A New-Old Vision for Congressional Technology Assessment

OTA doesn't get enough credit for the variety, timeliness, and impact of its work.

By Kathryn Wagner Hill

When the Office of Technology Assessment (OTA), created by Congress in 1972 as its science and technology think tank, was narrowly voted to be defunded in 1995, the calls to restore it began immediately. In the quarter century since, concerns over Congress's institutional capacity to address the range of complex technical issues facing the nation have only increased. Members of Congress have occasionally considered restoring an advisory capacity for science and technology policy; most such proposals have come to nothing, with the notable exception of what began as a pilot program in the Government Accountability Office (GAO) and was recently expanded and formalized as its Science, Technology Assessment, and Analytics (STAA) team. Significant institutional needs for science and technology policy advice remain unmet.

Now, with bipartisan support in Congress and a broad coalition of organizations urging action, momentum is building for a comprehensive solution. In July 2019, the House Select Committee on the Modernization of Congress unanimously approved a recommendation that OTA be restored, and the fiscal year 2020 House appropriations bill included $6 million to reinstate the agency. While the Senate did not back the funding,[1] this was the closest that OTA has come to being revived. In any event, now is the right moment to answer critical questions about how a restored OTA or a new agency with a similar mandate should be structured and what would distinguish its role from the existing support provided by the other congressional agencies, particularly the STAA.

Understanding how OTA was organized originally and how well its structure for technology assessment functioned is crucial to determining what to retain and what to change in a reformed OTA or successor body. Understanding how Congress itself has changed in recent decades is also important. For example, OTA was responsive to committee requests because during its years of operation committees were strong and were the place where most of Congress's legislative work was done. Today, leadership in both chambers more directly shapes not just the legislative agenda but also the legislation itself, and individual members operate much more autonomously in advancing their own legislative agendas. In fact, only 50 percent of the time do bills enacted follow the regular order of going through the full committee process.[2] Given this change, does a new OTA need to be more responsive to "rank-and-file" members, or would this duplicate functions of the Congressional Research Service and the STAA? And how can bipartisan support be encouraged for the agency's work?

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[1] The provision was left out of the final appropriations bill for fiscal year 2020 in favor of waiting and spending more time evaluating the then-recent National Academy of Public Administration report on science and technology policy assessment, which is discussed later in this paper.

[2] Frances E. Lee, "The Limits of Party: Policymaking in a Polarized Era" (Barbara Sinclair Lecture, Center for Congressional and Presidential Studies, School of Public Affairs, American University, November 18, 2019).

This paper addresses these and related questions and explores particular ways a new OTA's procedures and structure might be reformulated to better fit the needs of Congress today. The two main modifications discussed are to: 1) The assessment request process; and 2) The role and composition of OTA's governing body, the Technology Assessment Board (TAB). These revisions are proposed because they could help OTA adapt to the institutional changes within Congress.

Perhaps equally important is a discussion of what need *not* change in a new OTA. To that end, as part of the review of the original OTA's procedures, this paper offers a detailed look at an aspect of the agency's work that is underappreciated today—the flexibility of the size, scope, and timeline of its reports. OTA's 1989 technical assessment on the topic of municipal solid waste serves to illustrate how valuable the different types of reports were to Congress's deliberative process in the past—an array of offerings that would fit well today with Congress's ongoing needs for timely expert input. It would not take long to compile a list of urgent science and technology policy issues for which today's Congress would benefit from having independent advice (privacy and artificial intelligence come immediately to mind). The challenge is determining how best to structure a new OTA to meet this need.

Structure and Process

The overall scope of a new OTA and specifically the structure of the request process—that is, the process by which Congress requests the office undertake specific projects—require careful attention. Some observers have raised concerns about the duration of the major studies (or "assessments") conducted by the original OTA and the length of the reports it published. These concerns may best be addressed by a closer examination of OTA's actual assessment process and some specific examples of results from assessments. Understanding how the old OTA actually performed technology assessments could be helpful in determining what should be retained and what should be changed in the processes of a new OTA.

Usually, OTA undertook assessments to address new or emerging issues related to existing legislation that was ripe for revision and reauthorization or in an area for which new legislation might be needed. Assuming that legislative guidance remains the chief goal for the office's work, should it conduct assessments as the old OTA did? How should the assessment process be structured? Is 18 months too long to wait for a full assessment? Or is that kind of thoroughness an important part of fully informing Congress in a way that encourages engagement and deliberation? How might the demand for shorter forms of analysis be accommodated? Perhaps the options to supplement full assessments with additional deliverables such as background papers or interim special reports are part of the answer.

As explained in agency handbooks from the 1980s,[3] OTA undertook multiple kinds of reports:

- Full **assessment reports**, which were the final reports of technology assessments (including policy options); each was released together with technical appendices, a

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[3] Vary T. Coates, *An OTA Handbook* (draft internal document, June 7, 1982), p. 72*ff*; and Office of Technology Assessment, *The OTA Orange Book—Policies and Procedures of the Office of Technology Assessment: Communication with Congress and the Public* (February 1986), pp. 2–9, 16–17, 68–70, 75–76.

summary, and a one-page report brief. (As discussed in more detail further on, technology assessments could only be requested by committee chairs, members of the TAB, or the director of OTA.)

