

Legislative Science Advice in Europe and the United Kingdom

Lessons for the United States.

By Chris Tyler

Politicians are often asked for their opinions on a dizzying array of complex topics, such as what to do about global warming, whether to invest in big infrastructure projects, how to reduce gun violence, and when to permit embryonic stem cell research. Obviously no individual politician can comprehend all of these issues and more on his or her own. The question is not whether politicians need help—they do and they get a lot of it—the question is what kind of help they need.¹

This essay focuses on one particular type of help for politicians: *legislative science advice* (LSA). LSA helps politicians in two ways. First, it aids them in navigating scientific and technical topics, as in the example of what to do about global warming. This is a deeply technical issue, ranging from the underlying science that explains why the planet is warming, how quickly, and the likely effects, to the engineering solutions that would help humanity reduce and adapt to warming. The second way that LSA helps is by providing evidential context to topics that on first sight do not seem scientific or technical. Most political issues are of this sort. Take the example of gun violence: on the face of it, it feels like a purely ethical and political issue. However, scientific and engineering research can contribute a lot to the debate. Social scientists can help us understand what people think about gun violence and suggest social approaches to mitigation, and engineers can suggest ways of limiting the use of firearms through, for instance, palm-print technology.

For some two decades, from 1974 to 1995, the U.S. Congress had a dedicated source of LSA: the Office of Technology Assessment (OTA). In the years since this world-leading science advisory body was shuttered, Congress has had a much smaller in-house capacity for LSA. The Government Accountability Office provides some analysis of technical issues (including through its new Science, Technology Assessment, and Analytics team²), as does the Congressional Research Service.³ For both of these agencies, science and technology make up just a small part of their overall work. Congress lacks a robust, dedicated source of LSA, let alone a proactive one that specializes in telling politicians things they need to know but never thought to ask.

¹ Here and throughout this piece, I generally use “politicians” as shorthand for legislators.

² “Our New Science, Technology Assessment, and Analytics Team,” *WatchBlog* (blog), Government Accountability Office, January 29, 2019, <https://blog.gao.gov/2019/01/29/our-new-science-technology-assessment-and-analytics-team/>.

³ The website of the Government Accountability Office is: <https://www.gao.gov/>. Information about the Congressional Research Service is available at www.loc.gov/crsinfo/about/; its reports are available at <https://crsreports.congress.gov/>.

A growing bipartisan movement to bring back OTA has been gaining traction. But rather than suggesting that the agency should simply be re-funded in its original format, some advocates are calling for a radical rethinking of the project of providing Congress the scientific and technical advice it needs.

One potential source of guidance and instruction is the experience of the LSA entities established in other countries. After OTA was launched in the mid-1970s, it quickly became the envy of other modern and progressive legislatures. Similar institutions, often also adopting the term “technology assessment”—meant as either a synonym for or a subset of science advice—began to spring up in Europe. These offices were smaller than OTA but similar in function: providing politically impartial scientific and technical advice to politicians. Today, LSA offices thrive in Europe. The U.K. Parliamentary Office of Science and Technology (POST), which I headed for five years, celebrated its thirtieth anniversary in 2019,⁴ and there are similarly well-established and influential LSA offices in France, the Netherlands, Norway, Germany, Switzerland, Austria, and elsewhere. In short, the tables have turned. Thirty years ago, Europe was learning how to do LSA from the United States. Now the United States must look to Europe for inspiration on how to provide LSA effectively.

A Variety of Models

So what range of LSA offices is out there? As you would imagine, Europe’s variety of governance systems have yielded numerous solutions to the problem of how to get scientific and technical information into the hands of politicians. There are several ways to categorize LSA offices. For example, one can sort them according to whether they are internal to the legislature (as OTA was, and as the LSA offices of the U.K., France, Germany, and Sweden are) or external but with a formal agreement to provide science advice to parliament (as in Norway, the Netherlands, Austria, and Switzerland). One could also focus on the design of the office: whether it is an office of expert science advisers (as in the U.K., Norway, and the Netherlands) or a committee of politicians with a staff or secretariat (as in France, Finland, and Greece). Another approach is to look at the nature of the work—whether the office produces policy recommendations (e.g., France), thorough assessments of policy options (e.g., Norway), summaries of research evidence (e.g., the U.K.), or some combination of these (e.g., Germany).

