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REBUILDING A TECHNOLOGY ASSESSMENT OFFICE IN CONGRESS: FREQUENTLY ASKED QUESTIONS

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EXECUTIVE SUMMARY

Congress is not known for being particularly tech savvy. This reputation comes in part from its quaint anachronisms, such as prominent Members’ desire to eschew email and smartphones,¹ or preference for a typewriter over a laptop.² But, in many instances, it also stems from a demonstrated lack of fluency in science and

1. Ashley Parker, “In Era of Email, Some Senators Do Just Fine Without It,” *The New York Times*, March 11, 2015. <https://www.nytimes.com/2015/03/12/us/politics/storing-emails-from-these-senators-will-be-easy-if-they-ever-send-one.html>.

2. Judy Kurtz, “Who still uses a typewriter? Sensenbrenner does,” *The Hill*, April 10, 2014. <http://thehill.com/blogs/in-the-know/in-the-know/203221-who-still-uses-a-typewriter-sensenbrenner-does>.

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technology topics.³ As Sen. Ron Johnson (R-Wis.) put it, when it comes to technical expertise: “Most of us are Gilligan. There aren’t a whole lot of professors.”⁴

This is understandable. Most Senators and Representatives do not come from technical backgrounds, and even the ones that do should not be expected to possess a deep and sophisticated knowledge of every issue. Instead, Members of Congress must rely on their staff as well as legislative support agencies like the Congressional Research Service (CRS) for expert non-partisan advice.⁵ Unfortunately, rather than adapting to the increased demands of the 21st century, Congress’s internal staffing and support has significantly declined in recent decades, leaving our elected representatives woefully underprepared for contemporary policy challenges.⁶

In the course of day-to-day business, this expertise gap often gets overlooked as part of the normal state of affairs, however, it is periodically a significant cause of national embarrassment. Recently, for instance, when Facebook CEO Mark

3. See, e.g., Andy Greenberg, “The Senate’s Draft Encryption Bill Is ‘Ludicrous, Dangerous, Technically Illiterate,’” *Wired*, April 8, 2016. <https://www.wired.com/2016/04/senates-draft-encryption-bill-privacy-nightmare/>; David Mikkelson, “Guam Reaches the Tipping Point?”, *Snopes*, April 3, 2010. <https://www.snopes.com/fact-check/tipping-point/>; and Janus Kopfstein, “Dear Congress, It’s No Longer OK To Not Know How The Internet Works,” *Motherboard*, Dec. 16, 2011. https://motherboard.vice.com/en_us/article/pgqamb/dear-congress-it-s-no-longer-ok-to-not-know-how-the-internet-works-5886b6cbc860fd45c9f2dfe3.

4. “TRANSCRIPT: Cyberspace policy at home and abroad: The agenda for 2016 and beyond,” American Enterprise Institute, Jan. 28, 2016, p. 6. <https://www.aei.org/wp-content/uploads/2016/01/160128-AEI-Cyberspace-Policy-at-Home-and-Abroad.pdf>.

5. “Representatives and Senators: Trends in Member Characteristics Since 1945,” *Congressional Research Service*, Jan. 27, 2014, pp. 8-9. <https://www.everycrsreport.com/reports/R42365.html>.

6. Since 1985, Congress has cut the CRS by 29 percent, the GAO by 41 percent, House committees have 50 percent fewer employees, Senate committees have 20 percent fewer employees. See Kathy Goldschmidt, “State of the Congress: Staff Perspectives on Institutional Capacity in the House and Senate,” Congressional Management Foundation, 2017, p. 17. http://congressfoundation.org/storage/documents/CMF_Pubs/cmfc-state-of-the-congress.pdf.

Zuckerberg was called to testify on his platform's data privacy practices, Congress's evident lack of basic technical literacy was the subject of late-night-show vignettes⁷ and sharply critical global news coverage.⁸

Even if there is broad agreement that Congress does not have the institutional technical expertise it needs to do its job,⁹ such agreement ceases when it comes to deciding how best to fix the problem. While there are many potential approaches,¹⁰ one that has recently gained traction¹¹ is to revive an agency that once helped Congress understand complex, technical issues: the Office of Technology Assessment (OTA).¹² Still, there are various potential approaches to modernize or update the OTA model or even to recreate its function within another agency like the Government Accountability Office (GAO). Additionally, there are lingering doubts—particularly among conservatives—about the efficacy of the OTA's model, its political baggage and whether it is suited to Congress's current needs.¹³

Accordingly, this paper gives an overview of the OTA model, offers a look at different arguments for and against the revival of Congress's technology assessment function, and explores some of the challenges involved in bringing it back. The first section offers a brief history of technology assessment in Congress. Subsequently, it is comprised of questions and answers divided into three subsections based on subject area. The first section discusses institutional and pub-

lic administration concerns. The second looks at questions about the efficacy and necessity of such an office, and the third and final section addresses political considerations.

A HISTORY OF TECHNOLOGY ASSESSMENT IN CONGRESS

The idea of “technology assessment” emerged in the 1960s out of discussions in the House Committee on Science and Astronautics¹⁴ about how to better understand and anticipate major technological challenges such as nuclear weapons or space travel.¹⁵ These culminated in three major studies exploring congressional capabilities, as well as the potential creation of a new office in the First Branch. One of these, conducted by the Legislative Reference Service,¹⁶ established that a new technology assessment service should fulfill two functions: “to provide the Congress with early warning of the possible need for decisionmaking on technical issues, and to develop information resources in anticipation of congressional needs to support such decisionmaking.”¹⁷

These discussions culminated in the creation of the Office of Technology Assessment (OTA) through the passage of the Technology Assessment Act of 1972.¹⁸ This legislation established the OTA with a statutory directive to help Congress “equip itself with new and effective means for securing competent, unbiased information” concerning emerging technologies and other scientific matters.¹⁹ During its 23 years, the OTA's staff of highly-credentialed scientists, engineers and other experts produced nearly 750 assessments, background papers and other materials, helping to shape major science and technology policy debates in the final quarter of the 20th century.²⁰

But the OTA's run would not last forever. At the beginning of the 104th Congress, a conservative wave swept Republicans into a new congressional majority, making Newt Gingrich the first Republican Speaker of the House in four decades. This wave also brought a new Republican platform, the “Contract with America,”²¹ which sought to disrupt business as usual

7. See, e.g., “Mark Zuckerberg tries to explain Facebook to Congress,” *The Daily Show with Trevor Noah*, April 15, 2018. <https://www.youtube.com/watch?v=zDGa3YLWYuA>; “Zuck explains Facebook to Congress,” *The Late Show with Stephen Colbert*, April 12, 2018. <https://www.youtube.com/watch?v=Zo5Qlu9Xu3E>; “Senators ask Mark Zuckerberg for help,” Jimmy Kimmel Live, April 11, 2018. <https://www.youtube.com/watch?v=fVIHxVwAGhk>.

8. See, e.g., Margaret Sullivan, “Members of Congress can't possibly regulate Facebook. They don't understand it,” *The Washington Post*, April 10, 2018. https://www.washingtonpost.com/lifestyle/style/members-of-congress-cant-possibly-regulate-facebook-they-dont-understand-it/2018/04/10/27fa163e-3cd1-11e8-8d53-eba0ed2371cc_story.html?utm_term=.a3c4077692e3; Clare Malone, “Congress Needs To Understand Facebook Before Dealing With It,” *FiveThirtyEight*, April 12, 2018. <https://fivethirtyeight.com/features/is-facebook-too-much-of-a-shape-shifter-to-regulate>.

9. According to a CMF survey of senior congressional staff, 81 percent rate access to high-quality policy expertise as “very important,” while only 24 percent are “very satisfied” with the status quo – a gap of 57 percent. When asked about having time and resources to understand and consider policy questions and legislation, 67 percent considered it “very important,” while only 6 percent were “very satisfied” with the status quo – a gap of 61 percent (Goldschmidt, p. 9).

10. As examples, these include expanding relevant committees, adding staff to existing support agencies like the CRS or GAO, increasing congressional staff pay and improving retention, and expanding the number of technical fellowships.

11. See, e.g., Editorial Board, “Legislators struggle with tech. That's why we need the Office of Technology Assessment,” *The Washington Post*, September 17, 2018. https://www.washingtonpost.com/amphtml/opinions/legislators-struggle-with-tech-thats-why-we-need-the-office-of-technology-assessment/2018/09/17/bb7c30c6-b860-11e8-a7b5-adaaa5b2a57f_story.html.

