Response of The MITRE Corporation to the OSTP RFI to Support the Development of a Federal Scientific Integrity Policy Framework

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About MITRE

The MITRE Corporation is a not-for-profit company that works in the public interest to tackle difficult problems that challenge the safety, stability, security, and well-being of our nation. We operate multiple federally funded research and development centers (FFRDCs), participate in public-private partnerships across national security and civilian agency missions, and maintain an independent technology research program. Working across federal, state, and local governments—as well as industry and academia—gives MITRE a unique vantage point. MITRE works in the public interest to discover new possibilities, create unexpected opportunities, and lead by pioneering together to bring innovative ideas into existence in areas such as artificial intelligence, intuitive data science, quantum information science, health informatics, policy and economic expertise, trustworthy autonomy, cyber threat sharing, and cyber resilience.

Scientific integrity is fundamental to MITRE's existence and differentiation. MITRE is prohibited from lobbying. We don't develop or sell products. We have no owners or shareholders, and we don't compete with industry. This lack of conflicts of interests forms the basis for our objectivity and enables us to solely focus on our mission: *solving problems for a safer world*. This collective mission enables our multidisciplinary teams—including engineers, scientists, mathematicians, data analysts, policy specialists, and more—to dig into problems from all angles. As an independent, not-for-profit company, we have no commercial pressures to influence our decision-making, technical findings, or policy recommendations.

Questions Posed in the RFI

1. Information is requested on how scientific integrity policies at Federal agencies and other components of the Executive Branch can be developed or updated to address important and emergent issues of our time, including: (1) Diversity, equity, inclusion, and accessibility, which are essential to advancing the conduct, communication, and use of science, ensuring the equitable delivery of government programs, and improving equitable participation in science by diverse communities across the Nation; (2) New technologies, such as artificial intelligence, machine learning, and the lack of transparency and potential for bias in computer algorithms and associated data; (3) Emerging modes of science, such as citizen science and community-engaged research; and (4) Coordination with related policy domains, such as open science and data; quality guidelines for data and information that agencies release; promotion of safe, equitable workplaces free from harassment and discrimination; and protection of research security and responding to research misconduct.

1-1, Diversity, equity, inclusion, and accessibility (DEIA)

Scientific organizations should consider the full spectrum of DEIA that drives people to think differently, leads to creativity and innovation, and supports scientific integrity.

Recognizing Biases. A prior MITRE study[1] on diversity and inclusion in the intelligence community found that its analysts' efforts at objective analyses are challenged by any number of cognitive biases, with intergroup biases[2] of particular concern because they lead to pitfalls like mirror imaging,[3] fundamental attribution bias,[4] and in-group bias.[5] The same can realistically be assumed to hold true for other groups—in the case of scientific researchers, this leads to scientific integrity and DEIA concerns.

Diverse Scientific Teams. Engaging diverse individuals with various perspectives increases transparency and the capacity to create and innovate. Teams that include diverse thinkers with different experiences and backgrounds "outperform homogeneous groups on complex tasks, including improved problem solving, increased innovation, and more-accurate predictions—all of which lead to better performance and results when a diverse team is tasked to approach a given problem."[6] Creative ideas come from divergent thinking, and cognitive diversity facilitates creativity in teams.[7] Diverse teams also generate more research questions that have yet to be asked and apply diverse perspectives to researching likely impacts on different groups of individuals. Federal science and technology (S&T) activities should thus continuously seek to include members with a variety of backgrounds and perspectives, as doing so better drives both scientific advancement and scientific integrity.

