ARTICLE

PROTECTING FEDERALLY-FUNDED RESEARCH AND DEVELOPMENT: A PRIMER ON NATIONAL SECURITY DECISION DIRECTIVE 189 FOR LEGAL PRACTITIONERS

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ABSTRACT: Although there is widespread agreement among U.S. experts that the United States must protect its technological advantage, there is disagreement about how best to do so. The related debate reveals tension between maintaining an unrestricted federally-funded research and development enterprise, on one hand, and countering foreign governments seeking to exploit it, on the other. Although lawyers have engaged with this debate in academic scholarship and in strategic ways like influencing national-level law and policy, legal practitioners have often been absent at the operational level. By way of facilitating such engagement, this Article provides a primer on National Security Decision Directive 189, an executive order issued in 1985 that established national policy favoring openness with respect to federally-funded fundamental research. The Article also considers the legal force the order continues to hold given recent legislative and executive action designed to strengthen the federally-funded research and development enterprise against foreign threats.

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The capacity of the United States to protect its scientific and technological (S&T) advantage is vital not only as a matter of maintaining U.S. economic competitiveness, but also as a matter of ensuring U.S. national security. From an economic standpoint, experts estimate that theft by foreign adversaries of research, intellectual property, and trade secrets annually costs the U.S. economy up to $600 billion.[1] With respect to national security, the U.S. military's

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1. FEDERAL BUREAU OF INVESTIGATION, EXECUTIVE SUMMARY—CHINA: THE RISK TO CORPORATE AMERICA 1 (2019); *see also* United States v. Xu, No. 1:18-CR-043, 2022 WL 16715663, at *9 (S.D. Ohio Nov. 5, 2022) (defendant, a Chinese intelligence officer, convicted of

ability to successfully achieve technical superiority tomorrow depends on innovation today, including in areas like artificial intelligence, synthetic biology, microelectronics, quantum computing, and robotics.[2]

Yet, while there is widespread agreement among U.S. experts that the United States must protect its S&T advantage, a spirited debate is currently underway between intelligence professionals and members of the scientific community about the measures necessary to do so. At the extremes, on one side, members of the scientific community (rightly) highlight that U.S. scientific innovation depends on openness and transparency, as well as the ability of the United States to attract and retain highly qualified foreign scholars.[3] On the other side, intelligence professionals (rightly) emphasize that some foreign governments—most notably the People's Republic of China (PRC)—do not abide by widely accepted norms related to scientific research, and instead exploit for their own advantage the very features of openness that make the U.S. research enterprise successful.[4]

Although lawyers have engaged with this debate in academic scholarship and in strategic ways such as influencing national-level law and policy, legal practitioners have often been absent at the operational level. Consequently, legal practitioners appear to be missing opportunities to aid members of the intelligence and scientific communities as they navigate an ever-increasing body of law and policy regulating federally-funded S&T research, instead engaging only when their clients affirmatively bring issues to them. As a result, national security and research and development (R&D) professionals often are left wondering what to make of what they perceive as a morass of conflicting law and policy.

Lawyers know well the value they offer to their clients—they explain laws and policies governing their clients' equities and correct related misunderstandings; they resolve apparent tension in, and between, various legal and regulatory provisions; they identify risks and ensure compliance; and they propose reforms aimed at advancing their clients' interests. Each of these competencies holds substantial promise for addressing the challenges surrounding S&T protection, thereby suggesting a need for greater engagement by legal practitioners.

By way of facilitating such engagement, this Article provides a primer on a narrow, but foundational, aspect of the technology protection debate. Recently, experts in the scientific and intelligence communities have been at odds over their respective perspectives about the continuing viability of National Se-

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economic espionage of U.S. technology valued at $50 million); United States v. You, No. 2:19-CR-14, 2022 WL 1397771, at *5 (E.D. Tenn. May 3, 2022) (defendant, an applicant to a Chinese government talent program, convicted of theft of trade secrets valued at over $121 million). Foreign talent programs are discussed further, below. *See infra* notes 121–123 and accompanying text.

2. *See* ARMY FUTURES COMMAND, FUTURE OPERATIONAL ENVIRONMENT: FORGING THE FUTURE IN AN UNCERTAIN WORLD 2035–2050, at 2 (2020).

3. *See, e.g.*, NAT'L ACADS. OF SCIS., ENG'G, & MED., SCIENCE AND SECURITY IN A POST 9/11 WORLD: A REPORT BASED ON REGIONAL DISCUSSIONS BETWEEN THE SCIENCE AND SECURITY COMMUNITIES 3 (2007) [hereinafter 9/11 REPORT].