12. An archive of the OTA's work can be found here: <http://ota.fas.org>.

13. See, e.g., Zach Graves and Kevin Kosar, “Bring in the nerds: Reviving the Office of Technology Assessment,” *R Street Policy Study* No. 128, January 2018, pp. 4-5. <https://www.rstreet.org/2018/01/24/bring-in-the-nerds-reviving-the-office-of-technology-assessment>.

14. The predecessor of today's Committee on Science, Space & Technology. For additional background, see Committee on Science, Space & Technology, “History,” U.S. House of Representatives. <https://science.house.gov/about/history>.

15. Peter D. Blair, *Congress's Own Think Tank* (Palgrave Macmillan, 2013), pp. 11-23.

16. Now the Congressional Research Service.

17. “Technical Information for Congress,” *Legislative Reference Service*, April 25, 1969, p. 520. <https://ia801403.us.archive.org/18/items/technicalinforma00libr/technicalinforma00libr.pdf>.

18. Pub. L. 92-484. <https://www.gpo.gov/fdsys/pkg/STATUTE-86/pdf/STATUTE-86-Pg797.pdf>.

19. 2 U.S.C. § 471.

20. Office of Technology Assessment, “Annual Report to Congress: Fiscal Year 1995,” U.S. Congress, March, 1996. <http://ota.fas.org/reports/9600.pdf>.

21. “Contract with America,” U.S. Congress, 1994. <https://web.archive.org/web/19990427174200/http://www.house.gov/house/Contract/CONTRACT.html>.

and to curtail wasteful spending in Washington. One of the themes of the contract was to drastically reduce spending by Congress itself, or to “Cut Congress First.” This was to show their commitment to reducing the size of the federal government. The OTA swiftly fell victim to this belt-tightening politics and was defunded in 1995.

When it ceased operations, various entities tried to fill the gap.²² Since its authorizing statute still remained in effect, a number of efforts were also made to refund the Office.²³ While these efforts have been fruitless,²⁴ one alternative emerged in the Government Accountability Office (GAO). This program, which established a pilot technology assessment service in the GAO in 2002, continues to produce several reports each year,²⁵ albeit with a substantially different methodology and vastly fewer resources than the former OTA.²⁶

Despite the limited successes of the past, today there is renewed interest in restoring the OTA’s function within Congress.²⁷ Furthermore, unlike the belt-tightening politics of the Gingrich era, today there is increased interest among conservatives and libertarians in strengthening the First Branch and enhancing its oversight capabilities.²⁸ After all, if Congress can’t follow Facebook’s consumer data practices,

how can it hope to oversee the complexities of the federal government’s \$4 trillion budget? Indeed, a sizable portion of federal spending involves scientific and technological issues across domains such as healthcare, agriculture, energy, finance, education and cybersecurity.

Even if one thinks the OTA may have been expendable in the 1990s, the 21st century has brought an increasingly complex and pressing array of high-tech challenges that touch every aspect of American life and put our future security and prosperity on the line.

FREQUENTLY ASKED QUESTIONS

Institutional Issues

Doesn’t Congress already have sufficient access to expert advice?

It is certainly the case that Congress is one of the most advised bodies in the world. Lobbyists, think tanks, trade associations, academics and special interest groups from every conceivable sector bombard our elected representatives with information on a daily basis.

However, although many special interest groups are experts in their fields (e.g. autonomous vehicle producers, for example, know how sensors on self-driving cars work and energy companies know a lot about offshore drilling), they do not always have an incentive to present unbiased analysis. Rather, like defense attorneys, the lobbyists they hire are employed to advocate on their behalf and to help avoid burdensome regulations or unwanted scrutiny. This is an important function but it does not give Congress a complete or necessarily accurate picture.

Similarly, think tanks and advocacy groups also have a policy or advocacy agenda—whether it is to promote a certain ideological view of the world or to advocate for specific policy outcomes such as increased funding for their cause. Most think tanks and advocacy groups also have a dearth of technical expertise in engineering or the hard sciences, instead tending to employ lawyers and political operatives. Beyond lacking the requisite expertise and objectivity, the analysis these groups produce is not inherently responsive to Congress’s needs. So, for example, think tanks produce many white papers but very rarely will this be at the request of a Member of Congress or congressional committee.²⁹ The quality and impartiality of think tank research is also variable depending on the institution or scholar.

The National Academies of Sciences, Engineering and Medicine (NASEM) produces authoritative studies relevant to

22. An unsuccessful effort was made to have the Congressional Research Service take up this mission. Additionally, various outside groups tried to step in. These included the National Research Council, the Potomac Institute and the now-defunct Institute of Technology Assessment.

23. Most recently, Reps. Mark Takano (D-Calif.) and Bill Foster (D-Ill.) have spear-headed efforts to restore funding to the OTA, offering legislation in 2016, 2017 and 2018. While votes have largely split on party lines, they have attracted some notable Republicans including Rep. Greg Walden (R-Ore.), Chairman of the Committee on Energy and Commerce; Rep. Michael McCaul (R-Texas), Chairman of the Committee on Homeland Security; and Rep. Lamar Smith (R-Texas), Chairman of the Science, Space and Technology Committee. Other notable Republican supporters include Reps. Justin Amash (R-Mich.), Elise Stefanik (R-N.Y.), and Leonard Lance (R-N.J.).

24. For notable legislative actions, see Zach Graves, “Technology assessment: Legislative activity,” FutureCongress Wiki, 2018. <https://github.com/zachgraves/futurecongress/wiki/Technology-assessment:-Legislative-activity>.

25. See, e.g., “Technology Assessment: Key Reports,” Government Accountability Office. https://www.gao.gov/technology_assessment/key_reports.

26. For more on how the GAO is different, see Zach Graves, “Technology assessment: Can the GAO fulfill the OTA’s mission?,” *LegBranch.com*, April 20, 2018. <http://www.legbranch.com/theblog/2018/4/20/technology-assessment-can-the-gao-fulfill-the-otas-mission>.

27. Notably, both the House and Senate appropriations committees and later the conference committee included report language for the fiscal year 2019 appropriations bill commissioning a study to evaluate the need “to create a separate entity charged with the mission of providing nonpartisan advice on issues of science and technology.” See H.Rept.No.115-696, 115th Congress, p. 18. <https://docs.house.gov/meetings/AP/AP00/20180508/108282/HRPT-115-HR-FY2019-LegBranch.PDF>; S. Rept.No.115-274, 115th Congress, pp. 48-49. <https://www.appropriations.senate.gov/download/fy19-legislative-branch-appropriations-act-report-115-274>; Joint Explanatory Statement of the Committee of Conference for H.R. 5895, 115th Congress. <https://www.appropriations.senate.gov/imo/media/doc/Joint%20Explanatory%20Statement%20H.R.%205895.pdf>.

28. See, e.g., “Article I Project,” Office of Senator Mike Lee. <https://www.lee.senate.gov/public/index.cfm/articleIproject>; “Cato Handbook for Policymakers, 8th Edition,” Cato Institute, 2017, pp. 25-45. https://object.cato.org/sites/cato.org/files/serials/files/cato-handbook-policymakers/2017/2/cato-handbook-for-policymakers-8th-edition_1.pdf; and Yuval Levin, “Yes, Trump Is Weak. So Is Congress.” *The New York Times*, Jan. 22, 2018. <https://www.nytimes.com/2018/01/22/opinion/trump-congress-dysfunction.html>.

29. Where this might happen, it would likely be for the purposes of advancing a partisan agenda.

policy debates and have access to experts from all manner of technical backgrounds. This makes the NASEM a good candidate to fill some of this gap.³⁰ However, as an entity that exists outside of Congress and without a direct appropriation, it faces fundamental structural limitations. Indeed, one of the key benefits of a model like the OTA—or CRS—is that experts function as “shared staff” within Congress. Those expert staff are available to answer questions or consult on legislation as it is being developed, and they are thoroughly familiar with legislative process, deadlines and information needs.³¹ By contrast, the NASEM is a private non-profit³² that brings in outside experts from all over the country to work on its studies and Congress has no role in selecting its leadership or staff.³³ Many NASEM staff and study committee members are also inexperienced in dealing with Congress or responding to its needs. Moreover, the NASEM does its work of advising government through contracts, so even congressionally mandated projects entail a delay while contracts are negotiated.