Another useful way of distinguishing among the different kinds of LSA offices was proposed in 2014 by Jurgen Ganzevles, Rinie van Est, and Michael Nentwich.⁵ They categorize the offices based on the involvement of different stakeholders with the LSA activity. Their first category is “mainly parliamentary involvement,” meaning that parliamentary activity dominates the science advisory work with relatively little input from the scientific community or wider society. For example, in France, the *Office parlementaire d’évaluation des choix scientifiques et technologiques* (OPECST) is made up of members from both houses of the French Parliament,

⁴ Information about POST is available at <https://www.parliament.uk/post>.

⁵ Jurgen Ganzevles, Rinie van Est, and Michael Nentwich, “Embracing Variety: Introducing the Inclusive Modelling of (Parliamentary) Technology Assessment,” *Journal of Responsible Innovation* vol. 1, no. 3 (2014), pp. 292–313, <http://dx.doi.org/10.1080/23299460.2014.968439>.

reflecting the party makeup of the parliament.⁶ The OPECST members themselves undertake the inquiries into science and technology questions and policy options, with members appointed as rapporteurs for each inquiry and with the support of a secretariat. Because the politicians lead the inquiries, they not only can make recommendations, they also can propose legislation. Of all the LSA offices around the world, OPECST is probably the most embedded in the legislature. Another example of this model is the Committee for the Future, which is what it sounds like: a standing committee in the Parliament of Finland, it serves as a think tank focusing on the future and science and technology policy.⁷ Part of its remit is to undertake technology assessments, which politicians steer with the support of a staff and some external expertise. Also following this model is the European Parliament's Panel for the Future of Science and Technology (formerly called Science and Technology Options Assessment).⁸ It sees relatively more involvement from scientists, who are contracted to undertake its inquiries. However, there is a strong dose of parliamentary engagement: projects are sponsored by politicians and workshops are designed and run with politicians present.

The second type of LSA office described by Ganzevles et al. is "shared parliamentary-science involvement." In this model, the science community participates with the parliament in the work of formulating science advice. In Germany, for example, the *Büro für Technikfolgen-Abschätzung beim Deutschen Bundestag* (TAB) is governed by a steering committee of politicians but operated by an outside research entity that competes for the contract in a bidding process. Since 1990, TAB has been run by the Institute for Technology Assessment and Systems Analysis at the Karlsruhe Institute for Technology.⁹ TAB's technology assessments are produced by its staff and external experts, not by the politicians. There is a similar model in the U.K., where POST is overseen by a board of both politicians (cross-party and cross-house) and senior scientists. The board directs the work of POST by selecting the topics of inquiry, but the work is undertaken by a combination of the POST staff (all of whom have research backgrounds) and PhD students seconded to Parliament to work on parliamentary briefings called POSTnotes.¹⁰ The PhD students are supported by research funders and scientific-membership bodies, so there is heavy involvement of the scientific community in the work of POST. Also in this category is the *Consell Assessor del Parlament sobre Ciència i Tecnologia* (CAPCIT) of Catalonia in

⁶ Information about OPECST is available at <http://www.senat.fr/opecest/index.html> and <http://www2.assemblee-nationale.fr/15/les-delegations-comite-et-office-parlementaire/office-parlementaire-d-evaluation-des-choix-scientifiques-et-technologiques>.

⁷ Information about the Committee for the Future is available at <https://www.eduskunta.fi/EN/valiokunnat/tulevaisuusvaliokunta/Pages/default.aspx>.

⁸ Information about the Panel for the Future of Science and Technology is available at <https://www.europarl.europa.eu/stoa/en/home/highlights>.

⁹ The website of TAB is: <https://www.tab-beim-bundestag.de/de/>.

¹⁰ Information about POSTnotes is available at <https://www.parliament.uk/postnotes>.

Spain.¹¹ Its board of 18 members is made up half of politicians (from the regional Parliament of Catalonia) and half of scientists. The scientific community partly funds the activities and performs the inquiries.