Inclusive Climates. Inclusive workplace climates lead to more creative and innovative scientific team outcomes. Leaders who foster inclusive climates adopt *psychological safety* whereby people can make mistakes freely, ask questions freely, share ideas and opinions openly, be willing to learn throughout the process, and be willing to take risks without fear of retribution. These types of environments, conditions, and characteristics are primary drivers of team performance, and thus are important to improving scientific research processes and outcomes.[8]

Research indicates more stressful climates, especially those that result in a low sense of belonging and social exclusion, trigger fight or flight stress responses that impede intellectual thought and reasoning, prosocial behavior, listening to others, and being open to ideas and different points of view.[9] Fight or flight reactions resulting from exclusion and lack of

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[1] T. Dao, J. Patterson, and P. Roberts. Diversity and Inclusion: A Mission Imperative for the Intelligence Community. 2021. MITRE, https://www.mitre.org/sites/default/files/publications/pr-21-0136-intelligence-after-next-diversity-and-inclusion-a-mission-imperative-for-the-intelligence-community.pdf.

[2] *Intergroup* was defined as interaction between people who self-categorize or recognize social identities from different social groups, including gender, religion, ability, fraternity, or racial and ethnic cultural groups.

[3] *Mirror imaging* was defined as the assumption the subject will behave like the analyst.

[4] *Fundamental attribution bias* was defined as the tendency to attribute another's actions to their character or personality, while attributing their behavior to external situational factors outside of their control.

[5] *In-group bias* was defined as the tendency to favor one's own group, its members, its characteristics, and its products, particularly in reference to other groups.

[6] T. Swartz, et al. The Science and Value of Diversity: Closing the Gaps in Our Understanding of Inclusion and Diversity. 2019. The Journal of Infectious Diseases, https://academic.oup.com/jid/article/220/Supplement_2/S33/5552350. Last accessed March 30, 2022.

[7] S. Kaufman. The Real Neuroscience of Creativity. 2013. Scientific American, https://blogs.scientificamerican.com/beautiful-minds/the-real-neuroscience-of-creativity/. Last accessed March 30, 2022.

[8] L. Delizonna. High-Performing Teams Need Psychological Safety. Here's How to Create It. 2017. Harvard Business Review, https://hbr.org/2017/08/high-performing-teams-need-psychological-safety-heres-how-to-create-it. Last accessed March 30, 2022.

[9] A. Abuzaakouk. An Inclusion Habit Encourages Awareness and Enables Psychological Safety. 2018. MITRE, https://kde.mitre.org/blog/2018/10/01/an-inclusion-habit/. Last accessed March 30, 2022.

psychological safety can handicap the strategic thinking needed in today's workplaces and impede performance, productivity, and capability to deliver the excellence needed to maintain scientific integrity.[10] More-inclusive scientific teams can generate new ideas, methods, and approaches to problem solving and can better understand study populations from multiple perspectives.[11]

Furthermore, "science benefits from dissent within the scientific community to sharpen ideas and thinking. Scientists' ability to freely voice the legitimate disagreement that improves science should not be constrained."[12] Also, "transparency underpins the robust generation of knowledge and promotes accountability to the American public. Federal scientists should be able to speak freely, if they wish, about their unclassified research."[13] Neither of these NSTC scientific integrity principles can be achieved absent an inclusive climate.

Equitable Systems and Processes. A more diverse talent pool, representative of the communities it serves, will increase public trust in the federal government (including S&T activities). More-diverse scientific teams, processes, and systems are needed to achieve the desired excellence in scientific integrity.[14]

Workforce strategy and human capital system processes and practices can be evaluated for any structural inequities in hiring, retention, education, learning and development, and career growth and promotion systems. More attention is needed to attract diverse researchers from a wide spectrum of backgrounds (including geographic[15]). Addressing equitable representation in the scientific research community, processes and practices, and study populations is an added benefit to increasing trust in the scientific process and research outcomes.