Universities and the law and policy centers within them suffer from these limitations and more. They are not structured to produce studies at the request of Congress, and often lack comparable infrastructure to the NASEM for creating and disseminating major, authoritative multidisciplinary studies. Like think tanks, they have divergent incentives from Congress. They also tend to produce work that is less relevant to public policy discussions, with little outreach infrastructure to engage with policymakers.

Why can't federal government experts in executive agencies do this job?

Some critics might suggest that Congress could rely upon the abundance of experts in agencies such as the Office of Science and Technology Policy (OSTP), the Nuclear Regulatory Commission (NRC), the National Telecommunications and Information Administration (NTIA), the Federal Communications Commission (FCC), the Food and Drug Administration (FDA) or various others.

However, such reliance on the Second (executive) Branch entails a new set of problems. For example, the OSTP is part of the White House and thus is a political entity that reflects the president's agenda and priorities. It is therefore not an institution that the party not occupying the White House

would likely turn to for advice.³⁴ Beyond this, the OSTP, which has perhaps 45 employees, simply does not have the capacity to respond to a large number of congressional requests. It is also unlikely that the executive branch would allow one of its agencies to conduct research at the behest of individual legislators.³⁵

While other agencies listed above are outside the White House and also have ample technical talent, they are nevertheless part of an administration led by political appointees, and they are generally not schooled in congressional process. Indeed, even independent agencies can have a partisan-bent, as the president and majority party of the Senate hold considerable sway as to the selection of their officers.³⁶ It is also a conflict with Congress's oversight role solely to rely on the factual assertions of such agencies—particularly those that create or promulgate regulations—without the capacity to make its own independent determinations.³⁷

In short, while there are indeed numerous experts at these and other Executive Branch agencies, they are not an appropriate substitute for building equivalent institutions within the legislative branch. The Constitution's separation of powers establishes Congress as the first among three, co-equal branches of government, with responsibilities to craft legislation and oversee the other branches. It is therefore appropriate for Congress to build its own separate and independent analytical capabilities.

Why not house this function within an existing legislative support agency?

According to Peter Blair, good science and technology advice to Congress should be scored along six dimensions—whether it is: useful, relevant, informed, independent, authoritative and timely.³⁸ The various groups discussed above fail at one or more of these factors. But what about other legislative branch entities?

30. It may be possible to build more OTA-style features into the NASEM to address some of its limitations, however, this would have to be driven by its internal leadership in cooperation with Congress.

31. Office of Technology Assessment, “Annual Report to the Congress for 1981,” U.S. Congress, March 1982, p. 1. <http://ota.fas.org/reports/8200.pdf>.

32. Notably, the NASEM earns the majority of its revenue through government contracts. See “FAQs,” National Academies of Sciences, Engineering and Medicine. <http://www.nationalacademies.org/newsroom/faq/Index.html>.

33. 36 U.S.C. §§ 150301-150304.

34. Nor is it necessarily a good idea for congressmen of the same party as the president to uniformly embrace his agenda and accept all assertions from the White House as factual.

35. The Trump administration, for example, declared that agencies need not respond to any congressional inquiries for information unless it came from the chairmen of committees. See Kevin R. Kosar, “Agencies' responsibilities to inform Congress: Clashing views,” *LegBranch.com*, Jan. 18, 2018. <http://www.legbranch.com/the-blog/2018/1/16/agencies-responsibilities-to-inform-congress-two-perspectives>.

36. To see an example of this in action today, look no further than the contentious divide over net neutrality at the FCC.

37. For instance, if the FBI were to propose a new encryption backdoor that they claimed did not create systemic vulnerabilities, Congress may want to have the technical competence to evaluate that independently. After all, the FBI may not place much stake in economic and civil liberties tradeoffs relative to the opportunity to enhance their own capabilities. Similar incentives exist for other agencies in other circumstances, and thus they may not always be reliable sources of unbiased information.

38. Alexandra Givens and Aaron Fluit, “Improving Tech Expertise in Congress,” Institute for Technology Law and Policy, Georgetown Law, August 2018. <https://georgetown.app.box.com/s/2dt0lq0tb6p7kqdf68c7plwewseg3hxs>.

When congressional offices need research help, they turn to the Congressional Research Service (CRS), sometimes referred to as “Congress’s think tank.” Indeed, the work of the CRS is invaluable to Congress’s day-to-day operations and it has a good reputation within Congress among both Republicans and Democrats.

When the OTA was defunded, there were indeed efforts to move its function under the CRS.³⁹ But there are several reasons why it may not be ideal to build a technology assessment office there. For all its virtues, the mission of the CRS is very different from what OTA’s was, as the CRS is oriented to produce responsive memos and summaries of existing research, but not robust and authoritative technical studies.⁴⁰

In practice, the CRS’s bureaucracy and culture could interfere with the independence and priorities of a technology assessment division by adding unnecessary layers to the assessment process or by putting pressure to move staff time to its other activities.⁴¹ It also lacks the network and reputation in the broader science and technology community that the OTA had. Indeed, CRS’s internal culture seems to discourage engagement with outside stakeholders or cross-pollination with academia.

Moreover, for all their unique expertise, other legislative branch support agencies are also not currently situated to advise Congress on these kinds of science and technology matters. The Congressional Budget Office, for instance, is staffed by economists and budget wonks—not scientists or technologists. It is their job to “score” the costs of legislation, not to produce or evaluate technical research.

Similarly, the Government Accountability Office was set up primarily to perform audits and investigations.⁴² The exception to this was the small technology assessment program set up as a pilot within the GAO in 2002.⁴³ While it was made permanent in 2008, today, the program has few experts on

staff and very limited resources relative to the OTA.⁴⁴ It may be possible to restructure and expand this program to fill this role more effectively⁴⁵ but this would entail significant changes (some of which may be underway following the Fiscal Year 2019 appropriations bill).⁴⁶ One significant advantage, however, may lie in the GAO’s broader statutory powers, which may be useful in investigating government applications of science and technology.⁴⁷

In summary, while there may be some synergies in building a new technology assessment office within another legislative agency, there would also be a risk of the parent agency’s culture and bureaucracy undermining its ability to effectively execute its mission.⁴⁸ It is also worth mentioning that the OTA was authorized in statute to utilize the “services and assistance” of the CRS, as well as the GAO.⁴⁹

Why not build expertise directly in congressional offices or committees?

Another approach would be to embed experts within the personal staff of congressional offices or on congressional committees. This is already being done through fellowships such as those of TechCongress⁵⁰ or the American Association for the Advancement of Science (AAAS).⁵¹ While these fellowships show significant value⁵² in augmenting Congress’s science and technology expertise, the role they serve is fundamentally different from the OTA or CRS. Per congressional ethics, fellowships must be primarily for the educational benefit of the fellow, which is to say they are not supposed to be a substitute for staff.⁵³

39. Blair, p. 73.

40. For more on the differences between CRS and OTA reports, see Richard Rowberg, “How Did the Reports of OTA, the Congressional Research Service, and the National Academies Differ?”, LegBranch.com, Nov. 14, 2016. <http://www.legbranch.com/theblog/2016/11/14/how-did-the-reports-of-ota-the-congressional-research-service-and-the-national-academies-differ>.

41. Kevin R. Kosar, “The struggle between objectivity vs. neutrality continues at the Congressional Research Service,” LegBranch.com, Feb. 13, 2018. <http://www.legbranch.com/theblog/2018/2/11/the-struggle-between-objectivity-vs-neutrality-continues-at-the-congressional-research-service>.

42. Notably, they do have some scientists, technologists and engineers who work on these. See, e.g., “The Government Accountability Office Organization Chart,” Government Accountability Office. <https://www.gao.gov/about/workforce/orgchart.html>.

43. Conference Report on H.R.2647, 107th Congress. <https://www.congress.gov/congressional-record/2001/10/30/house-section/article/H7512-1>.

44. \$2.5 million was provided for GAO’s technology assessment program in the Consolidated Appropriations Act of 2008, Pub. L. 110-161. <https://www.congress.gov/110/plaws/publ161/PLAW-110publ161.pdf>. By contrast, the OTA’s peak funding was \$22 million, or about \$35 million in today’s dollars. Pub. L. 103-283. <https://www.gpo.gov/fdsys/pkg/STATUTE-108/pdf/STATUTE-108-Pg1423.pdf>.