4. *See, e.g.*, DIR. OF NAT'L INTEL., WORLDWIDE THREAT ASSESSMENT OF THE US INTELLIGENCE COMMUNITY 14 (Jan. 29, 2019) [hereinafter WORLDWIDE THREAT ASSESSMENT].

curity Decision Directive (NSDD) 189, a 1985 directive issued by President Ronald Reagan that established a national policy favoring openness with respect to federally-funded fundamental research.[5] The wisdom of that position is currently being challenged for numerous reasons, including the revolutionary pace at which innovation now occurs;[6] the increasing conflation between civil and military uses of technology;[7] and the rising threat to the United States posed by the PRC Government[8]—a threat that has prompted a flurry of recent executive branch and legislative action aimed at protecting federally-funded research from malign foreign influence.[9] Given these developments, and particularly in light of arguably conflicting executive orders and laws that have arisen since President Reagan issued NSDD-189, some experts in the scientific community have suggested that the thrust of NSDD-189 has been eviscerated and, therefore, requires forceful reaffirmation.[10] On the other hand, some intelligence experts assert that the policy NSDD-189 embodies is too permissive given current threats and, thus, should be tempered in the interest of protecting U.S. technology.[11] But the discussion between these two communities about NSDD-189's continuing viability has neglected a profoundly important question: What does *the law* say?

This Article addresses that gap, with the aim of providing legal practitioners with knowledge they can leverage to contribute to the technology protection debate. To do so, the Article proceeds as follows: In Part I, the Article explores the historical and legal context that frames these issues. More particularly, it surveys the milieu from which NSDD-189 emerged; discusses what the directive says and, as importantly, what it does not say; and surveys various subsequent presidential and congressional actions that, at least to some degree, occupy the same space as NSDD-189. In Part II, the Article considers what force

5. National Security Decision Directive 189: National Policy on the Transfer of Scientific, Technical and Engineering Information (Sept. 21, 1985) [hereinafter NSDD-189], https://irp.fas.org/offdocs/nsdd/nsdd-189.pdf [https://perma.cc/7C7A-F2GA]. It is worth highlighting that this Article focuses almost exclusively on federally-funded fundamental research. Thus, while there are interesting legal issues that arise with respect to other academic research, including, for instance, questions about when export control regimes constitute prior restraints under the First Amendment, issues such as those are beyond the scope of this Article.

6. *See, e.g.*, NAT'L ACADS. OF SCIS., ENG'G, & MED., PROTECTING U.S. TECHNOLOGICAL ADVANTAGE 55 (2022) [hereinafter NATIONAL ACADEMIES].

7. *See, e.g.*, Meia Nouwens & Helena Legarda, *China's Pursuit of Advanced Dual-Use Technologies*, INT'L INST. FOR STRATEGIC STUD. (Dec. 18, 2018), https://www.iiss.org/blogs/research-paper/2018/12/emerging-technology-dominance [https://perma.cc/EYF8-WR39] (noting that "China is investing heavily in its pursuit and integration of emerging dual-use technologies, hoping they will help the People's Liberation Army (PLA) to surpass conventional military capabilities to achieve battlefield dominance across domains") (footnote omitted).

8. *See, e.g.*, DIR. OF NAT'L INTEL., ANNUAL THREAT ASSESSMENT OF THE US INTELLIGENCE COMMUNITY 14 (Apr. 9, 2021) ("China will remain the top threat to US technological competitiveness as the [Chinese Communist Party] targets key technology sectors and proprietary commercial and military technology from US and allied companies and research institutions associated with defense, energy, finance, and other sectors.").

9. *See infra* Sections I.F, I.G.

10. *See infra* Section I.H.

11. *See infra* Sections I.D–G.

NSDD-189 continues to hold, a central subject at the essence of today's technology debate. In doing so, Part II examines the questions of what legal force executive actions generally hold; what interpretive theory to apply to them, particularly when they appear to conflict with each other and with related legislative enactments; and what the answers to those questions yield in terms of ascertaining the continuing viability of NSDD-189. Finally, some concluding remarks are provided.

I. HISTORICAL AND LEGAL CONTEXT

Given the recent flood of attention on the subject, one could be forgiven for mistakenly believing the issue of technology protection is novel.[12] In fact, U.S. law and policymakers have long recognized the need, from a national security perspective, to ensure U.S. S&T superiority. As described below, over the years this has led to a surge of federal legislation, executive actions, and academic studies related to technology protection.