1-2 & 1-3, New technologies and emerging modes of science

Ensuring a Scientific Foundation. New technologies such as artificial intelligence (AI) underscore both the need for and the complexity of ensuring scientific integrity. The NSTC's statement that AI presents "new challenges to scientific integrity, including the potential for bias when data used to train algorithms are not representative of the underlying phenomenon"[16] is true. It is also true, however, that sizable portions of the policy advocacy and public discussion of AI bias and its impact is driven by fantastical depictions and dire predictions of dystopian futures[17] rather than detailed, technically accurate analyses on what could occur. This issue also permeates citizen science and related policy-focused efforts. For example, most of the comments

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[10] Delizonna (2017).

[11] J. Adams. Collaborations: The Fourth Age of Research. 2013. Nature, https://www.nature.com/articles/497557a. Last accessed March 3, 2022.

[12] Protecting the Integrity of Government Science. 2022. National Science and Technology Council, https://www.whitehouse.gov/wp-content/uploads/2022/01/01-22-Protecting_the_Integrity_of_Government_Science.pdf.

[13] Ibid.

[14] Swartz, et al. (2019).

[15] Response of the MITRE Corporation to GSA's RFI on the Federal Workforce. 2022. MITRE, https://www.mitre.org/sites/default/files/publications/pr-21-01760-13-response-mitre-corporation-gsa-rfi-federal-workforce.pdf.

[16] National Science and Technology Council (2022).

[17] MITRE Response to OSTP's RFI Supporting the National Artificial Intelligence Research and Development Strategic Plan. 2022. MITRE, https://www.mitre.org/sites/default/files/publications/pr-21-01760-16-mitre-response-ostp-rfi-national-artificial-intelligence-research-and-development-strategic-plan.pdf.

made during OSTP's recent "listening sessions" on biometric technologies, which serves as a formal input into its policy development process, lacked scientific integrity to a stunning degree.

Therefore, a fundamental precept for scientific integrity policies for specific S&T matters is that they must be grounded in the science or technology itself rather than viewed solely through other lenses. There are multiple examples of policy analyses and recommendations crafted to meet important and appropriate objectives, such as ensuring privacy or equity, that failed basic scientific integrity principles due to starting from an inaccurate S&T basis. Viewing technologies through other lenses is important, but needs to be a parallel or collaborative effort rather than providing the sole vantage point. (A prior NSTC document provides an example of viewing issues through both technical and non-technical perspectives.[18]) A scientifically accurate foundation is therefore critical for ensuring subsequent policy analyses, analyses of alternatives, and operational procedures meet scientific integrity objectives.

Context Matters. The original context of scientific papers should matter significantly but is often ignored in advocacy-driven analyses that instead focus predominantly on the stated result, often claiming the result to be a "gold standard" if it supports their argument or that it "ignored the science" if it doesn't. The relevance of scientific papers and related analyses within policy deliberations will always have limits. These limits need to be determined and clearly discussed, serving as boundaries for subsequent policy deliberations on which they are based. Relatedly, additional assumptions should be clearly marked as such, and any analyses based on them should be flagged and discussed in an appropriate context and within appropriate limits.

Focusing on an Appropriate Level. The best way to solve a problem is often to break the issue into smaller, solvable pieces. Focusing too broadly usually leads to missing fundamental differences and other nuances that are often critical aspects of issuing policies with scientific integrity. OSTP's RFI on Public and Private Sector Uses of Biometric Technologies[19] provides a recent example of focusing too broadly. It brought together three technologies into one overarching group for analysis, even though each had different backgrounds, different operational issues, and different policy considerations. Such an amalgamation can easily lead to scientifically inaccurate and problematic policy decisions.

1-4, Coordination with related policy domains

Federal Data Strategy. The intersection between data availability and scientific integrity is strong. Data is required for scientific analyses, which (as stated previously) need to be the foundation for scientific integrity policies. MITRE recommends that the Federal Data Strategy,[20] crafted as part of the President's Management Agenda, be inextricably linked with federal scientific integrity policies. The strategy's 10 principles (organized around ethical governance, conscious design, and a learning culture) strongly align with scientific integrity needs.