45. Following report language in the fiscal year 2019 appropriations bill, efforts to expand this office may already be in motion. At the time of writing, the bill is still in conference.

46. See, e.g., Zach Graves, “Technology assessment: Can the GAO fulfill the OTA’s mission?”, LegBranch.com, April 20, 2018. <http://www.legbranch.com/theblog/2018/4/20/technology-assessment-can-the-gao-fulfill-the-otas-mission>.

47. 31 USC §§ 711-721.

48. In addition to its bureaucracy, the Library of Congress, which the CRS is situated under, still grapples with notoriously dysfunctional IT infrastructure. See, e.g., Frank Konkel, “After Tough Audits, Library of Congress IT is on the Mend,” Nextgov, June 8, 2017. <https://www.nextgov.com/cio-briefing/2017/06/after-tough-audits-library-congress-it-mend/138527>.

49. 2 U.S.C. §§ 477-78.

50. “More About the Congressional Innovation Fellowship,” TechCongress. <https://www.techcongress.io/the-fellowship>.

51. “Science & Technology Policy Fellowships: Legislative Branch Fellowship,” American Association for the Advancement of Science. <https://www.aaas.org/story-topics/legislative-branch-fellowship>.

52. See, e.g., David Shorr, “Our first three years: An independent evaluation of TechCongress,” TechCongress, Aug. 1, 2018. <https://www.techcongress.io/blog/2018/8/1/our-first-three-years-an-independent-evaluation>.

53. “Volunteers, Interns, Fellows, and Detailees,” House Committee on Ethics. <https://ethics.house.gov/staff-rights-and-duties/volunteers-interns-fellows-and-detailees>.

Fellows in these organizations serve the agendas of the member or committee for whom they work; they do not produce rigorous authoritative studies or advise Congress as a whole. They are only in Congress for a short period of time (typically one year) and many come in with little or no policy experience, which means they face a difficult learning curve. This does not give fellows much time to develop institutional knowledge or to build long-term trusted relationships with decision makers. Some fellows, however, do end up staying on in permanent staff positions where they can have a bigger impact.

Expanding the number of permanent staff positions on committees—which have seen significant cuts in recent decades—may be another valuable way to embed expertise. For instance, one of the key venues for technology policy in Congress is the Senate Committee on Commerce, Science and Transportation and its counterpart, the House Committee on Energy and Commerce. However, despite being in charge of multi-billion-dollar policy decisions across a broad range of issue jurisdictions, these committees have relatively few policy staff; those they have possess limited institutional knowledge, as they only serve on the committee for an average of about two years.⁵⁴

Like legislative fellows, these positions do not produce authoritative studies.⁵⁵ Most committee staff are also aligned with the minority or majority and thus serve a partisan agenda rather than offering objective advice.⁵⁶ To pursue this strategy, in addition to expanding the number of staff positions, it would also be necessary to increase compensation to attract top talent and reduce turnover.

While they are not direct substitutes (and would actually be complimentary), building deep expertise in committees would likely cost a lot more than a shared-staff model like the OTA or CRS. Setting aside structural concerns, the biggest obstacle to significantly expanding committees (or full funding of the OTA, for that matter) is finding the money. This would have to be done by taking resources from other legislative branch entities or expanding the size of the legislative branch budget itself—which has been declining for years and would present a significant political hurdle to substantially increase. After all, spending more money on Congress—an institution that Americans have said they dislike more than

the idea of getting a root canal⁵⁷—is unlikely to play well with constituents back in Members' home districts.

Would a new technology assessment office be a target for regulatory capture?

Some critics might suggest that, as an authoritative source on policy, a new technology assessment office would be a prime target for regulatory capture, which occurs when a particular industry co-opts government agencies that have influence over it in order to produce outcomes to benefit that industry rather than the public interest. This often happens in industries with narrow sector-specific regulators, where there are incentives for a revolving door between positions in government and the private sector.

It is unlikely, however, that a new OTA would be any more likely to be captured by a particular industry than the CRS, CBO or GAO are today. After all, these agencies are not traditionally talent pipelines to K Street. In part, this is because legislative branch agencies are relatively weak compared to their executive branch counterparts and thus they are not subject to frequent visits by lobbyists. Except in limited circumstances, they do not have authority to create or enforce new regulations on private firms.⁵⁸ Additionally, in each instance, their purview is very broad and covers many different issues, industries and their respective committees of jurisdiction in Congress.

In this respect, the OTA was no exception. While it had “technology” in its name, in practice, its range of covered subjects was nearly comparable to that of the CRS; its reports covered a diverse array of issues including telecommunications, medicine, energy, agriculture, transportation, education, defense, finance, international relations and various others.⁵⁹

The OTA's governance also made capture difficult. OTA operations were overseen by a Technology Assessment Board (TAB) made up of 12 Members of Congress (six from each party), plus the OTA Director, who was a nonvoting member. The role of the TAB included approving new projects as well as the public release of final reports. Each major assessment would have also had an independent advisory panel of leading experts in the field. When functioning properly, this structure should limit opportunities for industry capture since there would be numerous opportunities for different stakeholders to raise concerns with the content of

54. See, e.g., “House Committee on Energy and Commerce Fact Sheet,” LegBranch.com, November 2017, <http://www.legbranch.com/theblog/2017/11/27/committee-sheet-house-committee-on-energy-and-commerce>; and “Senate Committee on Commerce, Science, and Transportation Fact Sheet,” LegBranch.com, April 2018, <http://www.legbranch.com/theblog/2018/4/16/committee-sheet-senate-committee-on-commerce-science-and-transportation>.

55. While the majority or minority staff of committees sometimes release reports outlining a particular policy view, these should not be confused with rigorous authoritative studies like those produced by the OTA or NASEM, etc.

56. And thus, may be pushed out when their chamber flips.

57. Chris Nichols, “Is Congress really less popular than hemorrhoids and herpes as Arnold Schwarzenegger claims?”, *Politifact*, April 14, 2017, <http://www.politifact.com/california/statements/2017/apr/14/arnold-schwarzenegger/congress-really-less-popular-hemorrhoids-and-herpe>.

58. The Copyright Office, which is housed under the Library of Congress, is authorized to regulate and administer the U.S. copyright system. 17 U.S.C. § 702.

59. See “Office of Technology Assessment Archive: Reports by Topic,” Federation of American Scientists, <http://ota.fas.org/otareports/topic>.

a given report.⁶⁰ The protections inherent in this process also shielded the OTA from partisan capture and gave its work credibility outside of Congress.

Additionally, the types of people employed by the OTA were predominantly well-credentialed experts rather than lobbyists or political operatives. Many of them also operated on a contract basis, serving on a particular assessment project for its duration. This would suggest that any revolving door—to the extent that one would exist at all—would likely lead to academia rather than K Street.

Would a new technology assessment office encourage government intervention?

Even if capture by industry is not a significant risk, critics might worry that a new technology assessment office would attract a roster of left-leaning academics who favor government intervention over market-oriented solutions. Thus, restoring an OTA-like entity might lead to worse policy outcomes than maintaining our politicians' current state of ignorance.

Some right-leaning scholars have even suggested that ignorance, gridlock and dysfunction in the federal government is a good thing.⁶¹ These critics might argue that this disrupts the machinery of the progressive administrative state and limits rent-seeking opportunities for politically connected interests. Even if this were broadly true, it is not very applicable to the legislative branch, which is structured to consider diverse stakeholder interests and openly deliberate on policy.

Even if Congress were thoroughly lobotomized (say, by eliminating the CRS and cutting policy staff in half), the effect would not be a significant shrinkage of government. It would merely reduce oversight capacity and cede more power to the already bloated executive branch. This would decidedly not be a fiscally-conservative result. As Cato Institute Vice President Gene Healy put it, “our Constitution’s Framers preferred to leave national policy in the hands of bums you can vote out instead of bums you can’t.”⁶²

Still, for conservatives, technocratic bias in government is a legitimate thing to be concerned about. Even if experts strive to be objective, their underlying philosophical approach to risk or openness to market solutions may influence their conclusions. Indeed, expert bureaucracies in government have

historically exhibited a tendency to drift left in this manner.⁶³

While this challenge should not be ignored, there are ways it can be mitigated and overall it is not a compelling reason to abandon the project of building congressional capacity. Just as there is a risk that expertise could increase interventionist outcomes, there is a more severe risk that lack of expertise invites clumsy blundering, catastrophic unintended consequences and fear-driven reactionary policymaking that chills innovation.