A. Historical Background

Efforts by the U.S. government to protect S&T date back over a century. As early as 1917, the United States enacted the Espionage Act, which prohibited obtaining information, recording pictures, or copying descriptions of national defense information with intent to injure the United States or advantage a foreign nation.[13] Subsequent efforts to prevent the transfer of U.S. technology followed, including passage of the Export Control Act in 1940;[14] creation of a new security classification system by the Office of War Information in 1942;[15] and enactment of the Atomic Energy Act, which established categories of "restricted data," in 1946.[16]

Following World War II, the looming threat the Cold War would pose began to crystalize and evidence emerged that the Soviet Union was exploiting the United States "to strengthen [its] military industrial base through the legal and

12. *See, e.g.*, Chris Strohm, *US 'Strike Force' to Thwart Theft of Use of Disruptive Technology*, BLOOMBERG, https://www.bloomberg.com/news/articles/2023-02-16/us-strike-force-to-thwart-theft-or-use-of-disruptive-technology?leadSource=uverify%20wall [https://perma.cc/6CFB-SR8A] (Feb. 16, 2023, 7:58 AM) (describing formation of new "'strike force' to combat adversaries trying to steal advanced technology, hack for financial gain or use new tools to collect intelligence"); Peter F. Schaefer, *The Chinese Balloon Incident Exposes an Inconvenient Truth*, WASH. POST (Feb. 13, 2023, 4:09 PM), https://www.washingtonpost.com/opinions/2023/02/13/china-stealing-us-secrets-decades/ [https://perma.cc/QY2E-KNE7] ("For decades, China's intelligence services have been stealing U.S. technology and intellectual property on a scale that, if translated only to dollars, would be the greatest transfer of wealth in history."); David E. Sanger, *Balloon Incident Reveals More Than Spying as Competition With China Intensifies*, N.Y. TIMES, https://www.nytimes.com/2023/02/05/us/politics/balloon-china-spying-united-states.html [https://perma.cc/FN5B-K6PR] (Feb, 13, 2023) (surveying recent thefts and hacks committed by China).

13. 18 U.S.C. § 792–93.

14. 50 U.S.C. § 714 (*repealed by* ch. 1041, § 53, 70A Stat. 641 (1956)).

15. *See* U.S. DEP'T OF STATE, HISTORY OF THE BUREAU OF DIPLOMATIC SECURITY OF THE UNITED STATES DEPARTMENT OF STATE 56 (2011).

16. Atomic Energy Act of 1946, Pub. L. No. 79–585 (current version at 42 U.S.C. §§ 2011–2297).

illegal acquisition of Western technology."[17] The U.S. government's response yielded an array of executive and legislative actions. For instance, Congress passed the National Security Act in 1947, which, among other things, established the National Security Council and restructured the U.S. military and intelligence apparatus.[18] In 1951, President Truman issued Executive Order (EO) 10290, thereby extending the U.S. security classification system beyond military agencies.[19] Three years later, Congress amended the Atomic Energy Act to allow greater civil participation in the U.S. nuclear research enterprise.[20]

This trend was part of a larger effort after World War II to provide federal funding to U.S. universities conducting basic research.[21] The move was deliberate and viewed as a response to success universities had achieved in advancing national security during World War II.[22] However, as civil participation in the U.S. defense enterprise increased, foreign adversaries likewise "shifted from an exclusively military focus to an all-inclusive one, targeting the civilian sector and universities as well."[23] Against this backdrop, in 1976, the U.S. Department of Defense's (DoD) Director of Defense Research and Engineering requested that the Defense Science Board (DSB) prepare a report on the implications of transferred technology for U.S. defense.[24] The DSB's subsequently issued report—known as the "Bucy report" after Fred Bucy, the chairperson of the related task force—"represented a radical departure from contemporary export control concepts which focused primarily on material control."[25] That is, instead of exclusively concentrating on the harms caused by transfer of the *output* of U.S. technological innovation, the Bucy report "placed the focus on the exporting of know-how and certain keystone technologies."[26] The report therefore

17. MARIO DANIELS & JOHN KRIGE, KNOWLEDGE REGULATION AND NATIONAL SECURITY IN POSTWAR AMERICA 135 (2022).

18. National Security Act of 1947, Pub. L. No. 80–253, 61 Stat. 495.

19. *See* Exec. Order No. 10,290, 16 Fed. Reg. 9,795 (Sept. 27, 1951).

