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# The Governance of American Innovation

RESTORING CONGRESS'S ROLE

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A M E R I C A N   E N T E R P R I S E   I N S T I T U T E

# Executive Summary

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Despite fears of sliding into stagnation,<sup>1</sup> technological progress only seems to be accelerating. Multiple emerging technologies promise to change the world, including human-like generative artificial intelligence (AI), mRNA vaccines,<sup>2</sup> autonomous vehicles, clean-energy breakthroughs, and cost-effective reusable rockets. We may even get flying cars.<sup>3</sup>

This accelerating pace of change raises unique challenges for our governing institutions, which, following years of gradual calcification, have struggled to keep up. In American governance, policy is spread across multiple layers of federal, state, and local jurisdiction—often leading to sluggish and inconsistent patchworks of regulation.

Expectations of our policymakers have also changed. They are now routinely asked to assess and respond to an increasingly complex set of technical subjects, parsing out underlying values conflicts while managing the competing interests of incumbents and disruptors.

At the federal level, much of the blame has been put on Congress, which has delegated much of its power and authority and has allowed its staffing and policymaking capacity to atrophy.<sup>4</sup>

What should we do about this “governance gap”? On the one hand, some libertarian-minded scholars embrace the absence of the state, arguing that the private sector can take the reins, leveraging informal governance mechanisms and shaping agency actions. Others argue that our weakly regulated technology sector is a ticking time bomb that will eventually lead to catastrophic results—whether ecological collapse, garage bioweapons, or an AI that turns us all into paper clips.

But state intervention without expertise or capacity is unlikely to competently address harms or maximize benefits. Similarly, the absence of governance in a low-state-capacity environment carries significant risks of reactionary and protectionist policy outcomes—particularly in times of crisis. In short, this report argues that good policy is downstream from well-functioning institutions with calibrated expertise, authorities, and incentives.

In particular, the restoration of Congress’s absorptive capacity and legislative function is a necessary condition for maximizing the benefits of new technologies and securing America’s continued leadership in innovation.



# The Governance of American Innovation

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## RESTORING CONGRESS'S ROLE

### Zach Graves

Emerging from the progress of science and industry, technological innovations drive economic growth, bolster national security, and improve the human condition. While new technologies bring many benefits, they also bring distinct social, economic, and political challenges.

Innovation breeds disruption. As economist Joseph Schumpeter famously described,<sup>5</sup> technological progress inherently brings creative destruction—the process by which new economic structures continuously destroy and replace old ones from within, in an essentially biological way. This process, Schumpeter writes, is “the essential fact about capitalism”<sup>6</sup>—a fact that he predicted would lead to its collapse into stagnant socialism, in the wake of social, economic, and political upheaval.

In their book *Why Nations Fail*, economists Daron Acemoglu and James Robinson describe how the process of creative destruction threatens political destabilization, arguing this has been a major force in holding back progress. They write:

The fear of creative destruction is the main reason why there was no sustained increase in living standards between the Neolithic and Industrial revolutions. Technological innovation makes human societies prosperous, but also involves the replacement of the old with the new, and the destruction of the economic privileges and political power of certain people.<sup>7</sup>

Similarly, as economic historian Joel Mokyr recounts, stagnation was the norm for most of

human history, where “growth was slow, intermittent, and reversible.”<sup>8</sup>

Innovators will often have to contend with the political resistance of powerful incumbent groups whose interests are threatened. This might include large corporations, groups of laborers whose skills are being obviated, autocrats fearing destabilization, or elected politicians pursuing parochial interests. Thus, motivated opposition to technological progress often arrives before a technology can be deployed at scale.

To maximize innovation and growth, systems of governance must be resilient enough to withstand the political destabilization of creative destruction, balancing the pressures of factional interests and absorbing disruptive effects.<sup>9</sup>

Another aspect of innovation, particularly in the modern era, is its dual nature. That is, it can bring the threat of substantial destruction and harm at the same time as it offers economic or social benefits. One such example is the artificial nitrogen fixation process developed by Fritz Haber and Carl Bosch in 1909. This innovation to fertilizer helped ameliorate starvation and feed the world's growing population. It also enabled the large-scale production of explosives used in subsequent wars.

The splitting of the atom and the development of nuclear physics provide more cautionary examples with unique governance challenges. These discoveries helped expand our understanding of the universe and provided us with a powerful new zero-emission energy source. But they also gave humanity the tools to destroy itself and put every

nation under an ever-present sword of Damocles. Today, resurgent fears of existential risks from technological progress have been raised regarding areas such as artificial intelligence (AI), synthetic biology, and climate change.<sup>10</sup>

The downsides of technology can also manifest indirectly, as negative externalities. These can include harms to the environment such as pollution or ecological damage that can play out over decades. Or it can entail harm to certain groups of people (even if there is an overall net benefit). For instance, the arrival of transportation network companies Uber and Lyft largely displaced taxi services in most American cities. This provided consumers with a superior product, with more availability, greater safety, and added convenience. At the same time, many taxi drivers were forced to switch, and the owners of expensive medallions experienced significant losses.<sup>11</sup> In the coming years, drivers for these services can expect to be disrupted themselves, as autonomous vehicles deploy in more cities.<sup>12</sup>

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## **The challenge of innovation governance is one of bending emerging technologies to human ends while balancing the interests of long-term security, economic growth, and political stability.**

When governed well, a robust innovation ecosystem provides a freer, more secure, and more abundant future. But are our governance institutions

capable of keeping pace, or are we headed back toward stagnation?