OTA assessments typically provided a menu of policy options and their tradeoffs to Congress, leaving the value judgments to members and committees. This is why the Office’s reports were frequently cited favorably by both sides in policy debates.⁶⁴ Further, as previously mentioned, the OTA’s oversight structure would also give considerable opportunity to root out bias. However, to mitigate concerns, a new OTA might consider placing a greater emphasis on incorporating economic analysis into its reports and creating new rubrics or methodological devices to ensure that market-oriented options are given appropriate consideration. It might also explore greater collaboration with the CBO.

It is also worth noting that the policy preferences of our elected representatives are a function of our democratic system and deliberative legislative process. We should be careful not to blame advisors for the disparity between our own views and those of our representatives.

Political Issues

Would creating a new technology assessment office be a loss of face for Republicans?

Some believe Republicans would lose face if they were to backtrack on one of the victories of the 1990s and reinstate the OTA. However, it is important to remember that its original elimination was not motivated by deeply held conservative principles about reforming Congress. Rather, it was largely motivated by short-term political expediency.

For instance, during its hearings on downsizing government in 1995, the House Committee on Appropriations heard testimony from conservative groups such as the Heritage Foundation and the American Enterprise Institute. In his testimony, Heritage Foundation scholar David Mason noted that the OTA does “good work and useful work” that is “respected in the scientific and technical community,” but it should nonetheless be abolished since “the elimination of functions here

60. In its early history, the TAB suffered from dysfunction, with some legislators trying to manipulate the agency. Later reforms would restore the OTA’s reputation and solve these challenges. See, e.g., Bruce Bimber, *The Politics of Expertise in Congress* (State University of New York Press, 1996), pp. 50–68.

61. See, e.g., Marcus Ethridge, “The Case for Gridlock,” Cato Institute, Jan. 27, 2011. <https://object.cato.org/pubs/pas/PA672.pdf>.

62. Gene Healy, “Has Congress Become Useless?,” *DC Examiner*, Aug. 3, 2010. <https://www.cato.org/publications/commentary/has-congress-become-useless>.

63. Adam Keiper, “Science and Congress,” *New Atlantis* (Fall 2004/Winter 2005), p. 50. <https://www.thenewatlantis.com/doclib/TNA07-Keiper.pdf>.

64. Office of Technology Assessment, “Annual Report to Congress: Fiscal Year 1995,” U.S. Congress, March, 1996, p. 6. <http://ota.fas.org/reports/9600.pdf>.

in congress will make the job of eliminating other government functions far easier.”⁶⁵

In 1995, Republican efforts to cut the legislative branch—including the elimination of the OTA—were significant for their symbolic rather than practical effect. As Bruce Bimber has observed: “Firing the entire legislature and all its staff [...] would scarcely have made a noticeable mark on the budget deficit.”⁶⁶ But as far as symbolism goes, the Office of Technology Assessment was an easy target. For starters, it was the smallest of the legislative branch support agencies and its functions were not essential to Congress’s day-to-day operations. Moreover, the external constituency for science and technology was weak, and the OTA had a limited client base of committee chairmen and ranking members. In short, congressional Republicans’ interest in eliminating the OTA was motivated by their attempts to secure a moral high ground in a time of turbulent budget-cutting politics. Eliminating the OTA, then, made it easier to make politically difficult cuts to areas like school lunches or veterans’ benefits.⁶⁷

Today’s Republicans should feel comfortable acknowledging the reality that the circumstances of the mid-1990s—both in terms of politics and policy—were very different than they are now. Those who sought to abolish the OTA did so in deference to leaders who are no longer in power or for political reasons that are no longer applicable.⁶⁸ Additionally, fewer than one-fifth of members who served in 1995 remain in Congress, and only one former member of the OTA’s congressional oversight board, Sen. Chuck Grassley (R-Iowa), will return to the 116th Congress in January 2019.⁶⁹

Given today’s policy challenges and the lack of pressure to disrupt an institution once viewed as a Democratic stronghold, it should be much easier to frame this in a way that will resonate with conservative constituencies. For instance, legislators could cite the importance of the constitutional oversight role of Congress, the need to understand cybersecurity threats facing our nation or the value of having access to unbiased information, rather than relying on lobbyists or special interest groups.

65. House Committee on Appropriations, “Downsizing government and setting priorities of federal programs,” U.S. Congress, April 14, 1995, pp. 1126-36. <https://ia802701.us.archive.org/15/items/downsizinggovern02unit/downsizinggovern02unit.pdf>.

66. Bimber, p. 69.

67. *Ibid.*, p. 71.

68. For instance, in 1995, there was an attempt to stop the elimination of the OTA by moving its functions to the CRS. 48 House Republicans joined with Democrats to support this measure, however, pressure from Republican leadership ultimately quashed this effort. See Bimber, pp. 74-75.

69. Matthew Eric Glassman and Amber Hope Wilhelm, “Congressional Careers: Service Tenure and Patterns of Member Service,” Congressional Research Service, Jan. 3, 2017, pp. 8-9. https://www.everycrsreport.com/files/20170103_R41545_68dab2d3a44882883eeda9ec2bb36675fe1470ab.pdf.

Did the OTA’s model have a partisan bias?

Some conservatives believe that the OTA had a partisan left-wing bias and fear that bringing it back might create a political weapon that would be used against them. Certainly, the most prominent advocates for reviving the agency have been Democrats, such as former Rep. Rush Holt (D-N.J.), and more recently Reps. Mark Takano (D-Calif.) and Bill Foster (D-Ill.), and Sen. Elizabeth Warren (D-Mass.), as well as various left-leaning civil society groups such as the ACLU, New America and the Sunlight Foundation.⁷⁰ Throughout its existence, the OTA also had associations with a number of prominent liberals such as its founder and first director Rep. Emilio Daddario (D-Conn.) and Sen. Edward Kennedy (D-Mass.), who was one of its greatest patrons.

To answer this question, however, it is important to understand the context of the Office’s history and development. Democrats controlled both chambers of Congress for the majority of its existence and thus Republican interest in dissolving the OTA stemmed, in part, from a desire to disrupt this institutional status quo.

Of key importance is that the OTA was governed by a bipartisan Technology Assessment Board (TAB) that functioned like a joint committee. As briefly mentioned previously, it consisted of six Democrats and six Republicans taken equally from the House and Senate, appointed by the Speaker and the President pro tempore respectively.⁷¹ Among other authorities, this body approved new studies and reviewed them before final release, and it could hire and fire the OTA director.⁷² This created a mechanism for either party to reject politicized projects or content.

During its early history, the OTA grappled with legitimate criticism over poor governance and its reputation suffered.⁷³ Later, it successfully adopted a strategy of political neutrality, which was implemented starting in 1979, when physicist John Gibbons became OTA director and instituted a number of key reforms.⁷⁴ Over the next decade and a half, the Office built a strong reputation for objectivity and gained influential conservative supporters including Sen. Orrin Hatch (R-Utah), Sen. Chuck Grassley (R-Iowa) and Sen. Ted Stevens (R-Alaska).⁷⁵

70. “Ninety Diverse Organizations Support Restoring the OTA,” Union of Concerned Scientists, May 7, 2010. https://www.ucsusa.org/sites/default/files/legacy/assets/documents/scientific_integrity/OTA-sign-on-letter-1.pdf.

71. This may not be ideal. As previously suggested, Congress might consider updating the TAB selection process if it revives OTA. See Graves and Kosar, p. 9. <https://2o9ub0417chl2lg6m43em6psi2i-wpengine.netdna-ssl.com/wp-content/uploads/2018/04/Final-128-1.pdf>.

72. 2 U.S.C. § 473.

73. Keiper, p. 29.

74. Bimber, p. 57.

75. *Ibid.*, p. 51.