20. Atomic Energy Act of 1954, Pub. L. No. 83-703, 68 Stat. 919.

21. *See, e.g.*, NAT'L ACAD. OF SCIS., SCIENTIFIC COMMUNICATION AND NATIONAL SECURITY 22 (1982) [hereinafter CORSON REPORT].

22. *Id.*; *see also* STUART W. LESLIE, THE COLD WAR AND AMERICAN SCIENCE: THE MILITARY-INDUSTRIAL-ACADEMIC COMPLEX AT MIT AND STANFORD 1 (1993) (explaining that "the Cold War redefined American science," and that "[i]n the decade following the Second World War, the Department of Defense (DOD) became the biggest single patron of American science," a move "[d]riven by the politics of national security and by the Pentagon's belief in the competitive advantages of high technology").

23. Sandra N. Milevski, *Federal Policy-Making and National Security Controls on Information*, 39 LIBRARY TRENDS 132, 134–35 (1990).

24. DEFENSE SCIENCE BOARD TASK FORCE ON EXPORT OF U.S. TECHNOLOGY, AN ANALYSIS OF EXPORT CONTROL OF U.S. TECHNOLOGY—A DOD PERSPECTIVE, at ii (1976) [hereinafter BUCY REPORT]. The DSB, established in 1956, serves as an independent board providing advice and recommendations to DoD leadership "on science, technology, manufacturing, acquisition processes, and other matters of special interest to the DOD." *History of the DSB*, DEP'T DEF. RSCH. & ENG'G ENTER., https://dsb.cto.mil/history.htm [https://perma.cc/7T2A-UXSR].

25. Scott Jones, *Disrupting Export Controls: "Emerging and Foundational Technologies" and Next Generation Controls*, STRATEGIC TRADE REV., Winter/Spring 2020, at 31, 36.

26. Richard Perle, *The Eastward Technology Flow: A Plan of Common Action,* STRATEGIC REV., Spring 1984, at 24, 30.

called, among other things, for a comprehensive DoD study of the vectors by which technology was transferred abroad, including through training that foreign scholars were obtaining from "U.S. technical institutes and universities."[27]

Around the same time, geopolitical events such as the Soviet Union's invasion of Afghanistan were causing U.S.-Soviet relations to further deteriorate.[28] New trends also were emerging in the scientific enterprise that exacerbated challenges surrounding technology protection. Namely, because innovation in many fields was occurring at a revolutionary pace, "the distinction between basic and applied research was becoming less relevant. . . . [And] an increasing number of technologies were dual-use in character . . . [making it] difficult, if not impossible, to separate military applications from civilian ones."[29] The DoD thus began to look for new ways to control U.S. technology, including by categorizing certain areas of information as "sensitive."[30]

B. The Corson Report

Owing to these and other similar developments, conflict between the scientific and national security communities deepened, such that efforts to impose greater restrictions on technology transfer eventually were met with a "hostile response from the academic community."[31] In an effort to ameliorate the tension, in 1982, the DoD, in partnership with other organizations such as the National Science Foundation (NSF), asked the National Academy of Science "to examine the relation between scientific communication and national security in light of the growing concern that foreign nations are gaining military advantage from such research."[32] The resulting panel—chaired by Dale Corson, a physicist and President Emeritus of Cornell University—began its work with a recognition that remains salient today; that is, that the U.S. government and research community both would "lose much" if the nation were unable to "find a policy course that reflect[ed] legitimate concerns" of both the national security and scientific communities.[33] What emerged from the panel's work was a report titled *Scientific Communication and National Security*, informally known as the "Corson report."[34] To this day, the legal regime surrounding U.S. technology protection is grounded in recommendations made in the report.

To begin, the Corson report framed the issue by describing what had, by then, become two entrenched and seemingly irreconcilable positions. On one hand, the report explained that "openness has contributed to American military

27. BUCY REPORT, *supra* note 24, at 38–39.

28. CORSON REPORT, *supra* note 21, at 103.

29. *Id.* at 101–02.

30. Brooks A. Keel, *Protecting America's Secrets While Maintaining Academic Freedom*, 79 ACAD. MED. 333, 334 (2004).

31. DANIELS & KRIGE, *supra* note 17, at 166; CORSON REPORT, *supra* note 21, at v (explaining that "signs of distrust have appeared on all sides").

32. CORSON REPORT, *supra* note 21, at ix (footnotes omitted).

33. *Id.* at v.

34. *Id.*

and economic strength."[35] On the other, it acknowledged that "recent trends, including apparent increases in acquisition efforts by our adversaries, have raised serious concerns that openness may harm U.S. security by providing adversaries with militarily relevant technologies that can be directed against us."[36] The report then explored the increasing alarm national leaders were expressing about Soviet acquisition of U.S. S&T and sought to explain its causes.

