction. Likewise, challenger banks found success through a combination of utility, design and business model. N26 bank allows users ‘full control’ of their finances, Monzo employs personalisation for users to ‘see their money clearly’ and Monese emphasises ‘financial wellness’ (Dieter & Tkacz, 2020). Freed from barriers to market entry, AI challengers could reimagine the value proposition of applications and design human centred, culturally sensitive products that better serve the public good.

4.4 Addressing Regulation Objections

Before concluding, it is essential to return to the Silicon Valley narrative and engage directly with the specific arguments advanced by regulation skeptics. The narrative deserves consideration to the extent that some regulatory frameworks can indeed create barriers to technological development, especially bans on AI deemed high risk, such as facial recognition technologies. Fines for violations of the EU AI

Act, for instance, are steep, reaching up to 35 million euros for prohibited technologies (European Parliament and Council, 2024). Castro & McLaughlin (2019) offer several arguments against AI regulation, chiefly that it creates slower, more expensive development cycles that disproportionately harm startups, along with concerns over price, adoption and growth. Generally, objections centre around the costs of compliance and geopolitical tensions (Tartaro et al., 2023)

Blind (2012) suggests that while some regulatory frameworks do indeed have contradictory effects on innovation, those related to product and service legislation show a positive uptick in innovation. This occurs because market intervention can redirect companies' activities toward emerging technological areas. This results in higher R&D incentives, achieving higher innovation levels over time while preventing concentration of power. The US government achieved this in 1956 with a consent decree that prohibited AT&T from entering businesses outside of telecommunications, which prevented the company from commercially exploiting Unix when it was developed in the 1970s. Instead, AT&T licensed Unix to universities for research purposes to avoid antitrust violations. This restriction inadvertently stimulated the open source movement and contributed to the development of Arpanet, the precursor to the internet (Massarotto, 2024).

Perhaps the strongest political argument concerns competitive disadvantage, with critics claiming that AI regulation gives economic and national security advantages to countries with lighter regulatory frameworks. This concern reflects geopolitical anxieties, particularly regarding competition with China's state-directed AI development. Trump Administration policy reflects this, stating America’s imperative to achieve “AI dominance in order to promote human flourishing, economic competitiveness, and national security” (The White House, 2025).

While national security and broader dynamics of geopolitical AI competition require more nuanced analysis than falls within the scope of this paper, it is worth noting that simulations of AI race dynamics by Gruetzemacher et al. (2025) find that geopolitical competition consistently leads to destabilising outcomes, with cooperation being difficult to achieve and actors launching attacks when facing imminent defeat in the race to develop transformative AI. The study reveals that without early international agreements and coordination mechanisms, AI

development races tend to result in conflict, instability, and increased risk rather than safe deployment. In this case, the PSD2 analogy is instructive: open banking standards did not require banks to sacrifice security or efficiency, but rather to make their interfaces accessible to authorised third parties. Similarly, AI standards can mandate openness, accountability and coordination without compromising legitimate technical capabilities.

These counterarguments share a common limitation: they treat innovation as synonymous with unrestricted technical development and market growth. Given the societal impacts already seen of LLMs, and when AI systems function as knowledge infrastructure, innovation must be evaluated not just on technical metrics but on its contribution to power distribution, democratic discourse, cultural diversity, and collective understanding. While unrestricted AI development might provide short-term competitive advantages, the strengthening of epistemic power in private hands poses its own national security risks. Regulation that preserves competitive innovation while preventing epistemic monopolisation may prove more strategically advantageous than unrestricted development that leaves power in potentially unstable private hands.

5. Conclusion

In 1890, Senator John Sherman stood before Congress and declared, "if we will not endure a king as a political power, we should not endure a king over the production, transportation, and sale of any of the necessaries of life" (Reich, 2020). His words launched the Sherman Antitrust Act, America's first major attempt to constrain the economic monarchies that had emerged from the Industrial Revolution. Today, as AI reshapes the global economy, we see a similar accumulation of power, but this time, the commodity being accumulated is not oil, steel, or railroads, but knowledge itself, and by extension, human cognition (Coeckelbergh, 2025; Russell, 2019).

The monopolisation of AI threatens far more than economic competition. As Neff (2024) points out, when a handful of companies control the primary mechanisms through which we access information and form understanding, the risks extend beyond commercial innovation to encompass the preservation of democratic

discourse and cultural diversity. With private ambitions to "rewrite the entire corpus of human knowledge," we witness the logical endpoint of unregulated intellectual monopolisation: private control over collective understanding.