[18] The NSTC's 2006 document *Privacy & Biometrics: Building a Conceptual Foundation* explained biometrics to privacy professionals and privacy concepts to biometric professionals, and then provided a framework for applying privacy protections to biometric technologies that made sense to both groups. The document is available at https://www.hsdl.org/?view&did=463913.

[19] Notice of Request for Information (RFI) on Public and Private Sector Uses of Biometric Technologies. 2021. Office of Science and Technology Policy, https://www.federalregister.gov/documents/2021/10/08/2021-21975/notice-of-request-for-information-rfi-on-public-and-private-sector-uses-of-biometric-technologies. Last accessed March 14, 2022.

[20] Federal Data Strategy. 2021. Office of Management and Budget, https://strategy.data.gov/. Last accessed March 28, 2022.

Open Science. There have been many calls over the years for *open science* principles (with a recent legislative example occurring just a few weeks ago[21]) that would make all results from federally sponsored research publicly available. There have been related calls to extend these principles to all research or to encourage the sharing of negative results, both of which would be valuable to other researchers for discovery, to enable researchers to avoid duplicating a research hypothesis that has already been explored and proved negative,[22] and to further equity, diversity, and inclusion in science.[23] The impacts of expanding open science concepts on scientific integrity objectives need to be analyzed, because although such openness better drives scientific advancement, it can also provide fodder for mis- or disinformation. Finding a way to enable the former while proactively overcoming the latter will be paramount.

Peer Review, Replication, and Retractions. Peer review has been a bedrock aspect of S&T advancement for decades; however, worrisome cracks are creating issues in both scientific advancement and scientific integrity. The "publish or perish" aphorism remains strong, particularly in academia, whose research is heavily sponsored by the federal government. Competition and associated urgency to be first, among both researchers and publishers, is leading to diminished quality and subsequently trust in peer-reviewed papers, as evidenced by the "replication crisis" and the seemingly growing numbers of formal retractions. The "peer-reviewed" label does not automatically convey that a paper's findings are completely accurate or trusted; blindly treating them as such can lead to policy decisions that lack scientific integrity.

While peer review helps to maintain high standards for published research, there are inconsistencies in how journal publishers train reviewers and manage the peer review process (e.g., open review, single-blind review, or double-blind review). Compounding these inconsistences are the various incentives for why scientific experts volunteer to conduct peer reviews, such as a perceived academic duty to perform reviews, building personal contacts with editors, keeping up to date with the latest developments in a field, advancing their own research, building associations with prestigious journals, becoming aware of the latest research before their peers, or for career development.[24] Inconsistent processes and personal incentives could lead to bias in peer reviews, such as content-based bias, confirmation bias, bias due to conservatism, bias against interdisciplinary research, publication bias, and the bias of conflicts of interest.[25] Consequently, peer review would benefit from various changes and improvements, including appropriate training of reviewers to provide reviews to maintain the quality and integrity of research without bias.

MITRE recommends a study, perhaps via the National Academies, that investigates all these matters systemically so that S&T community creates improved models for the future.

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[21] Wyden, Markey Urge OSTP to Establish a National Cross-Government Public-Access Policy for Federally Funded Research. 2022. Senator Ron Wyden, https://www.wyden.senate.gov/news/press-releases/wyden-markey-urge-ostp-to-establish-a-national-cross-government-public-access-policy-for-federally-funded-research. Last accessed March 8, 2022.

[22] L. van Hilten. Why It's Time to Publish Research "Failures". 2015. Elsevier Connect, https://www.elsevier.com/connect/scientists-we-want-your-negative-results-too. Last accessed March 16, 2022.

[23] H. Santoro. Addressing Equity Gaps in Open Science. 2021. American Psychological Association, https://www.apa.org/monitor/2021/09/news-equity-gaps. Last accessed March 28, 2022.

[24] J. Kelly, et al. Peer Review in Scientific Publications: Benefits, Critiques, & a Survival Guide. 2014. The Journal of the International Federation of Clinical Chemistry and Laboratory Medicine, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4975196/. Last accessed March 8, 2022.