Mirroring remarkably similar comments made today about China,[37] the Corson report cited one U.S. official who expressed that "the Soviets exploit[ed] scientific exchanges . . . in a highly orchestrated, centrally directed effort aimed at gathering the technical information required to enhance their military posture."[38] Another U.S. official stated that a network of Soviet intelligence operatives were "exploit[ing] the 'soft underbelly'" of U.S. society, including "our traditions of an open press and unrestricted access to knowledge," and "the desire of academia to jealously preserve its prerogatives as a community of scholars unencumbered by government regulations."[39] The report attributed rising U.S. concern to a perception that the U.S. technological advantage over the Soviets was diminishing.[40] It also observed that "the separation between military operations and scientific research [had] quickly narrowed,"[41] and "a steadily increasing share of these technologies [were] dual-use in nature," meaning that they had "both military and nonmilitary applications."[42]

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35. *Id.*

36. *Id.*

37. The Corson report also discussed China, interestingly opining that, at that time, it was "generally recognized that the capacity of the PRC to transfer such [industrial] technologies to the military sector [was] limited." *Id.* at 7.

38. *Id.* at 9 (quoting then Deputy Secretary of Defense Frank Carlucci).

39. *Id.* at 10 (quoting then Assistant Secretary of Commerce Lawrence J. Brady).

40. *Id.* at 10–11.

41. *Id.* at 11.

42. *Id.* (emphasis omitted). Even so, many experts believe the threat posed today by the PRC is unparalleled, even as compared to the former Soviet Union. *See, e.g.*, *The Chinese Communist Party's Threat to America: Hearing Before the H. Select Comm. on the Chinese Communist Party*, 118 Cong. 83–84 (2023) (statement of H.R. McMaster, former National Security Advisor of the United States) (explaining that added complexity, "especially the interconnectedness of China with the global economy," as well as "the scale of what [the PRC is] doing from an economic perspective and from an espionage perspective" makes the challenge "unprecedented"); *id*. at 84 (arguing that the United States "never gave the Soviet Union the kind of access that we give to Chinese Communist Party operatives . . . based on . . . [a] fundamentally flawed assumption that China, having been welcomed into the international order, would play by the rules"); Bradley A. Thayer & Lianchao Han, *Why Was the U.S. So Late to Recognize the China Threat*, REAL CLEAR DEFENSE (Apr. 30, 2020), https://www.realcleardefense.com/articles/2020/04/30/why_was_the_us_so_late_to_recognize_the_china_threat_115238.html [https://web.archive.org/web/20210307145304/https://www.realcleardefense.com/articles/2020/04/30/why_was_the_us_so_late_to_recognize_the_china_threat_115238.html] (explaining "[t]he PRC is more dangerous than the Soviet Union because it is unpredictable and more formidable," it "learned key lessons from the USSR's mistakes regarding competition with the United States," and "[i]t is an extremely adaptive adversary"); TARUN CHHABRA, THE CHINA CHALLENGE, DEMOCRACY, AND U.S. GRAND STRATEGY 1 (2019) ("Beijing's 'flexible' authoritarianism abroad, digital tools of surveillance and control, unique brand of authoritarian capitalism, and 'weaponization' of interdependence may in fact render China a more formidable threat to democracy and liberal values than the Soviet Union was during the Cold War.").

Nevertheless, while acknowledging that the Soviets had acquired a substantial amount of U.S. military technology, the Corson report concluded "that universities and open scientific communication have been the source of very little of this technology transfer."[43] This view was reflected in the report's three principal recommendations, which would have the effect of framing the future debate. First, the report recommended "that the vast majority of university research, whether basic or applied, should be subject to no limitations on access or communications."[44] Second, it urged that "[w]here specific information must perforce be kept secret, it should be classified strictly and guarded carefully."[45] Third, it suggested that additional restrictions might be appropriate in certain, limited "gray areas," such as barring researchers from designated countries from participating in federally-funded R&D, or requiring prepublication review of certain research manuscripts.[46] However, to fall within the gray area, the panel concluded that a technology would need to meet each of the following criteria:

- The technology is developing rapidly, and the time from basic science to application is short;
- The technology has identifiable direct military applications; or it is dual-use and involves process or production-related techniques;
- Transfer of the technology would give the U.S.S.R. a significant near-term military advantage; and
- The United States is the only source of information about the technology, or other friendly nations that could also be the source have control systems as secure as ours.[47]