### **The Character of American Innovation**

American innovators are responsible for the development, and commercialization, of most of the significant technologies of the 20th century. These include the Model T, the airplane, the semiconductor, the personal computer, and the internet, to name just a few. Even air conditioning—which Lee Kuan Yew called one of the most important inventions in history—was first commercialized in America.<sup>13</sup>

The heroic inventor is a figure baked into American mythology—from Benjamin Franklin to Thomas Edison to Samuel Colt. But the successful practice of innovation is also an inherently capitalist one, requiring founders who can refine and bring to market a new idea, process, or discovery.

Despite the persistent American myth of the lone inventor, major innovations in the modern era have increasingly relied on forms of institutional support: the resources of the industrial laboratory or university, publicly supported advances in basic science, or dual-use technologies from the defense sector. Schumpeter, fearing the ill effects of this bureaucratization, observed:<sup>14</sup>

Technological progress is increasingly becoming the business of teams of trained specialists who turn out what is required and make it work in predictable ways. The romance of earlier commercial adventure is rapidly wearing away, because so many more things can be strictly calculated that had of old to be visualized in a flash of genius.<sup>15</sup>

Since the mid-20th century<sup>16</sup>—following the end of World War II and entry into the Cold War—America has been the research and development (R&D) lab for the world.<sup>17</sup> US R&D expenditures exceed \$700 billion annually,<sup>18</sup> including \$138 billion in federal funding, of which about half is related to defense. Public-sector R&D institutions are also among the most successful, with agencies such as the National Science Foundation, the National Institutes



of Health, and the Defense Advanced Research Projects Agency—institutions that helped create the internet, GPS, smartphones, mRNA vaccines, the computer, and other key technologies. This has directly supported the creation of firms such as Intel, Google, and Tesla and indirectly contributed to numerous others.<sup>19</sup>

Having helped lead the world into the Information Age, it should be no surprise that US technology firms now dominate the list of most valuable companies in the world (by market capitalization).<sup>20</sup> Additionally, despite recent challenges from China, Silicon Valley and other US-based tech hubs continue to produce the most unicorns—companies with valuations over \$1 billion—of any country in the world.<sup>21</sup>

With its maturation, the US technology industry has become one of the biggest movers in Washington, spending hundreds of millions of dollars each year on influence.<sup>22</sup> This recent escalation in political engagement has followed growing criticism of tech firms by policymakers, the media, and souring public sentiment. This scrutiny is also bipartisan, with a recent Gallup poll showing support from a majority of both Republicans and Democrats for stricter regulation.<sup>23</sup> This “influence arms race” has also created new intra-industry conflicts and attempts at regulatory capture.<sup>24</sup>

The resulting “techlash”<sup>25</sup> has motivated dozens of hearings, legislative proposals, executive orders, and other actions. While some new laws and regulations have been enacted (particularly at the state level), many critics have been frustrated by the slow pace of change, arguing that governing institutions have failed.

## The Governance Gap

Old Entish. . . . It is a lovely language, but it takes a very long time to say anything in it, because we do not say anything in it, unless it is worth taking a long time to say.

—J. R. R. Tolkien, *The Two Towers*

It’s clear that policymakers are struggling to keep up with the pace of technological change.<sup>26</sup> This raises

two important questions: What is the nature of the governance gap, and how should it be addressed?

Many argue that this gap isn’t evenly distributed, with primary blame resting on Congress’s institutional decline.<sup>27</sup> Lending support to this view, a study by Harvard University’s Belfer Center concluded that “Congress has not shown that it has the necessary capacity and expertise to fully exercise its constitutional duties.”<sup>28</sup> Similarly, in a report for this series, Adam Thierer argues, “Congress has largely abrogated its role as primary policymaker for many emerging technologies, perhaps permanently.”<sup>29</sup>

Congressional technology expert Marci Harris expands on this thesis, arguing that there are three facets of the pacing problem for Congress:

- (1) the external—as Congress fails to keep pace with emerging innovations that are changing industries and society;
- (2) the inter-branch—as Congress lags the executive branch, compromising its ability to act as a co-equal branch of government; and
- (3) the internal—which results from Congress not employing modern practice[s] and technology for its own operations.<sup>30</sup>

In Congress’s absence, other actors have moved in—including the White House, administrative agencies, the courts, and the states.<sup>31</sup> However, these institutions also suffer from a deficiency of expertise, weak incentives, vulnerability to industry capture, limited resources, and overlapping and constrained authorities.

Whether the fault lies with Congress or elsewhere, some critics argue the lack of governance is a ticking time bomb that will eventually lead to catastrophic results—whether ecological collapse, garage bio-weapons, or an AI that could try to turn humanity into paper clips.<sup>32</sup> Following this narrative, the governance gap must be filled by muscular government intervention and a more precautionary posture toward technological risks.

Others, like Thierer, make the case that governance should prioritize experimentation and flexibility over hard rules. Specifically, he argues we should lean into the governance vacuum through what he calls “soft

law.”<sup>33</sup> Instead of the rigid frameworks of the past, this approach emphasizes decentralized, iterative, and informal approaches. These include “multi-stakeholder processes, experimental ‘sandboxes,’ industry best practices or codes of conduct, technical standards, private certifications, agency workshops and guidance documents, informal negotiations, and education and awareness building efforts.”<sup>34</sup>

This libertarian-minded approach broadly follows Thierer’s “permissionless innovation” framework, including its emphasis on light-touch regulation, encouragement for rule-bending entrepreneurs, and preference for ex post enforcement rather than ex ante regulation.<sup>35</sup> According to this view, gridlock and institutional decline created a federal withdrawal from technology policymaking. This requires the private sector—including industry and civil society—to take a larger role in governance.<sup>36</sup>

But there are reasons to be skeptical of this framework as our best and only option.