This analysis has challenged the prevailing narrative that positions AI regulation as inherently antagonistic to innovation. Instead, it indicates how this framing serves to obscure and perpetuate the concentration of epistemic power in the hands of a few dominant players. PSD2 provides evidence that regulatory intervention can stimulate, not stifle, genuine innovation. It transformed oligopolistic financial markets into open ecosystems where challenger banks could emerge with breakthrough innovations. The resulting economic growth shows that market opening generates substantial value that was previously suppressed by incumbents.

Moving forward requires recognising epistemic infrastructure as a form of commons that merits governance in the public interest, with regulatory frameworks that treat knowledge production as a shared resource rather than a private asset. Just as PSD2 recognised customer data as an asset, opening banking infrastructure, AI policy could open access to foundation models, training data, and computational resources, creating space for AI challengers to develop independent capabilities aligned with democratic values. The preemption games currently consuming incumbent resources in rent-dissipating behaviour could be redirected toward socially optimal innovation through regulatory frameworks that create market certainty.

The real choice facing policymakers is not between innovation and regulation, but between technical innovation that serves extractive corporate interests and breakthrough innovation that democratises access to epistemic infrastructure. Ultimately, this analysis argues that the reflexive anti-regulatory stance of tech leaders represents not principled commitment to innovation, but strategic defence of power. For AI governance, this necessitates focus on ensuring that the power to shape our epistemic future remains distributed rather than concentrated, inclusive rather than extractive. The stakes could not be higher: the choice before us will determine whether AI becomes instrumental for democratic empowerment or epistemic colonisation.

References

Acemoglu, D., & Robinson, J. A. (2013). *Why nations fail: The origins of power, prosperity, and poverty*. Crown Business.

Amit, R., & Zott, C. (2001). Value creation in e-business. Strategic Management Journal, 22(6-7), 493-520.

Andreessen, M. (2023). The techno-optimist manifesto. *Andreessen Horowitz*. Retrieved 3 June 2025 from https://a16z.com/the-techno-optimist-manifesto/

Archibald, L. (2023). How NVIDIA fuels the AI revolution with investments in game changers and market makers. *NVIDIA Blog*. Retrieved 14 June 2025 from https://blogs.nvidia.com/blog/nvidia-investments/

Benjamin, R. (2019). *Race after technology: Abolitionist tools for the new Jim Crow*. Polity Press.

Bessen, J. E., Impink, S., Seamans, R., & Reichensperger, L. (2018). The business of AI startups. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3293275

Blind, K. (2012). The influence of regulations on innovation: A quantitative assessment for OECD countries. *Research Policy*, 41(2), 391–400. https://doi.org/10.1016/j.respol.2011.08.008

Bradford, A. (2024). The false choice between digital regulation and innovation. *Northwestern University Law Review*, 19, 377-389.

Bughin, J., Windhagen, E., Smit, S., Mischke, J., Sjatil, P. E., & Gürich, B. (2019). *Innovation in Europe: Changing the game to regain a competitive edge* (Report No. 14). McKinsey Global Institute.

Buisson, B., & Silberzahn, P. (2010). Blue ocean or fast-second innovation? A four-breakthrough model to explain successful market domination. *International Journal of Innovation Management*, 14(03), 359–378. https://doi.org/10.1142/S1363919610002684

Carr, N. (2025). *Superbloom: How technologies of connection tear us apart.* W.W. Norton & Company.

Castro, D., & McLaughlin, M. (2019). Ten ways the precautionary principle undermines progress in artificial intelligence. Retrieved 17 June 2025 from https://www2.itif.org/2019-precautionary-principle.pdf

Chaudhary, Y., & Penn, J. (2024). Large Language Models as instruments of power: New regimes of autonomous manipulation and control. arXiv preprint arXiv:2405.03813. https://doi.org/10.48550/arXiv.2405.03813

Christensen, C. M. (1997). *The innovator's dilemma: When new technologies cause great firms to fail.* Harvard Business School Press.

Coeckelbergh, M. (2025). LLMs, truth, and democracy: An overview of risks. *Science and Engineering Ethics*, 31(1), 4. https://doi.org/10.1007/s11948-025-00529-0

Competition and Markets Authority. (2016). *Retail banking market investigation: Final report*. CMA.

Competition and Markets Authority. (2017). *Banking services to small and medium-sized enterprises: Summary of responses to the market study notice*. CMA.

Dieter, M. & Tkacz, N. (2020). The patterning of finance/security: a designerly walkthrough of challenger banking apps. *Computational Culture: A Journal of Software Studies*, 7.

Dietz, T., Ostrom, E., & Stern, P. C. (2003). The struggle to govern the commons. *Science*, 302(5652), 1907-1912.