While it represented an understandable effort to find compromise between the scientific and national security communities, this third category of R&D, which would come to be called "gray-area research," grew into "a major sticking point" in the DoD's efforts to establish related policy.[48] Not only was gray-area research causing friction between the DoD and university officials, it also became clear that there were divides within the Pentagon.[49] Work to try to define and identify gray-area research was proving too complicated, particularly when the benefits were unclear.[50] As a result, in May 1984, a senior DoD official testified before Congress that the DoD was abandoning "the gray-area concept" in favor of a binary "classification-nonclassification approach"—a move that stunned the scientific community.[51]

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43. CORSON REPORT, *supra* note 21, at 1.
44. *Id*. at 48 (emphasis omitted).
45. *Id.* (emphasis omitted).
46. *Id*. at 48–49.
47. *Id.* at 65.
48. John Walsh, *DoD Springs Surprise on Secrecy Rules*, 224 SCIENCE 1081, 1081 (1984).
49. *Id.* ("Recently there had been signs of a split in opinion within Pentagon ranks.").
50. *Id.*
51. *Id.*

C. National Security Decision Directive 189

This approach evolved into the policy ultimately embodied in NSDD-189, issued by President Reagan on September 21, 1985.[52] Just over a page in length, the significance of the directive is belied by its brevity. NSDD-189 begins by announcing that its purpose is to "establish[] national policy for controlling the flow of science, technology, and engineering information produced in federally-funded fundamental research at colleges, universities, and laboratories."[53] The directive then defines fundamental research by stating that

> "[f]undamental research" means basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reasons.[54]

In a background section, NSDD-189 underscores the significance of the national security threat posed by foreign acquisition of U.S. technology, while also acknowledging that U.S. leadership in S&T, which "is an essential element in our economic and physical security," depends on the open exchange of ideas.[55] Finally, NSDD-189 announces:

> It is the policy of this Administration that, to the maximum extent possible, the products of fundamental research remain unrestricted. It is also the policy of this Administration that, where the national security requires control, the mechanism for control of information generated during federally-funded fundamental research in science, technology and engineering at colleges, universities and laboratories is classification. . . . No restrictions may be placed upon the conduct or reporting of federally-funded fundamental research that has not received national security classification, except as provided in applicable U.S. Statutes.[56]

The enduring value experts see in NSDD-189 is reflected by the fact that, in the decades since its promulgation, studies examining fundamental research policy have repeatedly called on the U.S. government to formally and forcefully reaffirm the principles the directive embodies. As one study put it, "NSDD-189's application to fundamental research conducted in U.S. universities cannot be overemphasized."[57] Stated simply, by creating a binary regime under which federally-funded fundamental research must be either unrestricted or—in rare cases required for national security—classified, the directive established as national policy a default favoring openness.

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52. NSDD-189, *supra* note 5. For a discussion on the legal force of a presidential directive, see *infra* Sections II.A, II.B.

53. NSDD-189, *supra* note 5, at 1.

54. *Id.*

55. *Id.*

56. *Id.*

57. 9/11 REPORT, *supra* note 3, at 31.

In the years following issuance of NSDD-189, the U.S. government's commitment to the directive's principles manifested itself in numerous ways. For example, the Department of Commerce's Export Administration Regulations (EAR)[58] and the Department of State's International Traffic in Arms Regulations (ITAR)[59] each were revised to acknowledge that, under most circumstances, NSDD-189 "provides an exclusion for certain research activities at colleges and universities in the United States from the application of the export regulations."[60] Similarly, policies issued by federal agencies demonstrated a responsibility to openness by calling for prompt and wide dissemination of agency-funded research.[61]

Nevertheless, foreshadowing later trouble, the text of NSDD-189 also made certain concessions about the unknowable state of the future. It noted, for example, that the "government-university-industry partnership in research activities" on which it was focused was only then "emerging."[62] As such, it left open the possibility that "a more significant problem may well develop."[63] It also acknowledged that, even beyond classification, additional restrictions on federally-funded fundamental research might be "provided in applicable U.S. Statutes."[64] These caveats to the basic thrust of NSDD-189 went largely unrecognized and, as discussed below, have been a source of subsequent friction.