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## Excessive reliance on soft law dangerously circumvents the democratic process and the rule of law.

This risks a number of perverse effects, such as enabling new strategies for agencies to exceed their legal authorities,<sup>37</sup> giving government officials greater leverage to jawbone private firms,<sup>38</sup> and encouraging lawless conduct that elicits harsh sector-wide regulation.<sup>39</sup>

Shifting key policy decisions to informal governance bodies also creates greater opportunity for regulatory capture, tilting the board in favor of deep-pocketed incumbents over small disruptive innovators. This is because these entities—including standard-setting organizations, trade

associations, and multi-stakeholder forums—can operate with little transparency or accountability, favoring incumbent firms with the resources to influence them. This could help large firms capture benefits while socializing risks, artificially expanding their competitive moats.

In addition to these problems, the argument for the inevitability of soft law critically overstates its case against Congress. While it is entirely reasonable to criticize what Congress has done lately, it is hard to make the case that it hasn’t been a live player.

Even with a divided Senate, we’ve seen monumental bills get signed into law, including the American Rescue Plan Act; the Coronavirus Aid, Relief, and Economic Security Act;<sup>40</sup> and the Inflation Reduction Act. Congress has also enacted major policy related to innovation, science, and technology. In particular, the CHIPS and Science Act directed \$280 billion to new R&D and advanced manufacturing projects, including the creation of a new National Science Foundation directorate focused on emerging technologies.<sup>41</sup>

Congress has also moved legislation related to digital platforms. While it has rejected some far-reaching antitrust proposals, it has enacted multiple reforms providing tools and resources for enforcement. These include the State Antitrust Enforcement Venue Act, the Merger Filing Fee Modernization Act, and appropriations for the Federal Trade Commission and the Antitrust Division of the Department of Justice. In addition, Congress’s oversight work has put the public spotlight on tech firms, leading to some significant product and policy changes.

While Thierer’s framework aims to maximize innovation, there are reasons to doubt its ability to achieve this on its own. A key reason is its dismissiveness about the risks of dysfunctional governance institutions and general lack of interest in building state capacity.

Even if under-capacity and gridlock were the norm, weak institutions are more likely to adopt reactionary, heavy-handed, or captured policies during moments of crisis. Three examples come to mind: the vast expansion of the surveillance state post-9/11, such as through the Patriot Act; the nearly successful efforts to mandate backdoors in encrypted

communications following the 2015 San Bernardino attack; and even the Communications Decency Act of 1996, whose original version attempted expansive regulation of internet speech in response to a moral panic over the accessibility of obscene materials.<sup>42</sup>

Other important cases also have no good substitutes for federal legislative action. These include preempting conflicting patchworks of state laws, funding and reauthorizing federal agencies (particularly programs related to science and technology), updating old statutes to provide regulatory certainty, and conducting oversight of the federal bureaucracy. In our current environment, soft law also lacks appropriate oversight and accountability, making it vulnerable to capture.

Weak institutions make it easier for innovation’s political opponents to prevail, playing to uncertain fears, capturing regulations, and setting back future growth. While informal governance mechanisms can be valuable tools, they are insufficient on their own.

### Restoring Congress’s Role

Most of us are Gilligan. There aren’t a whole lot of professors.

—Sen. Ron Johnson (R-WI)<sup>43</sup>

The monumental battle for the Speakership at the beginning of the 118th Congress was popularly characterized as an embarrassment for Rep. Kevin McCarthy (R-CA) and the House GOP—yet another sign of congressional dysfunction. But congressional experts such as AEI’s Kevin Kosar rightfully reject this view,<sup>44</sup> recognizing that the contest was a legitimate intraparty negotiation that resulted in substantial and perhaps even lasting changes to make the institution more open.

At its core, this fight was a long-brewing reaction against a key source of congressional dysfunction: the consolidation of power in party leadership. Over decades, this trend has gradually moved the center of gravity away from expert committees and toward the generalist political operatives in leadership. Reduced opportunities for meaningful legislative

participation have resulted in what Kosar calls a “winner-take-all” politics,<sup>45</sup> shifting the focus of serving in Congress toward fundraising, political favors, and media appearances.

## While Congress’s dysfunction is a real and multifaceted problem, it is often mischaracterized.

As discussed earlier, even in divided government, Congress reliably does certain legislative work each year. This includes funding bills (often bundled as an omnibus), must-pass annual authorizing bills such as the National Defense Authorization Act, and periodic program reauthorizations such as the farm bill and the Federal Aviation Administration (both of which are up in 2023).

While Congress’s productivity is sometimes (incorrectly) scored by the number of bills it passes, in practice, different legislative proposals are often grouped together on these vehicles. Rather than following regular order, important decisions are made among the “four corners”: the House Speaker, the House minority leader, the Senate majority leader, and the Senate minority leader. This makes major controversial stand-alone bills increasingly rare.