The OTA's methodology also created ample opportunity for different perspectives and dissenting voices. Major studies were led by multiple experts in relevant disciplines. They consulted with experts in executive branch agencies, took formal input from external advisory panels and different industry stakeholders and even held public workshops. Rather than focusing on producing a consensus view like the NASEM, they instead often gave a menu of policy options and considered their respective tradeoffs. Thus, despite some perceptions to the contrary, the OTA's model made it very difficult for political actors to hijack the process. In practice, its reports occasionally ruffled the feathers of both parties⁷⁶ (as those of a neutral advisor arguably should) but they were generally viewed as fair.⁷⁷ As Adam Keiper notes: "Most OTA reports were just a low-key part of the policy process, serving to distill reliable facts, clarify debates, and improve congressional understanding."⁷⁸

But Republicans still have their suspicions about the OTA. A 2018 vote in the House to restore \$2.5 million of its funding failed 195 to 217, with only 15 Republicans voting in favor of the measure.⁷⁹ However, there are a few reasons not to read into this too much. First, this amendment was pushed by a Democrat (who was not on the committee) outside of the regular appropriations process in a Republican-controlled House. Second, key Republicans on the Appropriations Committee—such as Rep. Rodney Frelinghuysen (R-N.J.) and Rep. Kevin Yoder (R-Kan.)—had already included a bipartisan measure to commission a major study on the potential to revive a congressional technology assessment arm.⁸⁰ That the majority of House Republicans deferred to the preferred approach of the relevant committee chairmen should be no great surprise. Nonetheless, advocates for reviving the OTA will need to work harder to ease Republicans' concerns if they hope to succeed in the future.⁸¹

Why should Republicans support the creation of a new technology assessment office?

There are four major conservative arguments for reviving the OTA or creating a similar entity. First, Congress's lack

of technical literacy is increasingly a national security issue. We now face cybersecurity challenges such as ransomware that can hold cities hostage, attacks on our electoral infrastructure that undermine trust in the democratic process, renewed calls to backdoor encrypted communications and botnets of hijacked devices that can disrupt major parts of the Internet, including Congress's own websites.⁸² These are incredibly complex issues that require deep technical knowledge to understand the tradeoffs of different policy approaches, such as how to balance concerns over global economic competitiveness, civil liberties and security.

Second, the U.S. federal government is the largest purchaser of healthcare goods and services in the world, spending over a trillion dollars each year. This includes Medicare and Medicaid programs, spending on which is expected to grow significantly in the coming decades as costs go up and demographics adjust for an aging population. If conservatives are serious about enforcing fiscal responsibility, they will have to look hard at ways to reduce these expenditures and find new, more efficient treatments and care options.⁸³ But this is a complex and politically sensitive area, and one of the most intensively lobbied federal activities. Just look at the difficulties surrounding the passage of Obamacare and subsequent efforts to replace it. To make effective policy, fiscal conservatives will need to be better equipped to understand the technical dimensions of this policy domain—issues like drug patents and the approval process—and to find innovative ways to improve efficiency that can overcome political hurdles. For instance, if Congress better understands the tradeoffs of how the FDA process blocks or delays the introduction of beneficial treatments, it can more easily step in and deregulate.

Third, building institutional expertise in Congress is important for America's continued global leadership and economic prosperity and thus to do so will hedge against catastrophic regulatory outcomes. Major emerging technologies like artificial intelligence, additive manufacturing and self-driving cars are just around the corner. Each of these offers transformative social and economic potential. However, if Congress enacts ill-conceived laws and regulations now or fails to appropriately update outdated legal frameworks that get in the way, it could strangle these innovations and send investors and entrepreneurs overseas.

76. There was at least one major controversy, however, when, starting in 1984, the OTA's criticism of President Reagan's Strategic Defense Initiative drew the ire of congressional Republicans, the Pentagon and the White House. According to Keiper, many Republicans saw this as a "partisan hatchet job" (p. 48).

77. *Ibid.*, p. 35.

78. *Ibid.*, p. 36.

79. Roll Call for H.Amdt. 761 to H.R. 5895, 115th Congress. <http://clerk.house.gov/evs/2018/roll255.xml>.

80. See H.Rept.No.115-696, 115th Congress, p. 18. The Senate followed suit with S.Rept. No.115-274, 115th Congress, pp. 48-49. This language was also included in the Joint Explanatory Statement of the conference committee.

81. There is some evidence this is already happening. For instance, a recent coalition letter from right-leaning groups (led by R Street) praised bipartisan efforts to study the issue and urged congressional leaders to take further action. See "Re: Enhancing Congressional Capacity on Technology Policy," R Street Institute, May 21, 2018. <https://www.rstreet.org/2018/05/21/re-enhancing-congressional-capacity-on-technology-policy>.

82. John Sayers, "Library Fends Off DDoS Attack," Library of Congress, July 20, 2016. <https://blogs.loc.gov/loc/2016/07/library-fends-off-ddos-attack>.

83. For more on Health Technology Assessment (HTA), see: Jennifer Wong, "The History of Technology Assessment and Comparative Effectiveness Research for Drugs and Medical Devices and the Role of the Federal Government," *Biotechnology Law Report*, Dec. 1, 2014. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4270161/#fn107>; Sean D. Sullivan et al., "Health Technology Assessment in Health-Care Decisions in the United States," *Value in Health* 12:Supplement 2 (June 2009), pp. 39-44. [https://www.valueinhealthjournal.com/article/S1098-3015\(10\)60060-5/abstract](https://www.valueinhealthjournal.com/article/S1098-3015(10)60060-5/abstract).

Institutional expertise also serves as check against catastrophically bad regulation motivated by “techno-panics,”⁸⁴ as well as the unintended consequences of hastily passed laws. We have already seen a number of bad proposals motivated by fears over automation.⁸⁵ In past policy debates, we have also seen similar problems arise over issues such as SOPA/PIPA,⁸⁶ encryption⁸⁷ and FOSTA/SESTA,⁸⁸ to name only a few. It is not hard to imagine how fear over job loss could lead to heavy-handed regulations on self-driving cars or fear over algorithmic bias could put the brakes on artificial intelligence—or even fear over CRISPR⁸⁹ and gene drives could restrict its many beneficial uses.

Conservatives should bear in mind that fears about technology are more likely to be exploited by interest groups on the political left than those on the right. Congress needs experts to help it calibrate regulation to genuine risks and to brush off fear, uncertainty and doubt.

Fourth, it is the appropriate constitutional role of the legislative branch to have independent analytical capabilities that inform its policymaking and help it conduct oversight of the executive branch. Having this capacity will also save taxpayers money, since a large percentage of government expenditures involve scientific or technological matters.⁹⁰ Indeed, as noted earlier, the OTA’s studies once helped produce government savings well in excess of its own budget.⁹¹

Cost and Efficacy

Can we afford a technology assessment office?

A popular tenet of American conservatism is that, with our skyrocketing national debt, we need to make cuts to any and all unnecessary government functions until we get spending under control. Many conservatives and libertarians go further, arguing that we should endeavor to shrink government to a size where we can “drown it in a bathtub,”⁹² or even smaller.⁹³ Thus, critics might say reestablishing the OTA or a similar entity is a luxury we cannot afford.

There are three reasons why this argument is not compelling. First, reviving the OTA or similar entity does not need to entail additional spending. It could be funded by moving funding from elsewhere within the legislative branch budget. Second, not having a technology assessment office is not going to have any real impact on the debt. The OTA’s peak budget of \$22 million or \$35 million in today’s dollars—was less than 1 percent of the legislative branch’s \$4.7 billion budget⁹⁴ and was an even tinier fraction of the overall \$4 trillion federal budget. While it may play well with voters, cutting Congress is not a good way to fix our debt problem. Eliminating the *entire* legislative branch would barely make a dent in our \$21 trillion national debt. Finally, having a strong Congress is essential to conduct oversight to root out waste, fraud and abuse in our bloated executive branch.

How did the OTA’s technology assessment process work?

The OTA’s technology assessment studies took an average of 18 months⁹⁵ to complete and cost roughly \$850,000⁹⁶ in today’s dollars.⁹⁷ Studies were initiated with a formal request from the chairman and ranking member of a congressional committee or less frequently by a member of the TAB. OTA staff would then consult with other committees of jurisdiction, consider whether the request could be effectively executed and whether there was broad, bipartisan interest in the topic.⁹⁸ The OTA director then presented a formal proposal to the TAB for review. The TAB had final authority over approving or rejecting the proposal. In making its decision, the TAB considered resource constraints against the number

84. For more discussion of techno-panics and innovation see Adam Thierer, *Permissionless Innovation* (Mercatus Center, 2017), pp. 69-71. <http://permissionlessinnovation.org/book>.