- **Technical memoranda**, which were briefer reports on what was known about a particular topic and may or may not have been part of a larger assessment. They offered time-sensitive information that would be useful for Congress's legislative or oversight activities, but did not focus on policy (nor, generally, on highly controversial topics). The TAB did consider requests by individual members of Congress for technical memoranda.
- **Background papers**, which contained information and analysis on topics that might be identified as part of a full assessment and for which particular committees may have wanted a preliminary assessment. These were more general than technical memoranda, but similarly avoided discussion of policy options. They often drew upon work by contractors. Workshop proceedings (unless notable enough to be treated as "special reports," below) and case studies also fell into this category.
- **Staff papers**, which were short reports, typewritten rather than formally published, were based on existing work by OTA and intended for quick turnaround. As with technical memoranda, requests for these could be submitted not only by committees but by individual members of Congress. They did not present policy options. If they were deemed politically sensitive, they too might be treated instead as special reports, subject to additional review.
- **Contractor documents**, which were a type of background paper that were not only produced by contractors but went through a minimal review process. They were not formally published under OTA's imprimatur, but at some point after the associated full report was published they were sometimes made available to researchers and at times to the public as well. They tended to be highly technical and did not present policy options.
- **Special reports**, which could take several forms but were often produced as interim reports when Congress needed information urgently for legislative or oversight matters. They often previewed a full assessment report, providing preliminary analysis based on the work done to date. They generally had a fairly narrow focus and did include policy options; they went through OTA's full review process. Each was released with a report brief.

A full technology assessment usually took 18 months to complete, and the average length of the final assessment report was about 250 pages.[4] The summary (often based on the first chapter) would contain the findings and policy options and was between 30 and 50 pages. One-page report briefs, known as "one-pagers," which were summaries of the entire report, were also issued at the time of the assessment's release. These one-pagers were used by the media and often might be all that many members of Congress and their staff actually read. The important

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[4] U.S. Congress, Office of Technology Assessment, *Policy Analytics of OTA: A Staff Assessment* (Washington, D.C.: 1993), p. 40.

thing was that *some* members and staff would read the full report and the accompanying shorter deliverables and have briefings with the OTA team as well—and that *all* members and staff knew that the full, thoroughly reviewed and vetted assessment was available if they needed it.

Technical memoranda, special reports, and staff papers were likely to be completed within three to six months depending on a particular assessment's needs; they varied in length for the same reason. Background papers that were published as part of an assessment or on their own might be quite in-depth; they could take anywhere from three months to a year and varied in length from 30 to over 100 pages.

OTA officially identified itself as "an analytical arm of Congress" whose "basic function is to help legislative policy makers anticipate and plan for the consequences of technological changes and to examine the many ways, expected and unexpected, in which technology affects people's lives." Specifically, it was noted in each OTA report that the "assessment of technology calls for exploration of the physical, biological, economic, social, and political impacts that can result from applications of scientific knowledge." The agency was composed of scientists from many different fields, including social scientists. This cross-disciplinary approach is fundamental to technology assessment.

There were three main ways that requests for studies were made:

1) By chairs of standing committees in the House of Representatives or the Senate;
2) By the Technology Assessment Board (TAB), which, as noted above, was the governing body of OTA; or
3) By the director of OTA in consultation with the TAB.

The TAB's structure was key to the process for OTA assessments to be made. The board consisted of six members of the House and six members of the Senate. Typically half were Republicans and half were Democrats, and they tended to be chairs of major committees and members with seniority and stature within Congress. The OTA director also served on the TAB as a nonvoting member. There were nine program areas: energy and materials; industry, technology, and employment; international security and commerce; biological applications; food and renewable resources; health; communication and information technologies; oceans and environment; and science, education, and transportation.

It may be that the particular program areas would be subdivided differently in a new OTA, but retaining the basic structure of the agency and the requesting process, including the crucial role of the TAB, can provide a sustaining level of bipartisan and bicameral support. (Some minor adjustments are discussed further on.)

A critical point that should not be missed in designing the new OTA is that the kind of technology assessment the old OTA performed is *policy* analysis. It is not solely a technical analysis, although it inevitably touches on technical matters. Nor is it a detached, academic type of analysis. Rather, technology assessment is "policy analysis directed at issues related to science, technology, *and their impacts on society*" (emphasis added).[5]

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[5] Coates, *An OTA Handbook* (draft), op. cit., p. 84.