The third model is one of “shared parliamentary-science-society involvement.” The best-known example of this model is the Danish Board of Technology (DBT), which was funded partly by the Danish Parliament until 2011 and now exists as the Danish Board of Technology Foundation.¹² The old DBT had the statutory duty to inform citizens and politicians about new technology; the foundation continues this effort, working with both citizens and scientists. The DBT sat outside parliament and had both a small board of directors and a large board of representatives from various sectors of society. The DBT was, and now the DBTF is, renowned for its participatory methods and its public-facing science advisory role. Similarly, the Society and Technology Institute in Flanders, which was closed down at the end of 2012, performed technology assessment in a participatory way. Its board was made up of both politicians and scientists, and it had two main clients: parliament and the public.

The fourth model is “shared science-government involvement.” Ganzevles et al. mentioned Austria’s *Institut für Technikfolgen Abschätzung* (ITA) as an example of this model, but in the years since their article was published, the relationship of ITA with the Austrian Parliament has strengthened so this fourth model might today be better described as “shared science-government-parliament involvement.”¹³ The ITA sits within the Austrian Academy of Science, and its advisory board, which oversees the work program, is made up of scientists. The ITA team undertakes the technology assessments with the parliament and government as clients.

The fifth and final model is “shared parliament-government-science-society involvement.” There are LSA offices that fit this model in the Netherlands, Switzerland, and Norway. In all three cases, the funding comes from government. But the funding is, in the words of Ganzevles and his colleagues, “buffered” by being allocated to arm’s-length bodies. The *Rathenau Instituut* (formerly the *Nederlandse Organisatie voor Technologisch Aspectenonderzoek*) is located in the Royal Netherlands Academy of Arts and Sciences.¹⁴ TA-SWISS is now an independent foundation and affiliated with the Swiss Academies of Arts and Sciences.¹⁵ The Norwegian Board of Technology, which explores the societal impacts of and options for technology and science, is overseen by a board of 15 members who are appointed by the government, but it is the Norwegian Research Council that acts as its supervising authority.¹⁶ All three of these entities have public-facing roles and use participatory methods such as citizen

¹¹ Information about CAPCIT is available at <https://www.parlament.cat/web/composicio/capcit/index.html> and <https://www.fundaciorecerca.cat/en/science-and-data/capcit>.

¹² The website of the Danish Board of Technology Foundation is: <http://tekno.dk/?lang=en>.

¹³ The website of the ITA is: <https://www.oeaw.ac.at/en/ita/>.

¹⁴ The website of the *Rathenau Instituut* is: <https://www.rathenau.nl/en>.

¹⁵ The website of TA-SWISS is: <https://www.ta-swiss.ch/en/>.

¹⁶ The website of the Norwegian Board of Technology is: <https://teknologiradet.no/en/homepage/>.

panels, consensus conferences, and open hearings. And a core function of each of the three is to work with the scientific community to conduct technology assessments and report the findings to the legislature.

Ganzevles and his colleagues say that the defunct OTA—which relied on the expertise and advice of scientists and stakeholders, and which was overseen by a board drawn from both houses of Congress and both parties—“resembled” the second model (“shared parliamentary-science involvement”). They state that the Government Accountability Office’s efforts at technology assessment are an example of the fifth model, although the second model again seems more apt, since the involvement of the executive branch in the GAO’s work is minimal.

However one categorizes LSA offices, the point is that there is a wide range of options for setting up such offices. This fact should give pause to observers in the United States advocating for the re-establishment of OTA: it does not need to be set up in the same way.

Three Suggestions

It is one thing to say that there are options for designing a relaunched OTA, it is quite another to make design choices. With my colleague Karen Akerlof, I have elsewhere offered three suggestions for how to structure an OTA successor.¹⁷ I’ll deal with each in turn.

First, *make bipartisanship real*. OTA was intended to be bipartisan, and the board overseeing it was formally bipartisan—with six representatives and six senators, evenly divided between the parties—but OTA was from the outset perceived as a creature of the left, in part because of the chairmanship of Senator Edward Kennedy (D-Mass.) and his influence over the lifetime of the office. Real bipartisanship is difficult in the U.S. context, perhaps now so more than ever. But if a renewed office is not more bipartisan than the original OTA was, it may meet the same fate the original did.