But even in earlier eras of Congress, big transformative legislation often came only in response to a war, national emergency, or other major world events. For instance, the launch of Sputnik in 1957 led to major institutional reforms on science and technology, including the creation of NASA, the Advanced Research Projects Agency,<sup>46</sup> the House Committee on Science and Astronautics (renamed the House Committee on Science, Space, and Technology), and the former Office of Technology Assessment.<sup>47</sup>



Importantly, our bicameral Congress was designed to be a conservative institution, with a slow and deliberative process. The Senate, in particular, was set up as a breakwater for majoritarian fervor. *Federalist* 62 makes this explicit, rebuking “the propensity of all single and numerous assemblies to yield to the impulse of sudden and violent passions.”<sup>48</sup> Indeed, Congress is meant to operate as a forum for the resolution of conflicts between various interest groups, with elections closely aligning member incentives to democratic pressures. When Congress fails to take action on an important issue, this may just reflect a lack of consensus.<sup>49</sup> A more majoritarian and faster-moving legislature is also not necessarily better for innovators, as it would lead to radical policy swings between elections and greater uncertainty overall.

Thus, we should not confuse Congress’s lack of adhesion to executive branch norms and behaviors for true dysfunction. A better-functioning Congress is not necessarily more decisive, united, or top-down. Counterintuitively, it looks more like the chaotic horse trading and factional politics of the recent Speaker race.

To better understand Congress’s path to restoration, it is important to understand the factors that shaped its diminution.<sup>50</sup>

As discussed above, the trend toward centralization of power with party leadership is one such factor.<sup>51</sup> Beginning in the 1970s, power in the legislative branch began to shift away from committees. This followed on a complex history of the political legacy of former slave states, the fight for civil rights, and the realignment of the old intraparty factions.

Instead of achieving a better balance among the three competing power centers (of leadership, committees, and rank and file) in response to southern obstructionism, leadership gradually became the dominant power. This is clear from personnel numbers alone: Staff in leadership offices has more than tripled,<sup>52</sup> even as overall legislative branch staffing has declined sharply since the late 1970s.<sup>53</sup>

This operational shift also saw changes in the rules and precedents in each chamber, and in conference and caucus rules,<sup>54</sup> leading to greater leadership control of the legislative process. Specific mechanisms

include the appointment and removal of committee chairs,<sup>55</sup> capture of key committees such as the Rules Committee, and, consequently, control over the floor, the amendment process, and the substance of major legislative vehicles.<sup>56</sup> Other important factors in this shift include the mechanics of campaign fundraising post-*Citizens United*, the breakdown of the budget process, and the dissolution of strong intraparty factions.

As a result of this centralization, substantive deliberation has significantly broken down. The deep institutional knowledge and policy expertise once built up over decades have given way to the dictates of party politics.<sup>57</sup> Additionally, with fewer opportunities for individual congressmen to constructively engage in lawmaking, this landscape reinforces itself in a vicious cycle.

Another important factor is the distribution of power within the federal government. The equilibrium among the three branches of the federal government has rebalanced itself at various points in American history. Except perhaps the Civil War period, before the 20th century, most power resided in Congress, owing to the considerable powers granted to it by Article I. By contrast, from the 1930s onward, the overarching trend has been for the executive branch to grow in size, scope, and authority—often following times of crisis such as the Great Depression and the two World Wars. But in the aftermath of executive branch excesses, the legislative branch has also at different times reinvigorated and reasserted itself, most notably in the 1940s and early 1970s.<sup>58</sup>

Since then, we’ve witnessed the first branch follow a decades-long path of institutional decline and self-imposed austerity—framed by one expert as a “self-lobotomy.”<sup>59</sup> While its roots can be traced back much earlier, this capacity-eroding trajectory was heavily defined in the 104th Congress (1995–97), after Republicans took the House for the first time in four decades. Having campaigned on a platform of eliminating the waste and corruption of their political rivals, the new Republican majority in the House adopted the mantra of “cut Congress first,” defunding its own staffing capacity.<sup>60</sup> Cuts extended to personal offices, congressional committees,

and nonpartisan support agencies,<sup>61</sup> including the defunding of the Office of Technology Assessment. This led to a reduction in the total number of legislative branch staff and reduced tenure and seniority in key policy roles.

This has culminated in substantial powers being ceded to the executive branch and its administrative agencies. In place of narrowly tailored rules, Congress has given agencies broad, ambiguously worded authorities that the agencies have stretched with relatively little congressional scrutiny.<sup>62</sup>

Another factor is the growth of non-policy demands in a functionally zero-sum environment. For instance, the average number of constituents per congressional district is 23 times larger today than it was at the time of the first Congress.<sup>63</sup> Up until the 63rd Congress (1913–15), the number of representatives in the House was periodically increased to keep up with a growing population and new states that joined the union.<sup>64</sup> This has placed increased demands on offices for constituent work and communications, as office budgets have not kept up with the growing national population.<sup>65</sup> This has also shifted a greater share of staffing resources to district and state offices. With each new wave of communications technologies—from newspapers, to the telegraph, to radio and TV, to email, to social media—the workload on Congress has increased, pulling energy away from legislating. Similarly, a growing share of legislative branch resources has been taken up by facilities and security needs, principally through the US Capitol Police and the Architect of the Capitol.<sup>66</sup>

In addition to general factors, there are reasons Congress struggles with science and technology specifically. When compared to the decisiveness and simplicity of executive action, Congress tends to be criticized—often unfairly—for the messiness of its deliberative process, with all the accompanying hearings, amendments, and negotiations between chambers.

When Meta CEO Mark Zuckerberg testified before the Senate in 2018, he explained Facebook’s business model to 84-year-old Sen. Orrin Hatch (R-UT), exclaiming, “Senator, we run ads.” While

Congress was mocked in the press for its ignorance, in context, Sen. Hatch was making a rhetorical point about the consumer-privacy trade-offs of ad-supported free online services.<sup>67</sup> Often, witness questions start with the obvious to lay out basic facts. But this can come off as ignorance to non-congressional reporters when hearings are in the national spotlight.