Figure 1 is a scheme of the technology assessment process included in one of the OTA handbooks. It helps illustrate how the structural elements of technology assessment interact and evolve. In fact, the progression of an assessment can move not only sideways and downward as the arrows indicate, but upward and around in an iterative process. As the handbook notes, this can be conceptualized as a wheel, which "should go through several revolutions in the course of the assessment."[6] Technology assessment, then, is best understood as a policy analysis process rather than a technical analysis, which may at least appear to be tidier and more linear.
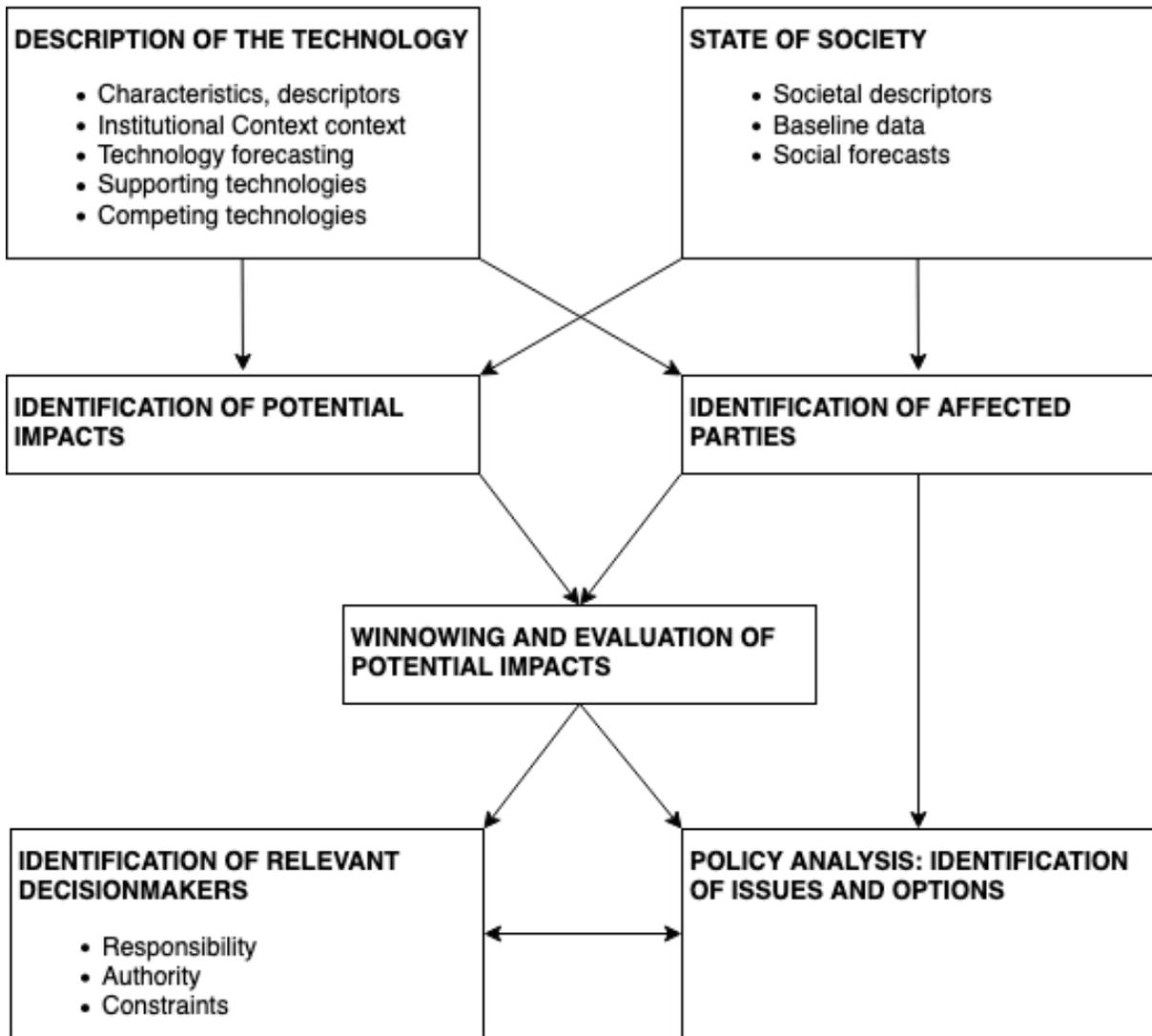
SCHEME OF TECHNOLOGY ASSESSMENT

DESCRIPTION OF THE TECHNOLOGY	STATE OF SOCIETY
• Characteristics, descriptors • Institutional Context context • Technology forecasting • Supporting technologies • Competing technologies	• Societal descriptors • Baseline data • Social forecasts

IDENTIFICATION OF POTENTIAL IMPACTS

IDENTIFICATION OF AFFECTED PARTIES

WINNOWING AND EVALUATION OF POTENTIAL IMPACTS

IDENTIFICATION OF RELEVANT DECISIONMAKERS
• Responsibility
• Authority
• Constraints

POLICY ANALYSIS: IDENTIFICATION OF ISSUES AND OPTIONS

Figure 1. OTA Scheme of Technology Assessment. (Source: Vary T. Coates, *An OTA Handbook* [draft internal document, 1982], p. 87.)

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[6] Ibid., p. 86.

It is also useful to keep in mind just what a policy issue is. As explained in the same handbook, "[a] policy issue is a factor of concern in making decisions, formulating policies, and selecting among options," which can be distinguished further as one of two kinds: (1) "unresolved questions of fact" or (2) "points of controversy and conflict."[7] Clearly, a new OTA would need to address both kinds of policy issues, as did the original OTA.

The prevalence, urgency, and controversial nature of issues relating to science and technology are not new. The audience for the technology assessments remains the same as well —that is, most lawmakers and their staffs are "educated laymen," as opposed to scientists, engineers, physicians, or other technical experts. In other words, much of the overall context for a new OTA is not significantly different from what the original OTA faced. As noted earlier, it is true that congressional committees are weaker today than they were in the past. And by many measures, partisanship is heightened today, but perhaps that only underscores the need for this nonpartisan, unbiased source of expert information for Congress. The TAB included members who were equally strongly conservative or liberal and all were receptive to and valued the assessments done by the agency. It is possible that with just a few tweaks to its process and structure, a new OTA would help—at least in a small way—to rebuild some bipartisan capacity in the institution, as well as enhancing its deliberative capacity.