[25] L. Manchikanti, et al. Medical Journal Peer Review: Process and Bias. 2015. Pain Physician, https://pubmed.ncbi.nlm.nih.gov/25675064/. Last accessed March 8, 2022.

Improper Foreign Government Influence. In 2020, MITRE convened experts in grants management, fundamental research execution, data analytics, intelligence analysis, business processes, systems analysis, and human and organizational systems to understand the challenges of scientific integrity, based on risks of improper government influence. In partnership with OSTP and federal R&D agencies (NIH, NSF, DOD, DOE), MITRE evaluated risks to improper foreign government influence in federally funded R&D and identified gaps and challenges to mitigate such risks. While tactics and techniques to impair the scientific integrity of federally funded R&D will never remain static or fully known, there are approaches to mitigate these risks. From its study, MITRE found:

(1) There are opportunities to further refine the existing federal grants management risk framework, developed by the federal grants management community with support from MITRE, to include risks to scientific integrity.

(2) There is a need to synthesize and analyze data related to federal grants to improve decision-making in the awarding process and subsequent post-award oversight and management of R&D grants. This will provide insights into risks to federal R&D grants related to scientific integrity. Models that currently exist for data sharing, integration, and analysis exist across the federal government can be explored in support of developing an approach for the federal grants community.[26]

2. Information is requested on the criteria that should be used to evaluate scientific integrity policies: Content, implementation, outcomes, and impacts in Federal agencies and other components of the Executive Branch. Consider methods and metrics for evaluating elements such as, but not limited to: Policy provisions, practices, capacity, and actions so that determinations can be made on their efficacy to achieve desired outcomes and impacts.

To answer this question, MITRE first queried its employees with prior experience in federal Inspector General offices (OIGs) or the Government Accountability Office (GAO) for a baseline, and then augmented that information with scientific integrity-specific concepts.

Content Development

- Overall scientific integrity policies:
  - Do the policies comport with the laws and presidential orders under which they were established?
  - Do the policies establish requirements and outcomes that will further the achievement of the letter and intentions of the laws (e.g., from committee reports) and presidential orders (e.g., from Executive Orders or White House blogs)?

[26] Two models for information sharing, integration, and analysis include those supported by the FAA and the IRS. The FAA's Aviation Safety Information Analysis and Sharing System enables users to perform integrated queries across multiple databases, search an extensive warehouse of safety data, and display pertinent elements in an array of useful formats. For more information, *see* https://www.asias.faa.gov/apex/f?p=100:1. The IRS's Identity Theft Tax Refund Fraud Information Sharing and Analysis Center enables the sharing of vital information used for detecting and preventing sophisticated fraud schemes ensuring our nation's taxpayers and the revenue system are protected from the disruptive behavior of fraudsters. For more information, *see* https://www.irs.gov/pub/newsroom/2021-isac-annual-report.pdf.

- Issue- or topic-specific policies:
    - Are the policies objectively based on the consensus of the best available science on a specific topic (instead of a small group of influential voices that may not represent the entirety of the community)?
    - Is the policy based on an accurate understanding and assessment of the S&T matter and demonstratable anticipated impacts from its application?
    - Is the policy consistent with the policies of other agencies that deal with this S&T topic?

<u>Implementation</u>

- Do the processes, procedures, organizational structures, and the like developed to implement the policies conform to the policies? Do they adequately provide for achieving the intent of the policies, along with policy-related goals, objectives, outcomes?
- Does the organization implement the processes, procedures, structures, and so on as defined?
- Are adequate internal controls incorporated into the processes and procedures to ensure the achievement of the policy objectives, compliance with relevant laws and presidential orders, safeguarding of assets (e.g., funds budgeted to implement the policy), and so on?
- Are the policies communicated to each stakeholder (e.g., agency management, S&T staff, external partners, the public and press) in a manner that is clear and effective for each?
- Are ramifications for not meeting the policies clearly described, and is the process for reaching that determination prescribed?
- For issue- or topic-specific policies, is there a mechanism in place to regularly receive dissenting views, updates of S&T capabilities, or other feedback so that the policies can be improved over time?
- Do the processes for measuring implementation follow best practices for reporting the status, gaps in implementation, root causes for these gaps, and a path forward to address the gaps/root causes?