85. For instance, there have been calls for a new “robot tax.” See, e.g., Rob Seamans, “No, Robots Should Not Be Taxed,” *Forbes*, March 3, 2017. <https://www.forbes.com/sites/washingtonbytes/2017/03/03/no-robots-should-not-be-taxed>.

86. See, e.g., David Moon et al., eds., *Hacking Politics: How Geeks, Progressives, The Tea Party, Gamers, Anarchists and Suits Teamed up to Defeat SOPA and Save the Internet* (OR Books, 2013), pp. 136-38.

87. Andy Greenberg, “The Senate’s Draft Encryption Bill Is ‘Ludicrous, Dangerous, Technically Illiterate,’” *Wired*, April 8, 2016. <https://www.wired.com/2016/04/senates-draft-encryption-bill-privacy-nightmare>.

88. Danielle Citron and Quinta Jurecic, “FOSTA: The New Anti-Sex-Trafficking Legislation May Not End the Internet, But It’s Not Good Law Either,” *Lawfare*, March 28, 2018. <https://www.lawfareblog.com/fosta-new-anti-sex-trafficking-legislation-may-not-end-internet-its-not-good-law-either>.

89. CRISPR is the acronym for Clustered Regularly Interspaced Short Palindromic Repeats, which refers to a subset of bacterial DNA sequencing that can be used to edit genomes. The practice is applicable primarily in farming and medicine.

90. The federal government spends about \$94 billion a year on information technology alone. This is only likely to increase with renewed efforts to modernize legacy federal systems and automate services that were once done manually. See, e.g., “An American Budget: Analytical Perspectives,” Office of Management and Budget, Feb. 12, 2018, p. 221. <https://www.whitehouse.gov/wp-content/uploads/2018/02/spec-fy2019.pdf>.

91. See M. Granger Morgan and Jon M. Peha, *Science and Technology Advice for Congress* (Routledge, 2003), p. 69.

92. At least, according to Grover Norquist. See “Conservative Advocate,” *NPR Morning Edition*, May 25, 2001. <https://www.npr.org/templates/story/story.php?storyId=1123439>.

93. See, e.g., David S. D’Amato, “The Birth of the State,” *Libertarianism.org*, April 18, 2016. <https://www.libertarianism.org/columns/birth-state>.

94. Ida A. Budnick, “Legislative Branch: FY2018 Appropriations,” Congressional Research Service, April 18, 2018. <https://fas.org/sgp/crs/misc/R44899.pdf>.

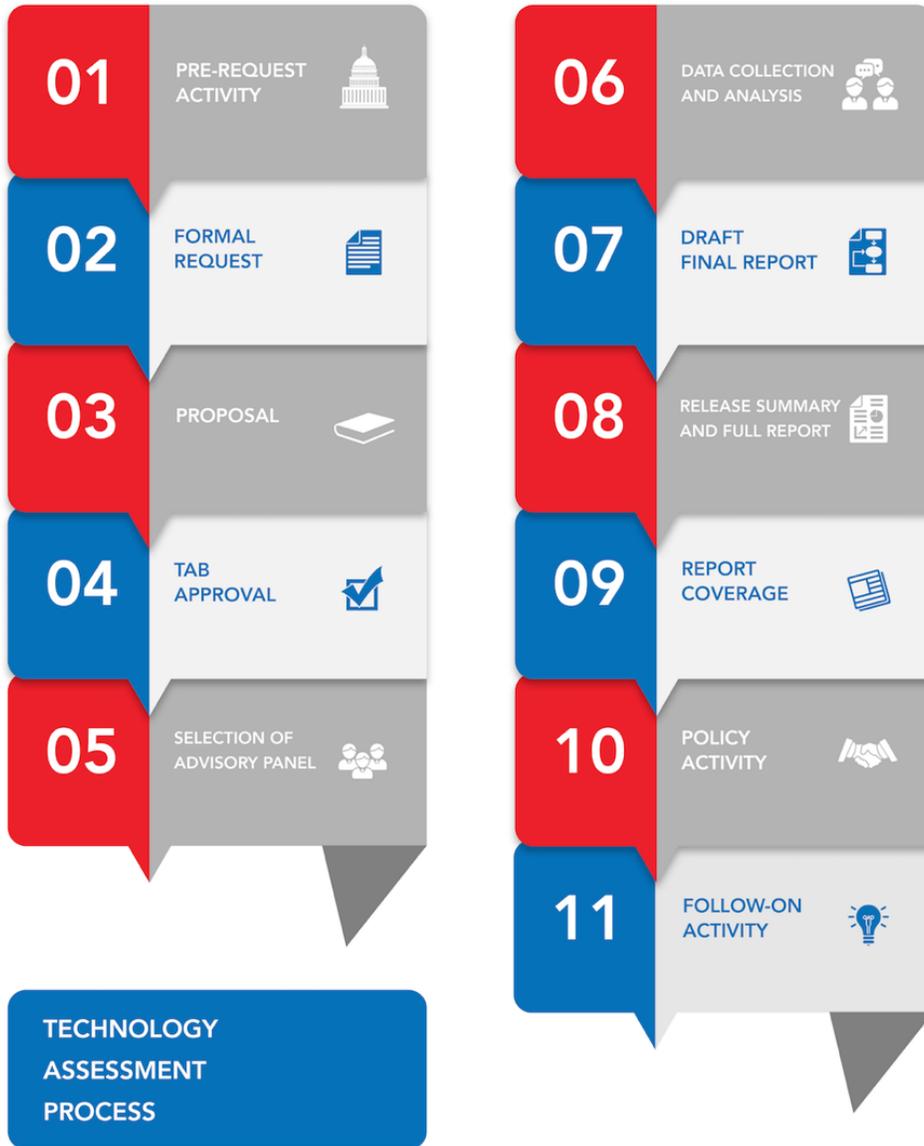
95. Blair, p. 51.

96. Based on \$500,000 in 1994 dollars. See *Ibid*.

97. The time and cost involved in OTA studies is comparable to that of NASEM studies.

98. “The Assessment Process,” Federation of American Scientists. http://ota.fas.org/technology_assessment_and_congress/theassessmentprocess.

IMAGE I: TECHNOLOGY ASSESSMENT PROCESS



SOURCE: Created by author based on the process described at https://www.princeton.edu/-ota/ns20/proces_f.html.

of requests coming in and also whether the request was better suited to another entity, such as the GAO or CRS.

If the TAB approved the proposal, it would assign it to the appropriate division within the OTA and a project director with relevant expertise would be hired or selected from the Office’s staff. Once selected, the project director would work with the requesting committee to further refine the project scope, develop a budget, and select a project staff comprised of OTA employees and outside contractors.⁹⁹ An advisory

panel would then be selected, typically comprised of around a dozen experts from each discipline relevant to the study. Members were from both industry and academia. This advisory panel would meet at several points during the process to advise on methodological approaches and ultimately to review the final product. Unlike NASEM studies, they did not try to reach consensus but rather to reflect a plurality of views.¹⁰⁰ In addition, project staff would often solicit input through technical workshops and outside consultations with industry, government agencies and other groups.

99. These contractors were typically brought on for the duration of a project to fill gaps in staff expertise, and would work onsite at the OTA.

100. Blair, p. 53

Once a draft report was completed, it was sent out for formal review by outside experts. Once this process was finished and the final draft was approved by the OTA director, it was submitted to the TAB for review and approval. Once release was authorized, the report would be circulated to Members of Congress, the press and made available to the public through the Government Printing Office. Follow up activities in Congress might include informal briefings and testimony at hearings. In addition to its assessments, the OTA also produced shorter background papers, summaries of its work and technical memoranda.

How did technology assessment impact policy?

Like the CRS, the OTA refrained from making specific legislative recommendations. Instead, it aimed to explain emergent technologies, describe how much or how little we understood about them and then suggested ways these technologies might change the world we know.

At least as important as its studies, OTA experts conducted many informal conversations with congressional staff, providing an invaluable source of advice to legislators attempting to understand complicated issues. In short, the OTA's value was in providing a mechanism to comprehensively inform the legislative process in its early stages without supporting a particular solution or taking sides between different factions. It accomplished this in a way that, unlike many outside organizations, was responsive to the specific needs of Congress.