Figure 2 illustrates the request process followed by the original OTA. It is worth underscoring the important role of the TAB in lending credibility and visibility to OTA's work. This begins with the request process; all proposals had to be approved by the TAB, which is far different from how requests are developed and managed for work done by the Congressional Research Service (CRS) and the GAO's STAA team. In the case of those other agencies, typically individual members of Congress directly request studies, although sometimes there are committee requests. There is not a body like the TAB for either CRS or the GAO—an entity that creates at least some bipartisan approval for all of the agency's work.
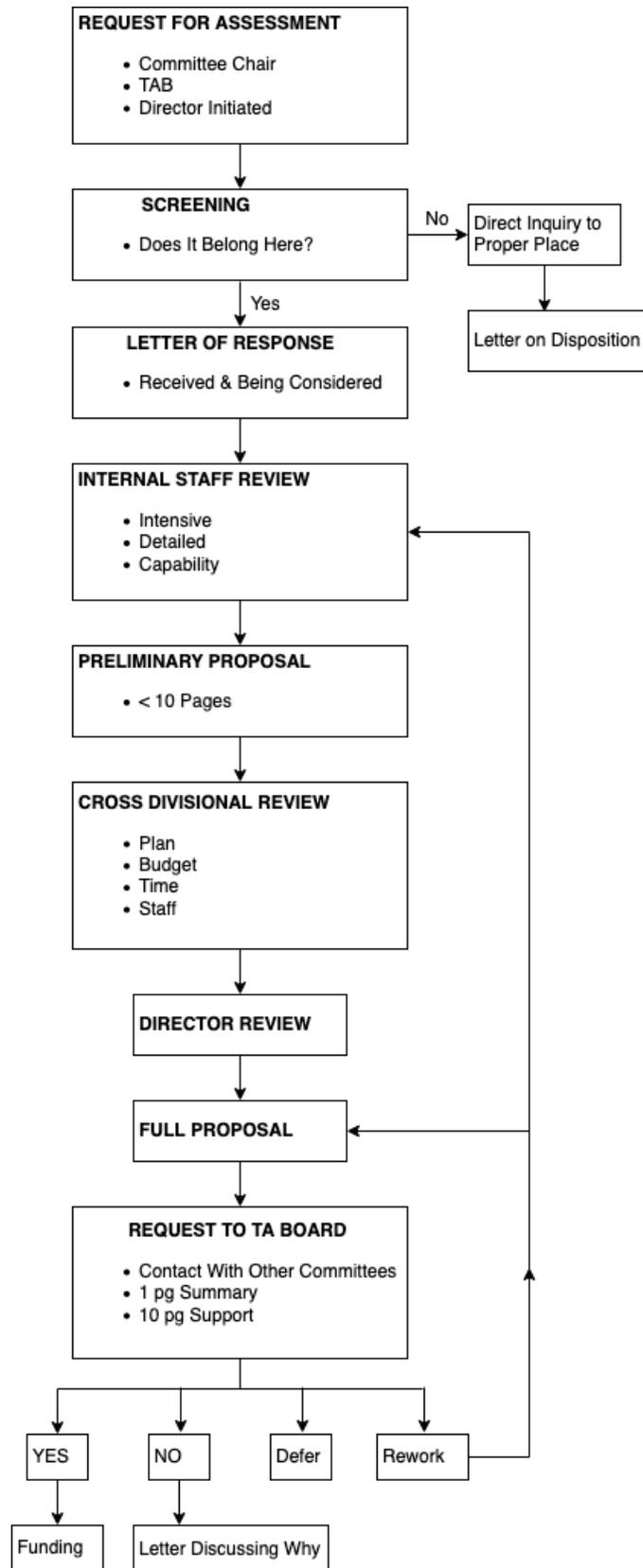
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[7] Ibid., p. 84*ff.*

Figure 2. OTA Request Process. (Source: Vary T. Coates, *An OTA Handbook* [draft internal document, 1982], p. 34.)

Case Study: "Facing America's Trash"

Some observers have raised concerns that the full technology assessments completed by the original OTA took too long to complete and the final reports were too lengthy to be useful. Further, they suggest that perhaps a different kind of analysis should be envisioned for the new OTA—something other than the technology assessments it conducted. This seems unnecessary when one remembers that the original purpose of having technology assessments remains intact, and that the full assessments usually resulted in shorter reports before the full report. An illustrative example is the 1989 OTA assessment on municipal solid waste (MSW) and resource management and the accompanying papers published as part of it.[8] (Full disclosure: I was the assistant director of this project, and held various roles—analyst, contractor, project director—for the other studies and publications listed in this section.)