<u>Outcomes</u>

- Are the desired outcomes SMART—Specific, Measurable, Achievable (or Attainable), Relevant (or Realistic), and Time-bound?
- Do the outcomes demonstrate the achievement of the letter and intent of the laws and presidential orders under which they were established?
- Can the outcomes' achievement be objectively measured/assessed?
    - For example, consider data – types, sources (are they authoritative?), quality, availability; does the data adequately support the measurements needed?

<u>Impact</u>

- Do the policies create any disconnects within or among agencies (e.g., does one policy contradict another existing policy either in design or in implementation)?

- Do the policies require funding to implement, but none is provided (i.e., unfunded mandates)?
    - If so, what impact does this have on the agency or contractor (e.g., is it required to move, within legal limits, funding from one area to another to implement the new policy, and what are the impacts of that move)?
- Is there a process in place to assess return on investment and the continuing need for the policy?

3. Information is requested on how to ensure that scientific integrity evaluation findings, and other findings that evolve over time, such as findings on the emergent issues identified above, lead to iterative improvement of Federal scientific integrity policy and practices. Consider information covering, but not limited to: Types and frequency of evaluation of agency scientific integrity policies and practices; steps that OSTP, Federal agencies, and other components of the Executive Branch should take to ensure regular comprehensive evaluation and continuous improvement of scientific integrity policies and practices; and other mechanisms or process elements that should be included in the framework to ensure effective iterative improvement of Federal scientific integrity policy and practices.

This question also very much aligns with issues regularly considered by OIGs and GAO: when concerns are identified, how do we best make sure that they are timely and effectively corrected or addressed? Below are the steps commonly used by those entities:

- Make recommendations to address, ideally, the root cause of the finding.
- Ask the audited entity to provide a written response with *corrective actions*: what will the entity do, and when, to resolve the root cause and correct the finding?
- Evaluate the response to ensure that, in the view of the OIG, the corrective actions will in fact resolve the finding.
- Track the status of the implementation of the corrective actions until complete.
- Report on the status of open corrective actions in Semiannual Reports to Congress.
- Possibly perform follow-up audit work, either as part of the scope of a subsequent audit in that same program or as a specific follow-up audit.

An individual agency's program management can adopt this same general methodology to help ensure that findings are resolved. Resolving them is, after all, management's responsibility.

From a government-wide perspective, OSTP could maintain a repository of significant findings (e.g., findings pertaining to scientific integrity policies and practices that cut across multiple agencies), related corrective actions, periodic updates on the status of addressing the corrective actions, and their ultimate resolution. OSTP could monitor and address with agencies indications that corrective actions were not being timely implemented or were not resolving the findings. This could drive an annual report that identifies outcomes and impacts as well as near-term (6-12 months) and longer-term (1-3 years) required actions.

OSTP should also consider actions that create a federal community of scientific integrity members. This community could meet regularly to enable members to present specific issues they encountered and share how they were addressed (and how well it worked). Doing so would also create useful relationships that each member can rely on for guidance when new issues arise.

To support longevity across administrations, it may be better for this community to be self-managed (members participate because they see the value) rather than as a formal OSTP or NSTC activity (members participate because they must). The community could still be launched by OSTP, or by a federal agency or FFRDC.