Another infamous example was Sen. Ted Stevens’s (R-AK) description of the internet as a “series of tubes.”<sup>68</sup> This incident happened during a committee markup in 2006, in remarks opposing a net neutrality amendment. As Princeton computer science professor Ed Felten argued at the time, while it was a bit clumsy, the analogy had been unfairly criticized.<sup>69</sup> But following amplification by a pro-net neutrality advocacy group, the incident was widely dragged in popular media, including by the *Daily Show* and late-night talk show hosts.

It’s true that our elected representatives are generally nonexperts, and few come from STEM-related professional backgrounds. Out of the 541 members that made up the 117th Congress,<sup>70</sup> there were only three scientists, nine engineers, eight tech executives, and four venture capitalists.<sup>71</sup> By contrast, 194 were lawyers.

While we might like a more balanced ratio, it is not a representative’s or senator’s role to be a deep subject matter expert on every technical issue considered in Congress (this would be an impossible task), particularly outside the committees on which they sit. For policy expertise, they rely on a range of professional staff—in personal offices, committees, and support agencies.<sup>72</sup> Whereas policy staff in personal offices can afford to be more generalist, each covering a portfolio of a few different issues, committees (and subcommittees) offer a key location for staff to build deeper, focused expertise. This is a key factor in the decline of Congress’s absorptive capacity and policy expertise, as committees have sharply reduced total staffing, seniority, and retention.

Another key location for technical expertise is in support agencies, primarily the Congressional Research Service (CRS) and Government Accountability Office (GAO). These offices have followed similar historic

trends for staffing reductions and have insufficient staff with a specialization in science and technology issues. Highlighting this challenge, a congressionally directed National Academy of Public Administration study in 2019 found that Congress needed to “improve its capacity to deal with science and technology-related issues” and recommended additional investments in its support agencies.<sup>73</sup>

But there is cause for limited optimism. The House appears to be moving (at least temporarily) toward a much more open process.<sup>74</sup> A major reform effort, through the House Select Committee on the Modernization of Congress, has led to over 100 implemented recommendations. And appropriations for the legislative branch have brought additional resources, increasing staffing levels and compensation in committees and personal offices. Additionally, new science and technology capacity has been added at support agencies such as the GAO and CRS, including the restoration of Congress’s technology-assessment function that was lost with the defunding of the Office of Technology Assessment in 1996.

While these reforms won’t fix the myriad causes of Congress’s dysfunction, it does show that restoration is possible—albeit incrementally and with dedicated effort. Considering these developments, and looking back on the historic reforms of the 1940s and 1970s, we can see a clear path forward.

## Conclusion

Advocates of American innovation shouldn’t resign themselves to muddling through future policy challenges and navigating around failed institutions and democratic obstacles, hoping to safely traverse a minefield of reactionary outcomes.<sup>75</sup> While mechanisms such as soft law, the courts, and the executive branch play an important role, preserving America’s leadership in technology and its governance necessitates a reinvigorated Congress.<sup>76</sup> A more assertive Congress is also necessary to preserve a liberal values framework in the global innovation ecosystem, as escalating geopolitical competition makes China’s illiberal vision<sup>77</sup> for

the future a viable alternative to the one offered by Western liberal democracies.

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## In our republican system of government, a stronger Congress may not always be the most direct path to promoting innovation.

This form of pluralistic governance requires bringing various stakeholders along through the natural disruptions and externalities of technological progress. And policymakers will take time to acquire knowledge and build consensus. Even when functioning well, this process is often messy, compromise-oriented, and frustrating.

But the alternatives should be even more worrisome. Rule by dysfunctional government bureaucracies is already upon us. The essential difference is that expert bureaucracies in administrative agencies act with little political accountability while still making decisions shaped by interest-group pressures, cultural risk aversion, and outdated rules.

Large firms in the private sector are likewise not reliable advocates for innovation. As Milton Friedman famously said, “With some notable exceptions, businessmen favor free enterprise in general but are opposed to it when it comes to themselves.”<sup>78</sup> Businesses tend to take self-interested rather than strictly free-market positions, and they are usually willing to accept regulation in exchange for a wider competitive moat.<sup>79</sup> Large firms can also hold back innovations that are seen as threats to their existing lines of business. Kodak held back the digital camera,<sup>80</sup> AT&T held back the answering machine,<sup>81</sup> and Google held back its AI chatbot.<sup>82</sup> Large firms can also lack the foresight to escape the innovator’s dilemma. While



Xerox invented many of the core technologies of the personal computer, Apple successfully commercialized them. Outsized influence of large firms can thus result in regulatory models that enshrine particular modes of business, chilling innovation.

There is no simple solution to address these challenges. But it is unlikely that dynamism will emerge from seeking to circumvent or suppress the melee of democratic politics. Rather, advocates for American innovation should direct their energy toward building modern governance institutions—focusing on the right capacities, expertise, and incentives.<sup>83</sup>

### About the Author

**Zach Graves** is the executive director of the Foundation for American Innovation, a nonprofit working to advance a more perfect union between technology and the American republic. His research and advocacy focus on the intersection of technology, security, and governance. In addition to his work at FAI, he is a fellow at the National Security Institute at George Mason University's Antonin Scalia Law School, a contributing editor at American Purpose, and a member of the Polaris Council of the US Government Accountability Office.