D. The Aftermath of National Security Decision Directive 189

While NSDD-189 was greeted with a warm reception, gradually, the research community began to voice concerns that the U.S. government was eroding the directive's permissive approach to unrestricted, federally-funded fundamental research.[65] Among other things, researchers undertook studies that eventually revealed that many awards for federally-funded research were only issued after a research institution agreed to provisions restricting the use of foreign nationals or publication of research results.[66] Complaints also arose about the proliferation of export control measures and the increasing use of controls

58. Wei Luo, *Research Guide to Export Control and WMD Non-Proliferation Law*, 35 INT'L J. LEGAL INFO. 447, 456 (2007) ("The EAR regulates not only the exports of dual-use goods, software, and technology from the U.S. but also the re-exports of U.S.-origin items from other countries, sales of foreign made products containing U.S.-origin components or derived from U.S.-origin technology, and disclosure of U.S.-origin technology to foreign nationals.").

59. *Id.* at 457 (ITAR "control[s] munitions and defense services exports.").

60. 9/11 REPORT, *supra* note 3, at 31.

61. DANA A. SHEA, CONG. RSCH. SERV., RL31695, BALANCING SCIENTIFIC PUBLICATION AND NATIONAL SECURITY CONCERNS: ISSUES FOR CONGRESS 8 (2004).

62. NSDD-189, *supra* note 5, at 1.

63. *Id.*

64. *Id.* at 2.

65. 9/11 REPORT, *supra* note 3, at 37.

66. *See, e.g.*, JULIE T. NORRIS, RESTRICTIONS ON RESEARCH AWARDS: TROUBLESOME CLAUSES, A REPORT OF THE AAU/COGR TASK FORCE (2004), https://www.aau.edu/sites/default/files/AAU%20Files/Key%20Issues/Science%20%26%20Security/Report_AAU-COGR_Restrictions-on-Research-Awards-Troublesome-Clauses_2004.pdf [https://perma.cc/P3SF-62H8].

on federally-funded R&D like the "sensitive but unclassified" (SBU) designation.[67] This led to calls for the U.S. government to reaffirm and abide by NSDD-189.[68]

For its part, the executive branch at least *voiced* an enduring commitment to the core aspects of NSDD-189. For example, while expressly highlighting that she was communicating "[o]n behalf of the President," in 2001, Assistant to the President for National Security Affairs Condoleezza Rice stated that "the policy on the transfer of scientific, technical, and engineering information set forth in NSDD-189 shall remain in effect, and we will ensure that this policy is followed."[69] Likewise, in 2010, then Undersecretary of Defense for Acquisition, Technology, and Logistics Ashton Carter issued a memorandum reaffirming that "the DoD will not restrict disclosure of the results of fundamental research . . . unless such research efforts are classified for reasons of national security or as otherwise required by applicable federal statutes, regulations, or executive orders."[70] Again, the memorandum explicitly referenced NSDD-189, stating that DoD grants, contracts, and negotiations must be "fully compliant with [NSDD-189]."[71]

Yet, at the same time, concern was rising about foreign adversaries exploiting the openness of the federally-funded R&D enterprise in ways that were harmful to the United States. The attacks of September 11, 2001, and the anthrax incidents that followed shortly thereafter created a "more tangible possibility of bioterrorism" and fueled renewed fears "regarding the performance and publication of dual-use research."[72] In an effort to quell those fears, in March 2002, Assistant to the President and Chief of Staff Andrew Card, Jr., released a memorandum for heads of executive branch departments and agencies reinforcing the obligation they had to "safeguard Government records regarding weapons of mass destruction . . . includ[ing] biological, radiological, and nuclear weapons."[73] The memorandum included directives widely viewed as opening the aperture of controls federal agencies could place on information, including more expansive use of the SBU designation.[74]

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67. *Id.* at 14.

68. *See, e.g.*, *id.*

69. Letter from Condoleezza Rice, Assistant to the President for Nat'l Sec. Affs., to Dr. Harold Brown, Co-Chairman of the Ctr. for Strategic & Int'l Studies (Nov. 1, 2001), https://sgp.fas.org/bush/cr110101.html [https://perma.cc/4LTX-3597].

70. Memorandum from Ashton B. Carter, Under Sec'y of Def. for Acquisition, Tech., and Logistics, to Secretaries of the Mil. Dep'ts 1 (May 24, 2010), https://www.acq.osd.mil/dpap/dars/pgi/docs/2012-D054%20Tab%20D%20OUSD%20(ATL)%20memorandum%20dated%20May%2024%202010.pdf [https://perma.cc/4PF9-RNJ6].

71. *Id.*

72. 9/11 REPORT, *supra* note 3, at 57.

73. Memorandum from Andrew Card, Jr., Assistant to the President & Chief of Staff, to Heads of Exec. Dep'ts & Agencies (Mar. 19, 2002), https://sgp.fas.org/bush/wh031902.html [https://perma.cc/9ZB7-P4TX].