In 1988, the Resource Conservation and Recovery Act (RCRA) was being considered for major revision, and OTA was already undertaking an assessment of how the nation was managing MSW, when there were reports of medical waste washing up on American beaches, creating national concern. OTA responded to the requesting committee's need for expert knowledge on this small but infectious portion of the waste stream by issuing first a background paper and then an extensive special report on medical waste.[9]

In this case, OTA staff convened a workshop focused specifically on medical waste that brought together experts from the waste management industry; the hospital and medical community (including the Joint Commission on Accreditation of Health Care Organizations); citizen and environmental groups; and representatives from local, state, and federal environmental and health agencies, including both the Centers for Disease Control (CDC) and the Environmental Protection Agency (EPA). The workshop focused on why medical waste was washing ashore at that time, how much of a hazard it posed, and what would be the best public policy response to it by Congress. The resulting background paper was written and published within three months of the workshop after an even broader group was involved in its external review. As the OTA analyst leading the study, I participated in staff briefings and also testified at a hearing on medical waste held by the authorizing committee; thus we provided direct input into the legislative action that Congress was taking. The resulting Medical Waste Tracking Act (Pub. L. 89-272) passed in October 1988, the same month the background paper was released. The special report OTA published two years later addressing additional issues associated with managing medical waste further informed policy efforts in this area.

The OTA medical waste studies show how the technology assessment approach gathered all that was known on the topic in a short amount of time to identify policy options that were different from those most legislators had anticipated. Specifically, the OTA analysis discovered that the medical waste on the beaches was arriving in several specific areas on each coast, primarily due to combined sewer overflow issues, particular weather conditions, and cyclical

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[8] U.S. Congress, Office of Technology Assessment, *Facing America's Trash: What Next for Municipal Solid Waste?* (Washington, D.C.: U.S. Government Printing Office, October 1989).

[9] U.S. Congress, Office of Technology Assessment, *Issues in Medical Waste Management* (Washington, D.C.: U.S. Government Printing Office, October 1988); and U.S. Congress, Office of Technology Assessment, *Finding the Rx for Managing Medical Waste* (Washington, D.C.: U.S. Government Printing Office, September 1990).

ocean-current phenomena that were bringing syringes and sharps primarily flushed down toilets by diabetics back to shore rather than out to sea. The problem was not, as originally thought, primarily caused by hospital waste being improperly disposed of or sharps from HIV-positive drug users. This part of the assessment then identified that safer disposal of sharps needed to be addressed as well. One finding discussed was how segregation of the infectious waste stream would lead to better management practices. In the case of sharps, it ultimately resulted in the red plastic collection containers now found in all health-care offices.

The assessment study also raised serious concerns regarding how hospitals were managing their infectious waste—including the then-prevalent practice of incinerating infectious and other medical wastes in units whose rooftop stacks were frequently located next to the air intake stacks for hospitals. The OTA study identified and assessed safer, affordable alternatives (e.g., autoclaving and waste-reduction programs) and discussed them in the context of policy options. As assessments frequently did, the study examined what some state and local jurisdictions were already doing and identified market forces that might encourage the adoption of alternatives. Based on the OTA studies, it was clear that legislation imposing regulations at the national level on the issue would be premature. Instead, some pilot waste-tracking programs in states that opted to have them were incorporated into the proposed law to address medical waste. In addition, the legislation included mandates for further research into particular topics to be undertaken by both the CDC and EPA.

The shorter, timely background paper and special report produced by OTA influenced legislation specific to medical waste that was enacted and established the initial regulatory and research programs to address what at the time was a pressing issue. Importantly, OTA's work did this in a way that brought credible information into the legislative process that might not have been identified otherwise and that led to a more informed legislative outcome.

When OTA's full assessment report on MSW was released, it also significantly affected the revision of RCRA. For example, Congress was considering adopting a national bottle bill, but the OTA assessment identified other policy options to encourage states to increase their levels of resource recovery that were environmentally sound and economically feasible. Providing incentives to meet an overall national recycling goal was ultimately the policy direction pursued. The MSW report was translated into several languages and was used as a textbook and resource on solid waste and resource management for many years around the globe. Further, after the full assessment was complete, a long background paper was published on managing *industrial* solid waste. This was because the MSW assessment identified how classifications of waste in this subcategory of RCRA included wastes identified as hazardous by other statutes and this gap between the laws complicated implementing proper management in the way Congress intended.[10]

This case study shows how the variety of reports produced by the old OTA served a variety of congressional needs. A full OTA assessment could affect legislation but also could ramify in unexpected directions, resulting in smaller, timely products that had important effects in their own right. The comprehensive design of OTA's full technology assessments allowed for

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[10] U.S. Congress, Office of Technology Assessment, *Managing Industrial Solid Wastes from Manufacturing, Mining, Oil and Gas Production, and Utility Coal Combustion* (Washington, D.C.: U.S. Government Printing Office, February 1992).

in-depth analysis with both near-term and longer-term deliverables, supporting a high level of deliberation and informed legislative action.

A New OTA? Or the STAA?

In January 2019, the GAO established its Science, Technology Assessment, and Analytics program with the mission of filling the gap in support for congressional needs in technical areas of policymaking. The STAA is an expansion of a pilot program begun in 2002, under which the GAO has undertaken a limited number of technology assessments. Given the structure of the GAO, however, these reports were never as in-depth as those produced by OTA, and given the GAO's process for requests, and specifically the lack of any equivalent to OTA's Technology Assessment Board, the GAO's technology assessments generally have not had much effect on the legislative process either.