Although the context is different, there are some lessons to be learned from Europe. In the U.K., for example, POST has a larger and more diverse board than OTA did. It numbers ten MPs who reflect the balance of parties in the House of Commons, four members of the House of Lords, and, crucially, four experts nominated by the U.K.’s national academies (the Royal Society, the Royal Academy of Engineering, the British Academy, and the Academy of Medical Sciences) as well as some ex-officio members representing the parliamentary bureaucracy. There is a culture of bipartisanship in the U.K. parliamentary committees. Even so, the presence here of the academics and bureaucrats keeps the politicians honest: they have to behave how they wish to be seen to behave or they will be found out by important people on the board.

In France, OPECST has another mechanism for promoting bipartisanship. Each study that it undertakes is overseen by two rapporteurs. One rapporteur is from the majority party, with another from an opposition party; one is a senator and the other is a deputy; and usually one is a man and the other is a woman. For example, a 2018 OPECST report on bioethics was overseen by Jean-François Eliaou from the centrist party *La République En Marche!* in the National Assembly and by Annie Delmont-Koropoulis from the center-right *Les Républicains* in the

¹⁷ Chris Tyler and Karen Akerlof, “Three Secrets of Survival in Science Advice,” *Nature* vol. 566, no. 7743 (2019), pp. 175–177, <http://www.doi.org/10.1038/d41586-019-00518-x>.

Senate.¹⁸ The “triple parity” among the rapporteurs is important to OPECST because it enforces a sense of bipartisanship and diversity that would likely otherwise be missing. The rapporteurs report back to parliament the findings of each study, including any recommendations that OPECST is making.

Second, *determine the kind of work that the office will undertake*. Does the office want to provide representatives and senators with policy recommendations? Does it want to touch on a wide range of topics, including social science issues? The good news is that internal LSA offices can do these kinds of things. The bad news is that they cannot do both. Either you can make policy recommendations, guiding politicians toward particular policy answers, in which case you have to be deeply embedded in the legislature, guided by politicians, and only tackle technical issues (like OPECST), or you can cover a wide range of issues, such as education, immigration, and crime, in which case your advice has to be “light touch,” you have to avoid recommendations, and you must focus instead on summarizing the research evidence in as impartial a way as possible (like POST).

The reason for this dichotomy has to do with the way that policy recommendations are processed by politicians. Any recommendation that a politician should do *x* or *y* is immediately put under scrutiny: What is the recommender’s motivation? What does the suggestion mean politically? The challenge for an LSA office is that, without the highest level of political cover, a single recommendation can sink the office; the office can become associated with one political faction or another. OPECST avoids this through its rapporteur and committee model. The office is in a strange sense above politics because it is so much part of the parliamentary makeup. That being said, OPECST never strays far from technical issues. Making recommendations about how a bridge should be built or what should be done with nuclear waste is far less political than, say, studying how to reduce violent crime or health inequalities. Those last two are recent examples of policy briefings produced by POST in the U.K. POST could not tackle topics like that while producing policy recommendations and survive into the next funding cycle. POST’s way around the problem is to avoid recommendations altogether. It summarizes the evidence, presents it in a policy-friendly way, and then steps back. Making policy decisions is the domain of politicians.

Third, *offer value for money*. Do away with OPECST? Why not another parliamentary committee? They are all relatively cheap and there are loads of them. Do away with POST? Really? And lose the free staff they bring into Parliament via their policy fellowships scheme? Such arguments were harder to make in the case of OTA. Although it rarely comes up as a reason for its demise, there is no doubt that OTA was a target on a value-for-money basis. In 1995, when OTA was closed, it numbered 143 permanent staff, plus contractors, and had a budget of \$22 million. The United States has a big Congress with a large budget, but that is definitely overkill. At \$22 million (about \$35 million in today’s money), you would be safest integrated closely into the apparatus of Congress (like OPECST), but OTA wasn’t. And you had better be bringing in outside funding to add even more value to Congress (like POST), but OTA wasn’t. Those involved in efforts to resurrect OTA might want to consider being more measured in scale and

¹⁸ OPECST, “Assessment of the implementation of the bioethics acts No 2004-800 of August 6th 2004 and No 2011-814 of July 7th 2011” (October 25, 2018), <http://www.assemblee-nationale.fr/15/rap-off/i1351.asp>.

seeking out ways in which its position as a conduit for science advice might be leveraged to add value to Congress.