Populist disparagement of expert bureaucracies has enabled a number of critics of this model to gain traction. In the 1980s, for instance, conservative pundit Donald Lambro attacked the OTA for producing excessively long studies that no one reads.¹⁰¹ While 100-page reports may be too long for the average hill staffer or, for that matter, the average American, this is not the case for senior staff who routinely sift through long documents in the process of developing legislation or preparing for hearings.¹⁰²

Indeed, the OTA's products were deemed so useful that during its existence, it was globally recognized and its model was copied by other nations such as Denmark, France and Germany.¹⁰³ Its reports won awards and were widely cited and printed copies were one of the more popular government publications requested¹⁰⁴ from the then-Government Printing Office.¹⁰⁵

101. Donald Lambro, *Fat City: How Washington Wastes Your Taxes* (Regnery/Gateway, 1980), pp. 248-51.

102. Roughly 40 percent of Capitol Hill staff are under 24 years of age. See data from <http://legistorm.com>.

103. Blair, p. 80.

104. Office of Technology Assessment, "Annual Report to the Congress: Fiscal Year 1995," U.S. Congress, March 1996, pp. 7-8. <http://ota.fas.org/reports/9600.pdf>.

105. Recently renamed the "Government Publishing Office."

CONCLUSION

In recent months, there has been renewed interest in expanding congressional capacity to meet the science and technology challenges of the 21st century. In particular, a bipartisan, bicameral effort in the fiscal year 2019 appropriations bill will commission a study by the National Academy of Public Administration (NAPA) to evaluate current gaps and consider strategies to revive Congress's technology assessment capability, as well as institute improvements within the GAO's science and technology office.

The NAPA report may not be available in time for the appropriations cycle at the beginning of the 116th Congress but it will surely have an impact on the debate over the next few years. Additionally, with many Member retirements ahead of the midterms—including some on key committees—a change of the guard will create a new opportunity to determine the best approach to fill this gap.¹⁰⁶

There are five main strategies to rebuild technology assessment in Congress::

- **Revive the OTA.** Since its authorizing statute remains in effect, there is an opportunity to reinstate the OTA each year in the legislative branch appropriations bill. A pilot program could be funded by taking a few million dollars from elsewhere in the legislative branch budget.¹⁰⁷ This strategy depends on who chairs the legislative Branch Appropriations Subcommittee in each chamber but it could also be done through a floor amendment. Any such effort is likely to attract some legacy opposition from Republicans—many of whom are still on the record voting against it. But, unlike other options, its model has been proven to be effective.
- **Expand the GAO's technology assessment program.** The GAO's technology assessment program has existed since 2002 but lacks resources and in-house experts. It has also been criticized for lacking some of the OTA's key features in its methodology, peer-review process and oversight structure. Like the CRS, the GAO's bureaucracy and internal culture are likely a disadvantage but it may also have some structural advantages, such as broader statutory powers. While the GAO has serious challenges to overcome, most could be addressed through appropriations and discretionary actions by the Comptroller General or other GAO staff. Additionally, since the GAO does not

106. "Departing Members: 115th Congress (2017-2018)," Roll Call. <https://www.rollcall.com/departing-members>.

107. Proposals to fund a new OTA at \$2.5 million may also fall below the minimum viable size for the agency. While the OTA's initial appropriation in 1973 was \$2 million, that was equivalent to about \$11 million in today's dollars. Furthermore, in 1974, that amount was doubled. Given current budget constraints, it is unlikely that this kind of scalability is possible.

share the OTA's brand problems with Republicans, enhancing it may be more politically expedient than reviving the OTA.

- **Build a technology assessment program within the CRS.** Building a technology assessment function in the CRS was attempted after the OTA was defunded and it may still be a viable location for it. However, differences with CRS's mission, its inward-facing culture may make this a less-than-ideal fit.
- **Deepen the partnership with the Academies.** The NASEM model could be updated to address some of its limitations with respect to shared staff, timeliness, focus on consensus and responsiveness to Congress. However, for the NASEM to fill this gap, it would require Congress and NASEM management to jointly undertake the effort; there are a number of open questions about how this would look.
- **Create a new technology assessment model.** There are various approaches to technology assessment that are quite different from the OTA model. These include those developed in Europe, such as "participatory technology assessment"¹⁰⁸ or ideas such as a discussion draft circulated by (now former) Rep. Jason Chaffetz (R-Utah) in 2016 that would have updated the OTA to be more narrowly focused and have a larger oversight board.¹⁰⁹ Structurally, a new model could be independent or housed within another agency like the Library of Congress. However, this approach would suffer most of the same political challenges as reviving the OTA and would risk factionalizing existing support. It would also require a new authorizing bill rather than appropriations language, which could be more difficult politically.

Even if one of the above strategies is successful, it will eventually run into a problem: to take a new OTA or OTA-type entity from a couple-million-a-year pilot to its former budget of about \$35 million (in today's dollars), requires money from somewhere. Since the Gingrich speakership, Congress has tended to be very parsimonious about spending money on the legislative branch. Without sufficient resources, a new OTA may struggle to provide long-term value or could be forced to focus on a very narrow range of issues.

Beyond funding, a new congressional technology assessment office—whatever its form—would also have to avoid the pit

falls of its predecessor and find strategies to adapt to the current political climate. In particular, it should look to:

- **Improve timeliness.** While authoritative and robust, OTA reports took an average year and a half to complete and were criticized for sometimes being late. To better serve Congress's needs, a new OTA might find ways to speed up this process or develop a range of products that take less time to complete (recognizing there would be tradeoffs in authoritativeness, depth, etc.). While there is ample middle ground between OTA assessments and CRS reports, more consideration will need to be given to which agency is best suited to new kinds of research products.
- **Cultivate a reputation for political neutrality.** A new OTA would need to work harder than ever to avoid the perception of political bias and also to build a broad constituency of supporters within Congress. Especially in the process to create it, this must include vocal Republican support or else it will surely color the perception of its work, undermine its effectiveness and make it a target for elimination. A bipartisan governance structure like the TAB may help avert bias but could also make its research process slower and more prone to avoid controversial issues.
- **Build a broader client base.** Like the GAO, the OTA primarily served committee chairmen and ranking members. To promote its longevity, a new OTA might find ways to better serve rank-and-file members, perhaps by emphasizing congressional outreach and consultations.
- **Include more economics.** While the OTA had economists on staff and incorporated economic analysis into its studies, a new OTA ought to consider expanding this to more studies and creating new rubrics or methodological devices to ensure that market-oriented options are given appropriate consideration. It might also explore greater collaboration with the CBO.
- **Uphold Mertonian norms.** The credibility of a new OTA will depend on adherence to norms and practices of the science and technology community, particularly disinterestedness, skepticism and objectivity. However, the Office must also produce work that is responsive to its congressional context. It should be mindful of Peter Blair's six criteria for effective science and technology advice and create reports that are: useful, relevant, informed, independent, authoritative and timely.

108. See, e.g., Richard Sclove, "Reinventing Technology Assessment," Woodrow Wilson International Center for Scholars, April 2010. <https://www.wilsoncenter.org/sites/default/files/ReinventingTechnologyAssessment1.pdf>.

109. Discussion draft from Rep. Jason Chaffetz, 114th Congress, 2nd Session. [https://github.com/zachgraves/futurecongress/blob/master/CHAFFE_124_xml%20\(002\).pdf](https://github.com/zachgraves/futurecongress/blob/master/CHAFFE_124_xml%20(002).pdf).

We should not forget that the world was a very different place when the OTA was defunded. Mosaic was the only web browser, GPS had just become operational, it would be a year before Dolly the sheep was cloned and two years before Google was founded. The OTA's work was forward-looking for its time, addressing subjects such as digital privacy, fusion power, spectrum allocation by auction, government IT modernization, Alzheimer's care, genetically modified crops and many other issues.¹¹⁰

Over two decades later, the impact of science and technology on society is even more pervasive, as are the policy challenges arising from it. These challenges will not go away, nor can Congress be expected to get any better on its own. Indeed, this problem will only get worse in coming years. While there are multiple approaches to address the gap, it is essential that congressional leaders start taking steps now to build institutional capacity. The policy challenges of our 21st century world demand a capable and competent legislature perhaps now more than ever.

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110. See, e.g., "Reports by Topic," Federation of American Scientists. <http://ota.fas.org/otareports/topic>.