Ideally, the STAA and a new OTA could mutually support the legislative branch's science and technology needs in complementary ways to improve congressional oversight and also address new science and technology challenges. A recent report by Zach Graves and Daniel Schuman reaches a similar conclusion, but they propose renaming OTA as the Technology Assessment Service (TAS) and significantly curtailing its purview. Specifically, their TAS would be more narrowly focused than the original OTA and would complement the STAA, but in more of a subsidiary role. Graves and Schuman envision TAS as offering "more nimble (and long-term) proactive thinking and horizon scanning about emerging technologies and other S&T issues, while simultaneously side-stepping potential complications that could arise from GAO's bureaucracy and culture."[11]

The type of technology assessment the STAA proposes to undertake, however, is fundamentally different from what OTA did and does not meet Congress's need for in-depth analysis. STAA technology assessments have a narrower focus than OTA's, and although the requests for them come from congressional committees, it is not done in consultation with a body like OTA's Technology Assessment Board. Furthermore, the GAO notes how closely its technology assessment protocol aligns with its traditional audits, with the main difference being that the STAA's work will involve the use of outside experts in a way that GAO audit work does not.[12]

OTA, on the other hand, ensured broad stakeholder input through the use of an advisory panel for each technology assessment, which met before the study began, midway through the assessment, and at its completion. In addition, consultants or contractors with particular expertise contributed to the process. Importantly, OTA analysts would host workshops on major areas of focus for an assessment, bringing in experts from all levels of government, industry, public interest groups, and sometimes trade associations to provide a broader range of views. For

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[11] Zach Graves and Daniel Schuman, "Science, Technology, and Democracy: Building a Modern Congressional Technology Assessment Office," report, Ash Center for Democratic Governance and Innovation, Harvard Kennedy School (January 2020), p. 4, https://ash.harvard.edu/publications/science-technology-and-democracybuilding-modern-congressional-technology-assessment.

[12] U.S. Government Accountability Office, *GAO Science, Technology Assessment, and Analytics Team: Initial Plan and Considerations Moving Forward* (Washington, D.C.: April 10, 2019), p. 24, https://web.archive.org/web/20190412233347/https://www.gao.gov/pdfs/about/GAOScienceTechPlan-2019-04-10.pdf.

example, for the MSW study discussed above, in addition to the medical waste workshop already noted, OTA analysts held four other workshops on major topics: state and local MSW programs; markets for recycled materials; incineration/waste-to-energy issues; and MSW reduction. Workshops involved pre- and post-preparation and input by participants. The actual workshops were day-long or sometimes day-and-a-half-long intensive efforts of information sharing and brainstorming that involved a depth of analysis and level of interaction that the STAA's meetings with "subject matter experts" are unlikely to achieve.[13]

In another recent paper, Zach Graves and Robert Cook-Deegan argue that lawmakers especially need "ethical, historical, and social analysis" that is incorporated "into policy analysis about science and emerging technologies" and emphasize that the "role of policy analysis is to help legislators see the values at stake more clearly, thus enabling them to produce policies that are more evidence-based and less intuitive."[14] This is a better fit with the OTA model than any technology assessment work done by the STAA. Indeed, the *OTA Handbook* states that "OTA studies must be focused squarely on current, emerging, and potential public policy issues [while also being] scrupulously non-partisan and non-ideological" and then notes:

> The unique value of OTA to Congress is that it can:
> - reach outside of government to capture information from a rich variety of sources, institutions, and individual experts, and
> - present this information without advocacy or bias, in a form which is useable by and useable to the educated layman, who is a busy, harried lawmaker.[15]

In October 2019, the National Academy of Public Administration (NAPA) released a report that sought to identify science and technology support needs for Congress and recommend how best to fill the gaps identified.[16] Curiously, NAPA, whose work was done on contract for CRS as directed by Congress, largely dismisses the role OTA could play in filling the science and technology (S&T) supply gaps. Perhaps this results from the NAPA panel not fully understanding how OTA operated in the past (since there is little recent information to consult on that) and thereby not identifying what distinguishes OTA from the existing efforts by CRS, the GAO, the GAO's STAA team, and the National Academies of Sciences, Engineering, and Medicine (NASEM).

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[13] Ibid., p. 23.

[14] Zach Graves and Robert Cook-Deegan, "Incorporating Ethics into Technology Assessment," *Issues in Science and Technology* vol. 36, no. 1 (Fall 2019), pp. 28–29, https://issues.org/incorporating-ethics-into-technology-assessment/.

[15] Coates, *An OTA Handbook* (draft), op. cit., p. 2.

[16] National Academy of Public Administration (NAPA), *Science and Technology Policy Assessment: A Congressionally Directed Review* (Washington, D.C.: initially released to Congress on October 31, 2019; subsequently released to the public on November 14, 2019), https://www.napawash.org/studies/academy-studies/science-and-technology-policy-assessment-for-the-us-congress.