# Notes

1. See, for example, Founders Fund, “What Happened to the Future?,” <https://foundersfund.com/the-future>.
2. For instance, we may soon have a universal flu vaccine and a malaria vaccine.
3. There are reasons to doubt its economic viability, but the technology works. See, for example, Joby Aviation, website, <https://www.jobyaviation.com>.
4. This is a substantial deviation from the constitutional vision of the framers, who saw a dynamic Congress empowered to take the lead in federal policymaking.
5. See Joseph A. Schumpeter, *Capitalism, Socialism and Democracy* (London: Routledge, 2010), 81–86.
6. Schumpeter, *Capitalism, Socialism and Democracy*.
7. Daron Acemoglu and James A. Robinson, *Why Nations Fail: The Origins of Power, Prosperity, and Poverty* (New York: Crown Publishers, 2013), 183.
8. Joel Mokyr, “The Past and the Future of Innovation: Some Lessons from Economic History,” *Explorations in Economic History* 69 (2018): 3, <https://www.sciencedirect.com/journal/explorations-in-economic-history/vol/69/suppl/C>.
9. Capitalist liberal democracies, and particularly the United States, have tended to be the most successful at managing the political challenges of innovation. However, state capitalist systems like China’s are also highly successful, suggesting that progress and liberalism may not be intertwined.
10. See, for example, Benjamin Todd, “The Case for Reducing Existential Risks,” 80,000 Hours, 2017, <https://80000hours.org/articles/existential-risks>.
11. Amanda Glodowski, “Stats and the City: Taxi Medallion Surge Prices Sustain but Are Still Nowhere Near Historic Highs,” *Crain’s New York Business*, August 25, 2022, <https://www.crainsnewyork.com/stats-and-city/stats-and-city-taxi-medallion-surge-prices-sustain-are-still-nowhere-near-historic>.
12. For instance, Alphabet’s self-driving car subsidiary, Waymo, has already deployed its robotic taxi service in Phoenix, Arizona.
13. As the Singaporean leader said: “Air conditioning was a most important invention for us, perhaps one of the signal inventions of history. It changed the nature of civilization by making development possible in the tropics. Without air conditioning you can work only in the cool early-morning hours or at dusk. The first thing I did upon becoming prime minister was to install air conditioners in buildings where the civil service worked. This was key to public efficiency.” Lee Kuan Yew, “The East Asian Way—with Air Conditioning,” *New Perspectives Quarterly* 26, no. 4 (October 2009).
14. Schumpeter, *Capitalism, Socialism and Democracy*, 132.
15. Even if some factors signal a trend toward Joseph Schumpeter’s feared scenario, entrepreneurial founders still drive most innovation forward.
16. AAAS, “Trends in Nondefense R&D by Function,” [https://www.aaas.org/sites/default/files/2022-09/Function\\_ND.png](https://www.aaas.org/sites/default/files/2022-09/Function_ND.png).
17. Caleb Watney and Alec Stapp, “Progress Is a Policy Choice,” Institute for Progress, January 20, 2022, <https://progress.institute/progress-is-a-policy-choice>.
18. Congressional Research Service, “U.S. Research and Development Funding and Performance: Fact Sheet,” September 13, 2022, <https://sgp.fas.org/crs/misc/R44307.pdf>.
19. For instance, Apple benefited from early small-business investment company investments and numerous National Science Foundation– and Defense Advanced Research Projects Agency–supported technologies like multi-touch displays, GPS, and Siri.
20. Companies Market Cap, website, <https://companiesmarketcap.com>.
21. *Nikkei Asia*, “Unicorns Surge to 500 in Number as US and China Account for 70%,” November 26, 2020, <https://asia.nikkei.com/Business/Startups/Unicorns-surge-to-500-in-number-as-US-and-China-account-for-70>.
22. See OpenSecrets, Industries, <https://www.opensecrets.org/federal-lobbying/industries>.