Dillin, R. (2025). Elon Musk raises eyebrows with bold plan to rewrite the internet. *Yahoo Tech*. Retrieved June 22, 2025 from https://tech.yahoo.com/ai/articles/elon-musk-raises-eyebrows-bold-081541875.html

El Hajjar, S. (2025). The silent colonization of consciousness: AI as the new 'other'. *The European Business Review*. Retrieved June 21, 2025 from

https://www.europeanbusinessreview.com/the-silent-colonization-of-consciousness-ai-as-the-new-other/

European Parliament and Council. (2024). Artificial Intelligence Act, Regulation EU 2024/1689. *Official Journal of the European Union*.

Ezrachi, A., & Stucke, M. (2016). *Virtual competition: The promise and perils of the algorithm-driven economy*. Harvard University Press.

FICO. (2024). Risk & lending predictions 2024: UK stresses and open banking. *FICO Blogs*. Retrieved June 11, 2025 from https://www.fico.com/blogs/risk-lending-predictions-2024-uk-stresses-and-open-banking

Field, H. (2024). Current and former OpenAI employees warn of AI's "serious risks" and lack of oversight. CNBC. Retrieved June 1, 2025 from https://www.cnbc.com/2024/06/04/openai-open-ai-risks-lack-of-oversight.html

Foucault, M. (1988). *Power/knowledge: Selected interviews and other writings, 1972–1977* (1st American ed.). Random House USA Inc.

Fricker, M. (2009). *Epistemic injustice: Power and the ethics of knowing*. Oxford University Press.

Fudenberg, D., & Tirole, J. (1985). Preemption and rent equalization in the adoption of new technology. *Review of Economic Studies*, 52(2), 383–401.

Grubb, A. (2024). CMA confirms full completion of Open Banking roadmap, unlocking a new era of financial innovation. *Open Banking*. Retrieved June 14, 2025 from https://www.openbanking.org.uk/news/cma-confirms-full-completion-of-open-banking-roadmap-unlocking-a-new-era-of-financial-innovation/

Gruetzemacher, R., Avin, S., Fox, J., & Saeri, A. K. (2025). Strategic insights from simulation gaming of AI race dynamics. *Futures: The Journal of Policy, Planning and Futures Studies*, *167*, 103563. https://doi.org/10.1016/j.futures.2025.103563

Habeshian, S., & Contreras, R. (2025). How false "white genocide" claims became central to Trump's view of South Africa. *Axios*. Retrieved May 23, 2025 from https://www.axios.com/2025/05/15/south-africa-president-meeting-trump

Hemphill, C. S. (2019). Disruptive incumbents: Platform competition in an age of machine learning. *Columbia Law Review*, 119(7), 1973-2017.

Hoppe, H. C. (1997). Second-mover advantages in the strategic adoption of new technology under uncertainty. *International Journal of Industrial Organization*, 18(2), 315–338. https://doi.org/10.1016/S0167-7187(98)00020-4

Hutt, W. H. (1936). *Economists and the public : A study of competition and opinion.* Jonathan Cape.

Janssen, M. (2025). Responsible governance of generative AI: Conceptualizing GenAI as complex adaptive systems. *Policy and Society*, 44(1), 38–51. https://doi.org/10.1093/polsoc/puae040

King, M. (2024). Unlocking growth: The UK's journey from open banking to a smart data economy. *Open Banking*. Retrieved June 14, 2025 from https://www.openbanking.org.uk/insights/unlocking-growth-the-uks-journey-from-open-banking-to-a-smart-data-economy/

Knight, W. (2023). Elon Musk announces Grok, a “rebellious” AI with few guardrails. WIRED. Retrieved June 17, 2025 from https://www.wired.com/story/elon-musk-announces-grok-a-rebellious-ai-without-guardrails/

Koch, B. J., & Peterson, D. (2024). *From protoscience to epistemic monoculture: How benchmarking set the stage for the deep learning revolution*. https://doi.org/10.48550/arxiv.2404.06647

Leswing, K. (2024). Nvidia closes at record as AI chipmaker's market cap tops $3.4 trillion. *CNBC*. Retrieved June 10, 2025 from https://www.cnbc.com/2024/10/14/nvidia-shares-hit-a-record-as-chipmaker-market-cap-tops-3point4-trillion.html

Markides, C. (2006). Disruptive innovation: In need of better theory. *Journal of Product Innovation Management,* 23(1). 19-25.

Massarotto, G. (2024). *Driving innovation with antitrust*. ProMarket. Retrieved June 1, 2025 from https://www.promarket.org/2024/04/10/driving-innovation-with-antitrust/

Munn, L. (2020). Thinking through silicon: Cables and servers as epistemic infrastructures. *New Media & Society*, 24(6), 1379-1396.