Category of Support	Summary of S&T Support Demand From Congress	Approx. Timeframe	Approx. Product	Current Providers
Quick Turnaround	Questions that require a prompt response with facts, figures, and descriptions; for example, a legislative correspondent working to respond to a constituent's inquiry or a brief overview of key S&T issues	one hour to three weeks	one to five pages	CRS
Networking	Access to a wide array of outside S&T experts embracing academia, industry, and non-profit segments	on-going	NA	Modest gap
Consultative	Readily available, consistent consulting with experts who provide more personal assistance to Members and staffs who can provide clear recommendations, if requested	on-going	NA	Modest gap CRS, but desire for additional S&T consultation
Report: Short-to Medium-Term	Studies and analyses of S&T trends that can be completed relatively quickly to allow critical issues to be addressed; provide detailed summaries of policy issues with original information gathered from stakeholders in all sectors, including government, nonprofit, industry, and government; these types of reports lay out options to deal with the challenges or leverage the opportunities; they are generally peer-reviewed from outside experts	one to twelve months	three to twenty pages	Modest gap with CRS and GAO seeking to respond
Report: Technology Assessment	Detailed research into the impact of S&T trends and provide avenues to mitigate the challenges and take advantage of opportunities; this type of study has a formal methodology that must be followed and are peer-reviewed by outside experts, going through a high degree of scrutiny before release	twelve to twenty-four months	fifty to 200 Pages	GAO
Report: Horizon Scanning	Identify emerging S&T technology trends and the opportunities and issues that might result from them in future	six to eighteen months	twenty to sixty pages	Gap

Table 1. Taxonomy of Congressional Science and Technology Support Needs. (Source: National Academy of Public Administration, *Science and Technology Policy Assessment: A Congressionally Directed Review* [2019], p. ix.)

The NAPA review does contain a useful taxonomy of the congressional S&T support needs (see Table 1). The need for technology assessment identified by NAPA is much narrower in scope, though, than what OTA did and Congress identified as its need. The type of "formal methodology" identified is closer to what in the past constituted the type of technology assessments more typically done in the private sector. These tend to be more narrowly technologically focused from an engineering perspective and do not necessarily support public-sector decision-making well insofar as they may not involve a thorough analysis of the potential social consequences of the issue under study. By contrast, the comprehensive OTA approach to technology assessment not only does this but, as indicated above, also produces the "short-to-medium-term" studies and analyses that NAPA identified as needed.[17]

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[17] Ibid., p. 18*ff.*

That said, the STAA may play an important role in fulfilling three other tasks it identified for itself: performance audits of federal science and technology programs, best-practices guides in engineering sciences, and an audit innovation lab for advanced analytic techniques.[18]

The NAPA report also identified "horizon scanning"—that is, identifying S&T trends and issues for possible future policy action—as a congressional need that is not now being met. The STAA is not likely to build such a capability: as part of the GAO, the STAA is embedded in a culture of oversight more than forward-looking analysis. A new OTA, however, could help to close this gap.

There is great symbolic value to Congress creating an entity devoted to technology assessment again because, as the NAPA report puts it, this "would show that Congress is committed to understanding and finding solutions to the complicated science and technology trends currently underway."[19] Based on a small set of interviews, NAPA concluded that the feasibility to actually re-establish OTA was "medium" because some interviewees "weren't convinced" a new OTA was "optimal" or "outright opposed" it. The review goes on to say that some interviewees said that OTA reports were "not critical parts of the legislative deliberation and decision-making processes."[20] This characterization of OTA's usefulness to Congress seems to be based on the opinions of a small number of individuals whom NAPA interviewed and does not square with the example of the MSW assessment given above, which (based on my own experience as an OTA staffer) was much more the norm. OTA had a very strong track record, as others have noted, including Senator Chuck Grassley (R-Iowa), who served on the TAB and defended its achievements—which included billions of dollars in savings based on OTA assessments.[21] Each of the congressional support agencies has some naysayers, but there is a danger to giving too much voice to critics.

The NAPA report does identify standing up a new OTA as highly desirable, and given that the House did vote appropriations to re-fund the agency, this would not seem to be any less likely to happen than NAPA's own preferred recommendation: the creation of a wholly new Office of the Congressional S&T Advisor (OCSTA).[22] While such an entity might take on the horizon-scanning task NAPA identified, a new OTA could certainly do that as well. And the proposed OCTSA would not be overseen by an entity like the TAB, and just as with the STAA, that means it would not have much visibility or stature within Congress. It is also not clear that the proposed OCSTA would have much of a role in directly informing the legislative process.

Congressional Capacity and the New OTA's Scope

OTA was created as part of a broader effort by Congress in the 1970s to reassert itself vis-à-vis the executive branch. A major motivator for those members of Congress who proposed the

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[18] GAO, *GAO Science, Technology Assessment, and Analytics Team*, op. cit., p. 15.

[19] NAPA, *Science and Technology Policy Assessment*, op. cit., p. 48.

[20] Ibid., p. 47.

[21] Graves and Schuman, "Science, Technology, and Democracy," op. cit., pp. 9–10.

[22] NAPA, *Science and Technology Policy Assessment*, op. cit., pp. 48, 54.

original OTA was for Congress to have its own independent, nonpartisan source of information and analysis regarding complex technical areas of policymaking.[23]

Congress has still not recovered from the institutional body blow of OTA's defunding. None of the other congressional agencies has proven able to fill the void left by OTA.

Today, congressional capacity is usually discussed in terms of the clear need to increase staffing in Congress. This is especially true with respect to committee staff, which in the case of standing committees decreased by 38 percent between 1981 and 2015.[24] But congressional capacity can be defined more generally—as "the human and physical infrastructure Congress needs to resolve public problems through legislating, budgeting, holding hearings, and conducting oversight."[25] In this definition adequate staffing is only one aspect of capacity, albeit a crucial one.