23. Megan Brenan, “Views of Big Tech Worsen; Public Wants More Regulation,” Gallup, February 18, 2021, <https://news.gallup.com/poll/329666/views-big-tech-worsen-public-wants-regulation.aspx>.
24. Zach Graves, “How Intra-Industry Conflicts Shape the Techlash,” National Security Institute, March 23, 2021, <https://thescif.org/how-intra-industry-conflicts-shape-the-techlash-e2a50534f422>.
25. The *Economist* coined this term in 2013. See Adrian Wooldridge, “The Coming Tech-Lash,” *Economist*, November 18, 2013, <https://www.economist.com/news/2013/11/18/the-coming-tech-lash>.
26. See, for example, Gary E. Marchant, Braden R. Allenby, and Joseph R. Herkert, eds., *The Growing Gap Between Emerging Technologies and Legal-Ethical Oversight: The Pacing Problem* (Germany: Springer, 2011), <https://link.springer.com/book/10.1007/978-94-007-1356-7>.
27. Notably, Congress’s own decline is not evenly distributed. For instance, some committees have access to greater resources and expertise than others do.
28. Ash Carter et al., *Building a 21st Century Congress: Improving Congress’s Science and Technology Expertise*, Harvard University, Belfer Center for Science and International Affairs, September 2019, 1, <https://www.belfercenter.org/sites/default/files/2019-09/ST/Building21stCenturyCongress.pdf>.
29. Adam Thierer, “Governing Emerging Technology in an Age of Policy Fragmentation and Disequilibrium,” American Enterprise Institute, April 29, 2022, <https://platforms.aei.org/can-the-knowledge-gap-between-regulators-and-innovators-be-narrowed>.
30. Marci Harris, “Congress vs. the ‘Pacing Problem[s],” Medium, August 21, 2019, <https://medium.com/g21c/congress-vs-the-pacing-problem-s-a887e3ca953f>.
31. Notably, few state legislatures have the same level of professionalization, ethics constraints, or support resources as Congress does.
32. LessWrong, “Squiggle Maximizer (Formerly ‘Paperclip Maximizer’),” <https://www.lesswrong.com/tag/squiggle-maximizer-formerly-paperclip-maximizer>.
33. The concept of “soft law” originates in international law, describing quasi-legal instruments and nonbinding agreements, often developed by quasi-governmental or multi-stakeholder bodies.
34. Thierer, “Governing Emerging Technology in an Age of Policy Fragmentation and Disequilibrium.”
35. See Adam Thierer, “Permissionless Innovation: The Continuing Case for Comprehensive Technological Freedom,” George Mason University, Mercatus Center, March 15, 2016, <https://www.mercatus.org/research/books/permissionless-innovation-continuing-case-comprehensive-technological-freedom>.
36. This sentiment also has its adherents in Silicon Valley, such as in Marc Andreessen’s famous essay. See Marc Andreessen, “It’s Time to Build,” *a16z*, April 2020, <https://a16z.com/2020/04/18/its-time-to-build>.
37. For instance, a nonbinding soft law framework could be used to bully firms into complying with a set of rules the agency couldn’t otherwise issue. Deviation from a soft law framework could be used as evidence of noncompliance in justifying future enforcement actions.
38. See, for example, Will Duffield, “Jawboning Against Speech,” Cato Institute, September 12, 2022, <https://www.cato.org/policy-analysis/jawboning-against-speech>.
39. See, for example, Uber’s efforts to circumvent law enforcement. Julia Carrie Wong, “Greyball: How Uber Used Secret Software to Dodge the Law,” *Guardian*, March 3, 2017, <https://www.theguardian.com/technology/2017/mar/03/uber-secret-program-greyball-resignation-ed-baker>.
40. This enabled Operation Warp Speed, one of the most successful government programs in recent history. See, for example, *Economist*, “How Many Lives Have Been Saved by Covid-19 Vaccines?,” June 24, 2022, <https://www.economist.com/graphic-detail/2022/06/24/how-many-lives-have-been-saved-by-covid-19-vaccines>.
41. CHIPS and Science Act, Pub. L. No. 117-167.
42. This was later struck down in *Reno v. ACLU*, except for its Section 230 provision.
43. Ron Johnson, “Cyberspace Policy at Home and Abroad: The Agenda for 2016 and Beyond,” American Enterprise Institute,



January 28, 2016, 6, <https://www.aei.org/events/cyberspace-policy-at-home-and-abroad-the-agenda-for-2016-and-beyond>.

44. Kevin Kosar, “The Congressional Fight over the House Speakership Was a Good Thing,” Public Discourse, January 24, 2023, <https://www.aei.org/op-eds/the-congressional-fight-over-the-house-speakership-was-a-good-thing>.

45. Kevin Kosar, “Can the House Freedom Caucus Revive the ‘People’s House?’,” *Hill*, November 8, 2022, <https://www.aei.org/op-eds/can-the-house-freedom-caucus-revive-the-peoples-house>.

46. It was renamed the Defense Advanced Research Projects Agency.

47. The Office of Technology Assessment operated from 1974 to 1995. Today, the congressional technology assessment function is continued in the Government Accountability Office.

48. *Federalist*, no. 62 (James Madison).

49. Congress’s status quo bias is also reinforced by the centralization of power in leadership, with its sensitivity to political and financial pressures from large interest groups.

50. The following discussion covers factors I have selected to highlight, but it is not intended to be exhaustive. A range of other important issues are worth discussing, including institutional culture, campaign finance, procedure and process, committee jurisdiction, and support agency structure and capabilities.

51. Key leadership roles include the Speaker of the House, the majority and minority leaders in each chamber, the majority and minority whips in each chamber, caucus and conference chairs, and staff in those offices. See US House of Representatives, “Leadership,” <https://www.house.gov/leadership>; and US Senate, “Leadership & Officers,” <https://www.senate.gov/senators/leadership.htm>.

52. According to the Congressional Research Service, between 1977 and 2020, the number of leadership staff grew from 62 to 223 in the House and from 44 to 143 in the Senate. See R. Eric Petersen, “Senate Staff Levels in Member, Committee, Leadership, and Other Offices, 1977–2020,” Congressional Research Service, October 19, 2020, [https://www.everycrsreport.com/files/2020-10-19\\_R43946\\_520175ddb6bf4e61aed98c722477a375163bb649.pdf](https://www.everycrsreport.com/files/2020-10-19_R43946_520175ddb6bf4e61aed98c722477a375163bb649.pdf); and R. Eric Petersen, “House of Representatives Staff Levels in Member, Committee, Leadership, and Other Offices, 1977–2021,” Congressional Research Service, September 2, 2021, [https://www.everycrsreport.com/files/2021-09-02\\_R43947\\_87d6af4acecdaeaca280110c4ddb560e758of2c4.pdf](https://www.everycrsreport.com/files/2021-09-02_R43947_87d6af4acecdaeaca280110c4ddb560e758of2c4.pdf).

53. Molly E. Reynolds, “Vital Statistics on Congress,” Brookings Institution, November 21, 2022, <https://www.brookings.edu/multi-chapter-report/vital-statistics-on-congress>.

54. Beyond Congress’s formal rules and precedents, Republicans and Democrats in each chamber are governed by rules set by their respective party organizations: The House Democratic Caucus, the Senate Democratic Caucus, the House Republican Conference, and the Senate Republican Conference.