Murinde, V., Rizopoulos, E., & Zachariadis, M. (2022). The impact of the FinTech revolution on the future of banking: Opportunities and risks. *International Review of Financial Analysis*, 81, 102103. https://doi.org/10.1016/j.irfa.2022.102103

Neff, G. (2025). Can democracy survive AI? *Sociologica*, 18(3), 137–146. https://doi.org/10.6092/ISSN.1971-8853/21108

Nguyen, C. T. (2020). Echo chambers and epistemic bubbles. *Episteme*, 17(2), 141-161. https://doi.org/10.1017/epi.2018.32

Nieminen, H. (2014). A short history of the epistemic commons: Critical intellectuals, Europe and the small nations. *Javnost - The Public*, 21(3), 55–76. https://doi.org/10.1080/13183222.2014.11073413

Noble, S. U. (2018). *Algorithms of oppression: How search engines reinforce racism*. NYU Press.

Pasquale, F. (2015). *The black box society: The secret algorithms that control money and information.* Harvard University Press.

Pasquinelli, M., & Joler, V. (2021). The Nooscope manifested: AI as instrument of knowledge extractivism. *AI & Society*, 36(4), 1263–1280. https://doi.org/10.1007/s00146-020-01097-6

Pfotenhauer, S. M., & Jasanoff, S. (2017). Panacea or diagnosis? Imaginaries of innovation and the "MIT model" in three political cultures. *Social Studies of Science*, 47(6), 783–810.

Qunaj, L., Kaltenboeck, A., & Bach, P. B. (2022). Compulsory licensing of pharmaceuticals in high-income countries: A comparative analysis. *The Milbank Quarterly*, 100(1), 284–313. https://doi.org/10.1111/1468-0009.12557

Reich, R. (2020). *The system: Who rigged it, how we fix it*. Alfred A. Knopf.

Reid, A., & King, M. (2024). *The future is open: Navigating the next phase of UK Open Banking*. Financial Services Industry Group.

Rikap, C. (2024). Intellectual monopolies as a new pattern of innovation and technological regime. *Industrial and Corporate Change*, *33*(5), 1037–1062. https://doi.org/10.1093/icc/dtad077

Rissman, K. (2024). Sewell Setzer: The disturbing messages shared between AI chatbot and teen who took his own life. The Independent. Retrieved June 5, 2025 from https://www.independent.co.uk/news/world/americas/crime/ai-chatbot-lawsuit-sewell-setzer-b2635090.html

Rolfe, A. (2019). European financial institutions see open banking as the biggest current threat. *Payments Cards & Mobile.* Retrieved June 14, 2025 from https://www.paymentscardsandmobile.com/european-fis-see-open-banking-as-the-biggest-current-threat/

Russell, S. J. (2019). *Human compatible: AI and the problem of control*. Viking.

Sahay, A., & Riley, D. (2003). The role of resource access, market considerations, and the nature of innovation in pursuit of standards in the new product development process. *Journal of Product Innovation Management*, 20(5), 338-355.

Schaake, M. (2024). Lobbying for unfettered innovation is bad for democracy. Financial Times. Retrieved June 4, 2025 from https://www.ft.com/content/ab2761bd-ace7-428b-aa3e-b7412ef69b48

Shuham, M. (2025, February 3). Elon Musk suggests getting rid of all regulations in midnight call. *Yahoo News*. Retrieved May 10, 2025 from https://www.yahoo.com/news/elon-musk-suggests-getting-rid-212557557.html

Stiglitz, J. (2006). *Making globalization work*. W. W. Norton & Company.

Stiglitz, J. (2024). *The road to freedom: Economics and the good society*. Penguin.

Suchman, L. (2023). The uncontroversial 'thingness' of AI. *Big Data & Society*, 10(2), 20539517231206794. https://doi.org/10.1177/20539517231206794

Tartaro, A., Smith, A. L., & Shaw, P. (2023). Assessing the impact of regulations and standards on innovation in the field of AI. arXiv preprint arXiv:2302.04110.

The White House. (2025, January 23). Removing barriers to American leadership in artificial intelligence. *The White House.* Retrieved June 28, 2025 from https://www.whitehouse.gov/presidential-actions/2025/01/removing-barriers-to-american-leadership-in-artificial-intelligence/

Utterback, J. M. (1994). *Mastering the dynamics of innovation*. Harvard Business School Press.

Wihbey, J. (2024). AI and epistemic risk for democracy: A coming crisis of public knowledge? *Conference on Democracy's Mega Challenges: How Climate Change, Migration, and Big Data Threaten the Future of Liberal Democratic Governance*, 1-15.

Winning the AI Race: Strengthening U.S. Capabilities in Computing and Innovation. (2025, May 8). U.S. Senate Committee on Commerce, Science, & Transportation. Retrieved June 24, 2025 from https://www.commerce.senate.gov/2025/5/winning-the-ai-race-strengthening-u-s-capabilities-in-computing-and-innovation_2

Zuboff, S. (2019). *The age of surveillance capitalism: The fight for a human future at the new frontier of power*. PublicAffairs.