Context, Structures, and Functions

There are several broader considerations that should be taken into account when establishing a new LSA service for Congress. I'll follow N.J. Vig in placing them in four broad categories: the political, cultural, and intellectual traditions; the specific founding context; the structures; and the functions.¹⁹

First, the political, cultural, and philosophical traditions of a nation-state are fundamentally important when considering what kind of LSA office to build. At the risk of oversimplifying, the philosophical and epistemological tendency of the United States is empiricist. According to Vig, this tends to favor case-by-case consideration of practical issues, with clear distinctions made between facts and values. (By contrast, a rationalist approach—as is found in, for example, France—tends toward deductive discourse around central principles and comprehensive analysis of large issues.) The United States also has a strong scientific tradition, which suggests an LSA process that accommodates and seeks legitimization from the top scientific people and institutions. A highly factual, science-based approach to LSA would also suit the relative elitism of the U.S. political class and the country's generally individualist approach to economic issues. At the other end of the spectrum lie countries that have stronger social science or humanist traditions, more participatory values, and more collective approaches to social issues. In those countries, LSA might involve more input from social dialogue, as is the norm in, for example, Denmark and Norway.

Second, it is important to consider the specific context in which a new office is being founded. For example, the nature of the discussions that led to establishing an LSA unit is important. Lengthy, contentious, partisan debates can lead to weak or compromised institutions, Vig argues. Relatedly, if the proposals for an LSA office are primarily coming from opposition parties, they are likely to receive weaker implementation compared to proposals for LSA put forward by the majority government. Finally, the legislative context is important. For example, in the U.K. Parliament, select committees are relatively bipartisan, compared with the United States, in which congressional committees are much more partisan. This is bound to affect LSA cultures: in the U.K., POST's governing board is strongly bipartisan; in the United States, specific efforts will have to be made to ensure that an LSA office's governance is both practically and visibly bipartisan.

Next up is the question of structures—the overall form of the legislative body and the details of how the LSA office fits into or works with it. For example, a weaker parliament can make it difficult to establish an LSA function. This has been found in Spain, where the relatively new democracy has made several attempts to establish an LSA office, and the most recent (and promising) effort has run up against political difficulties resulting from a weak parliament. Stronger legislatures, such as that of the United States, should be able to put in place more resilient LSA structures. Another factor, already mentioned above, is the structural role of

¹⁹ N.J. Vig, "Parliamentary Technology Assessment in Europe: Comparative Evolution," *Impact Assessment* vol. 10, no. 4 (1992), pp. 3–24, <https://www.tandfonline.com/doi/pdf/10.1080/07349165.1992.9725818>.

legislative committees. Committees are usually major clients of any LSA function, and so committees set up to seek impartial advice (as in the U.K.) are likely to make for strong clients well served by a strong LSA unit. In the United States, the particular needs of congressional committees will have to be considered when thinking about how to establish a new LSA function. Competing structures also need consideration: How would the work of a new congressional LSA office differ from the LSA work performed by the Government Accountability Office and the Congressional Research Service, and from the science and technology policy work of executive-branch entities, such as the Office of Science and Technology Policy?²⁰ A new LSA office would need to add something that is now missing and to dovetail with existing structures. In the U.K., for example, POST collaborates closely with advisers in select committees and the library research services. It is also a legislative counterpart of the executive's Government Office for Science, and collaborates with GO-Science and other departmental science offices on horizon-scanning and foresight.²¹