55. This includes term limits imposed by the Republican Conference.

56. This includes funding bills and the National Defense Authorization Act.

57. Of course, earlier eras of Congress had their own unique challenges. These include an arduous wait-in-line seniority system and excessive delegation to staff.

58. Examples include the Legislative Reorganization Act of 1946, the Legislative Reorganization Act of 1970, and the Congressional Budget and Impoundment Control Act of 1974.

59. Paul Glastris and Haley Sweetland Edwards, “The Big Lobotomy,” *Washington Monthly*, June 9, 2014, <https://washingtonmonthly.com/2014/06/09/the-big-lobotomy>.

60. Many reforms also centralized more power in the Speaker’s office. In the 110th Congress (2007–09), when the House shifted back to Democratic control under Nancy Pelosi, she did little to revert these changes and shot down a bipartisan effort to revive the Office of Technology Assessment.

61. Key support agencies for policy formation include the Congressional Budget Office, the Congressional Research Service, and the Government Accountability Office.

62. See, for example, Berin Szóka, “Technical Expertise Is Just the Tip of the Iceberg,” *Cato Unbound*, June 21, 2019, <https://www.cato-unbound.org/2019/06/21/berin-szoka/technical-expertise-just-tip-iceberg>.

63. US Census Bureau, “Apportionment,” <https://www.census.gov/history/www/reference/apportionment>.

64. US House of Representatives, Office of Art & Archives, “Congressional Apportionment,” <https://history.house.gov/Institution/>

Apportionment/Apportionment.

65. The average number of constituents per congressional seat has grown from around 33,000 at the time of the first Congress to 211,000 in 1910 to 761,000 today.

66. See Zach Graves, “Rebuilding Congress’ Policy Capacity,” Federalist Society, July 8, 2020, <https://fedsoc.org/commentary/fedsoc-blog/rebuilding-congress-policy-capacity>.

67. Facebook, *Social Media Privacy, and the Use and Abuse of Data*, 115th Congress (2018) (statement of Mark Zuckerberg, CEO of Meta).

68. For the transcript, see Ryan Singel and Kevin Poulsen, “Your Own Personal Internet,” Wired Blog, June 29, 2006, [https://web.archive.org/web/20060707053733/http://blog.wired.com/27BStroke6/?entry\\_id=1512499](https://web.archive.org/web/20060707053733/http://blog.wired.com/27BStroke6/?entry_id=1512499).

69. Ed Felten, “Taking Stevens Seriously,” Freedom to Tinker, July 17, 2006, <https://freedom-to-tinker.com/2006/07/17/taking-stevens-seriously>.

70. Others included were 100 senators, 435 representatives, five delegates, and one resident commissioner.

71. Jennifer E. Manning, “Membership of the 117th Congress: A Profile,” Congressional Research Service, August 8, 2022, [https://www.everycrsreport.com/files/2022-08-08\\_R46705\\_26abe7dcd7c7c943c8e572fo8a013f26fb5bf6d6.pdf](https://www.everycrsreport.com/files/2022-08-08_R46705_26abe7dcd7c7c943c8e572fo8a013f26fb5bf6d6.pdf).

72. Notably, organizations such as TechCongress and AAAS offer technical fellowships in Congress, providing an alternate talent pathway.

73. National Academy of Public Administration, “Science and Technology Policy Assessment: A Congressionally Directed Review,” October 2019, viii, <https://napawash.org/academy-studies/science-and-technology-policy-assessment-for-the-us-congress>.

74. For instance, in January, a bill was sent to the House floor under a modified open rule for the first time in seven years, allowing any rank-and-file member to offer amendments for debate. Strangely, this may signal that the majoritarian lower chamber is becoming more deliberative and open than the Senate.

75. This is a common sentiment in Silicon Valley, perhaps best represented in Andreessen, “It’s Time to Build.”

76. In particular, extraterritorial regulations from the EU, including the General Data Protection Regulation, Digital Services Act, and Digital Markets Act, are setting the digital ground rules with little US response.

77. See, for example, Geoff Cain, *The Perfect Police State: An Undercover Odyssey into China’s Terrifying Surveillance Dystopia of the Future* (New York: PublicAffairs, 2021).

78. Mark J. Perry, “The Wisdom of Milton Friedman,” American Enterprise Institute, April 28, 2012, <https://www.aei.org/carpe-diem/the-wisdom-of-milton-friedman>.

79. Perhaps the most famous example of this was the Kingsbury Commitment, which allowed AT&T to become a nationwide regulated monopoly, following a strategy set by firm President Theodore Vail. This lasted until the Department of Justice mandated the breakup of the Bell System in 1982.

80. Scott D. Anthony, “Kodak’s Downfall Wasn’t About Technology,” *Harvard Business Review*, July 15, 2016, <https://hbr.org/2016/07/kodaks-downfall-wasnt-about-technology>.

81. April White, “How the Spread of the Answering Machine Got Put on Hold,” *Smithsonian*, December 2019, <https://www.smithsonianmag.com/innovation/spread-answering-machine-put-on-hold-180973503>.

82. Alex Kantrowitz, “How Google Got Smoked by ChatGPT,” *Slate*, December 10, 2022, <https://slate.com/technology/2022/12/chatgpt-google-chatbots-lamda.html>.

83. Despite comparisons to the barons of the Gilded Age, the tech industry doesn’t seem to be good at wielding political power. Despite its massive resources and cultural influence, it struggles to bend even the local politics of the Bay Area to its own interests.

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