4. Information is requested on how to ensure the long-term viability and implementation of Federal scientific integrity policies, practices, and culture through future Administrations. Consider information on, but not limited to: Ways to ensure Federal scientific integrity is robust through changes in government leadership, funding, and cultural shifts; how to institutionalize policies and practices that ensure the integrity of science, build and sustain a culture of scientific integrity, and encourage transparency; and how to provide accountability, such as through procedures to identify, address, and provide appropriate and meaningful consequences for instances when scientific integrity policies have been violated.

While there is no surefire (non-statutory) approach to ensuring the longevity of scientific integrity as a priority into future administrations, attention on the following collection of matters would increase its chances significantly.

Widely Embraced. The most effective approach to ensure that the new scientific integrity policies, practices, and culture extend into the future is for the federal S&T community to believe that their success is dependent on following them. This is very similar to a fundamental guiding principle of interagency S&T leadership: interagency activities best succeed when its members "view the group's success as so intertwined with their own that they are willing to substantially invest time and energy into the group to ensure its success."[27] Members of one former NSTC Subcommittee, for example, still meet throughout the year, provide mutual mentoring, and host an annual conference—more than 10 years after the Subcommittee formally expired—because its members believe that doing so is critical for their agency's success. MITRE recommends that OSTP take actions now that lead federal scientists to recognize the criticality of scientific integrity to their own success. When that realization is formed, and continually reinforced, individual members will take it upon themselves to ensure its continuation.

Community Driven. In the modern hyper-partisan era, it is difficult for any administration's signature projects to be embraced and continued by its successors—even within the same political party. Initiatives too closely aligned to an administration falter; those viewed as both important and community driven continue even if they aren't fully embraced by succeeding administrations. This realization is difficult for currently serving appointees to embrace, because they're under pressure to promote the administration they're serving and their personal desires to establish a legacy during their short tenures. But these must be overcome for their efforts to succeed over the long term. Over the past year, scientific integrity has very much been promoted as a signature Biden administration initiative. While beneficial in the short term, this will be detrimental in the long term. This effort should instead be refocused and promoted as community-wide efforts supported by the administration. This alternative approach will greatly enhance the ability of this effort to continue beyond the Biden administration.

[27] D. Blackburn. Interagency S&T Leadership. 2016. MITRE, https://www.mitre.org/sites/default/files/publications/pr-16-0916-interagency-s-and-t-leadership.pdf.

Apolitical and Fallible Nature of S&T. S&T is inherently apolitical.[28] S&T is also not automatically infallible.[29] When S&T is treated as a political talking point (or otherwise leveraged to promote political objectives), when the term *science* is inaccurately used as a synonym for *indisputable fact*, or when scientists' conflicts of interest aren't properly handled—all of which have occurred over the past few years—the stature of the S&T community and the public's trust in science is degraded. These acts simultaneously justify the need for scientific integrity principles while also making it more difficult for the S&T community to develop and implement them on its own. For the current administration's (i.e., the community's) scientific integrity efforts to flourish in the future, its current scientific integrity thus needs to improve, and S&T needs to be disentangled from partisan politics.

OSTP Schedule A. Within OSTP's statutory allotment of career staff is an (exceptionally small) number of Schedule A appointees that can serve five-year terms. These non-political appointees can be strategically leveraged across administration timelines to help ensure continuity of efforts. For example, the prior Bush administration appointed MITRE's Duane Blackburn to one of these positions to ensure critical continuity of homeland and national security matters into the succeeding Obama administration. The Biden administration could similarly leverage these positions on this topic if it so chooses.

[28] Response of the MITRE Corporation to the OSTP RFI to Improve Federal Scientific Integrity Policies. 2021. MITRE, https://www.mitre.org/sites/default/files/publications/pr-21-01760-01-response-mitre-ostp-rfi-improve-federal-scientific-integrity-policies.pdf.

[29] D. Blackburn. When and How Should We "Trust the Science"?. 2021. MITRE, https://www.mitre.org/sites/default/files/publications/pr-21-1187-when-and-how-should-we-trust-the-science_0.pdf.