The authors of the NAPA report felt compelled to address congressional capacity even though what they term "absorptive capacity" was not a principal focus of their study.[26] The NAPA panel's goal was to make recommendations that, if followed, would leave Congress "better poised to absorb and utilize enhanced S&T support."[27] Primarily focusing on congressional committee needs, NAPA recommends adding S&T advisors to committees and also creating external Technical Advisory Groups for the major committees, similar to what the Senate Intelligence Committee has.[28] These entities, though, would in all likelihood lack an interdisciplinary approach. There may be a constructive role for the Technical Advisory Groups, but their function as described in the NAPA report would be better fulfilled by a new OTA.

Capacity in Congress ought also to be understood as the first branch's ability to carry out its constitutional responsibilities and functions as an institution—specifically legislating in a deliberate manner with proper study and understanding of the issues at hand. OTA is the one congressional agency that had as its sole mission conducting impact-focused assessments of technology and technological issues in the context of "helping Congress in its basic functions of policy formulation, legislating, budgeting, and overseeing government programs."[29]

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[23] For a history of OTA and of U.S. science policy in general, see Adam Keiper, "Science and Congress," *The New Atlantis* no. 7 (Fall 2004/Winter 2005), pp. 19–50, https://www.thenewatlantis.com/publications/science-and-congress.

[24] Brookings Institution, *Vital Statistics on Congress* (March 2019), Table 5.1, "Number of Congressional Staff on the Decline," https://www.brookings.edu/multi-chapter-report/vital-statistics-on-congress/; and NAPA, *Science and Technology Policy Assessment*, op. cit., p. 8.

[25] Timothy LaPira, Lee Drutman, and Kevin Kosar, eds., *Overwhelmed: Congressional Capacity and Prospects for Reform* (Chicago: University of Chicago Press, forthcoming in 2020), quoted in the written testimony of Kevin Kosar, *Hearing on Article One: Restoring Capacity and Equipping Congress to Better Serve the American People, before the U.S. House of Representatives, Select Committee on the Modernization of Congress*, 116th Cong. (January 14, 2020).

[26] NAPA, *Science and Technology Policy Assessment*, op. cit., p. 57*ff.*

[27] Ibid.

[28] Ibid., pp. 58–59.

[29] Coates, *An OTA Handbook* (draft), op. cit., p. 84.

Were a new OTA to open its doors, its structure and functions would need to be different from those of the old OTA. Congress today is both more decentralized and more centralized than at the time OTA was created. In the 1970s, congressional committees with strong chairs who earned their positions based largely on seniority had much more institutional power than is generally true today. But party leadership is more powerful now than it was then, and it is based much more on loyalty and ideology than committee organization. The "outcome-oriented leadership" by which party leaders use procedural power to control the legislative process to secure their desired outcomes differs from the "service-oriented leadership" of the past, when floor leaders had a more prominent role and rank-and-file members had more opportunities to participate in legislating. Today, members of Congress generally find that a do-it-yourself approach to legislating serves them better than working through the formal committee structure.[30]

Given this individualized lawmaking trend in Congress, is there a way for a new OTA to be more responsive to rank-and-file members without duplicating functions of the other congressional agencies, such as CRS? Perhaps the request structure in a new OTA could incorporate a way for individual members to make requests for assessments. For example, if a member of Congress is able to secure a sufficient number of cosponsors for a proposed assessment (e.g., 10 percent of their chamber, with additional weight given when the level of bipartisan support among the cosponsors is high) then the TAB would consider the assessment request in the same way it considers a request from a committee.[31]

The focus needs to be on structuring the process in ways that strengthen rather than further erode the power of committees and as much as possible helps to increase bipartisan cooperation in Congress. A recent analysis of lawmaking from 1973 to 2016 found that legislative coalitions that were successful in enacting laws in recent years were about as bipartisan as they were in the 1970s.[32] Bipartisan action is more common than press coverage sometimes implies, yet still more can be done to encourage it. This includes opportunities with respect to structuring the new OTA. For example, Graves and Schuman propose a change to how the TAB membership is selected: that the speaker and minority leader in the House would have to *agree* on TAB appointments, as would the majority leader (or president pro tempore) and minority leader in the Senate.[33] The point is that an even more bipartisan TAB overseeing OTA would build capacity for more bipartisanship in the legislative process.

Only OTA is positioned to encourage greater deliberation by providing the kinds of information and in-depth analysis about science and technology policy that Congress needs. Re-

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[30] Benjamin Ginsberg and Kathryn Wagner Hill, *Congress: The First Branch* (New Haven: Yale University Press, 2019), chaps. 4 and 5.

[31] See Graves and Schuman, "Science, Technology, and Democracy," op. cit., p. 46, where they suggest a similar updating to the request process.

[32] James M. Curry and Frances E. Lee, "Non-Party Government: Bipartisan Lawmaking and Party Power in Congress," *Perspectives on Politics* vol. 17, no. 1 (March 2019), pp. 47–65, https://doi.org/10.1017/S1537592718002128.

[33] Graves and Schuman, "Science, Technology, and Democracy," op. cit., p. 38.

establishing OTA will not only close this gap but will reinvigorate congressional lawmaking capacity as well.

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