Finally, the functions of the LSA office are crucially important. The most obvious role of an LSA office is to provide information to legislators so that they can understand, debate, and decide on policy issues in a more informed way. Some LSA units also help legislators with their scrutiny of the executive. (European LSA offices often narrowly focus on government science and technology policies. In the U.K., POST gets away with taking a wide scope, including social policy, because it does not make recommendations and its bipartisan footing is beyond doubt. Designers of a new American LSA office might consider giving it a more traditional science-and-technology-only remit.) A third function performed by some LSA offices is clarifying government options where a clear position has not yet been taken—a “pre-legislative” function that can help put the legislature on a more even footing with the executive. Sometimes LSA bodies can get well ahead of the legislative agenda and have some role in “agenda-setting.” This is particularly true of LSA bodies that undertake horizon-scanning and foresight activities. Finally, LSA offices may contribute to public debate on the underlying ethical questions of technological development by organizing public meetings, citizen juries, surveys, and other ways of involving the public in the LSA process. This was not part of what OTA did, and it is not clear whether this could work in the American context, but it would certainly differentiate a new congressional LSA body from existing offices.

Looking Ahead

Having explored a range of different types of LSA offices and having seen how they can be classified, we can ask: Where should a new congressional LSA office fall in such a classification?

Having seen some of the choices that an LSA office has to make when it is part of the legislature, we can ask: How can a new congressional LSA office make bipartisanship real?

²⁰ Information about the Office of Science and Technology Policy is available at <https://www.whitehouse.gov/ostp/>.

²¹ Information about the Government Office for Science (GO-Science) is available at <https://www.gov.uk/government/organisations/government-office-for-science>.

Should the office make recommendations? How large should the office be and how should it be funded?

Having taken a look at some of the factors that determine the shape and function of LSA offices, we can ask: What philosophical and epistemic traditions might a new congressional LSA office fit into? How will it fit among existing structures and what functions should it fulfill?

All these questions will have to be considered by anyone seriously contemplating restoring OTA or creating a new congressional LSA body.

I want to conclude by reflecting on some of the functions that are missing in the current U.S. system that an LSA office might provide. Some of these functions were recently highlighted in a Harvard Kennedy School report by Mike Miesen and colleagues.²² There is a need, they found, to establish a new agency that is “embedded” in Congress (in other words, an internal LSA body like those of the U.K. and France), nimbly responsive to changing congressional demands (in other words, smaller than the original OTA, and presumably better value for money), options-oriented (in other words, like POST and the old OTA, not to make recommendations), and “able to incorporate all external perspectives.” On this last point the report is more vague. It is unclear whether the authors have in mind a body that is deliberative in its style (e.g., Denmark), or consultative (e.g., the U.K. and the old OTA), or a combination thereof (e.g., Norway).

The authors also found that there is a science and technology talent gap in Congress, including in the offices of members and on committees. Unfortunately, the report’s recommendation here—that there should be more staff appointed to both member offices and committees—perpetuates another longstanding problem: that there are too many politically appointed staffers in Congress and not enough politically impartial staffers. Congress is currently crippled by excessive partisanship, something that in a (basically) two-party system in Westminster is neatly done away with by not having too many political staffers. In the House of Commons, the terms of reference for inquiries are drafted by impartial staff, the written evidence is sifted and interpreted by impartial staff, and the questioning of witnesses is guided by impartial staff. It would be nearly impossible to establish such a system in Congress, but at the very least, if Congress were to raise its budget for staff, it should consider exclusively asking for more bureaucrats.

My final point comes as a direct result of my background of running POST in the U.K. The most glaring gap in the science advisory functions of the U.S. Congress is *proactive* advice. The excellent science advisory work currently provided to Congress by the Government Accountability Office and the Congressional Research Service comes at the request of committees or individual members, or via legislative programming. What is missing is an office that provides independent science advice whether or not politicians have sought it. This is particularly important for issues that do not obviously appear to have a science and technology dimension, but on closer inspection, could better be understood with expertise from these domains. I mentioned the example of gun crime earlier, but there are countless others:

²² Mike Miesen, Laura Manley, Maeve Campbell, Chris Kuang, and Emily Roseman, “Building a 21st Century Congress: Improving Congress’s Science and Technology Expertise,” Harvard Kennedy School (2019), <https://www.belfercenter.org/publication/building-21st-century-congress-improving-congresss-science-and-technology-expertise>.

immigration, social welfare, drug abuse, and education, to name just a few. A successful legislative science advisory body needs to be able to tackle these issues, and other emerging issues that politicians do not yet realize they need advice on, so that, instead of having to play catch-up, politicians can truly lead.

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