74. *See* GENEVIEVE J. KNEZO, CONG. RSCH. SERV., RL 31845, "SENSITIVE BUT UNCLASSIFIED" AND OTHER FEDERAL SECURITY CONTROLS ON SCIENTIFIC AND TECHNICAL INFORMATION: HISTORY AND CURRENT CONTROVERSY (2003). To be sure, some in the scientific community acknowledged the "inconvenient truths" that jettisoning the Corson report's gray area

Congress likewise was legislating in the space. Of most relevance here was the passage of the Homeland Security Act in 2002, which created the Department of Homeland Security (DHS).[75] Likely in response to the contemporaneous debate that was raging about how to manage distribution of fundamental research, the Act stipulated that "[t]o the greatest extent practicable, research conducted or supported by [DHS] shall be unclassified."[76] However, the Act also not only *supported* use of the SBU designation, but in fact *required* the President to "prescribe and implement procedures under which relevant Federal agencies . . . identify and safeguard homeland security information that is sensitive but unclassified."[77]

Although this suggested possible uniformity, at least, in the executive branch's treatment of unclassified information that was nevertheless sensitive, in fact, numerous controls emerged to protect such information.[78] As a Congressional Research Service report stated, "Included among these [were] widely used markings such as 'Sensitive But Unclassified,' 'Limited Official Use,' 'Official Use Only,' and 'For Official Use Only.'"[79] This led to significant confusion and, beyond the inherent policy objections researchers had, concern arose over possible inadvertent noncompliance. A study by the Center for Strategic and International Studies (CSIS) noted, for example, "[s]cientists feel vulnerable to violating rules on categories that are ill defined."[80] While ostensibly limited in scope to a review of the Department of Energy (DOE), CSIS's conclusions that the DOE's SBU "definition is so broad as to be unusable," and that "[s]ensitive unclassified information is causing acute problems at DOE," might as well have been lodged against the executive branch, writ large.[81]

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had been a mistake and that the community was "inadequately served by just 2 options, that is, unrestricted dissemination and classification." Daniel A. Relman, *"Inconvenient Truths" in the Pursuit of Scientific Knowledge and Public Health*, J. INFECTIOUS DISEASES, Jan. 15, 2014, at 170, 171. More tangibly, the journal editors and authors group of *Science* magazine issued a statement expressing "that the prospect of bioterrorism ha[d] raised legitimate concerns about the potential abuse of published information." *Journal Editors and Authors Group, Statement on Scientific Publication and Security*, SCIENCE, Feb. 21, 2003, at 1149, 1149. The group therefore urged editors to carefully consider whether papers might require modification or might need to be withheld altogether. *Id.*

75. Homeland Security Act of 2002, Pub. Law No. 107-296, 116 Stat. 2135 (codified at 6 U.S.C. § 101).

76. *Id.* § 306.

77. *Id.* § 892. Of note, this almost certainly put the Bush Administration's authority to designate national security information as SBU at its zenith. *Cf.* Youngstown Sheet & Tube Co. v. Sawyer, 343 U.S. 579, 635–36 (1952) (Jackson, J., concurring).

78. KNEZO, *supra* note 74, at 15.

79. *Id.* at 15–16.

80. CTR. FOR STRATEGIC & INT'L STUD., SCIENCE AND SECURITY IN THE 21ST CENTURY: A REPORT TO THE SECRETARY OF ENERGY ON THE DEPARTMENT OF ENERGY 55–56 (2002).

81. *Id.*

E. Executive Adoption of the Controlled Unclassified Information Designation

As a result, in 2008, President George W. Bush issued to the heads of executive branch departments and agencies a memorandum identifying the "Controlled Unclassified Information" (CUI) designation as "the single, categorical designation" for "unclassified information that does not meet the standards for" classification "but is (i) pertinent to the national interests of the United States or to the important interests outside the Federal Government, and (ii) under law or policy requires protection from unauthorized disclosure, special handling safeguards, or prescribed limits on exchange or dissemination."[82] The memorandum designated the National Archives and Records Administration (NARA) as the executive agent responsible for managing the "CUI Framework," and charged NARA with creating and maintaining a "CUI Registry."[83]

In essence, President Bush's 2008 memorandum codified establishment of the Corson report's gray area by acknowledging that some information required dissemination control even though it was unclassified.[84] Perhaps owing to the fact that the memorandum had been issued only to heads of executive branch departments and agencies, in 2010, President Barack Obama rescinded the memorandum and issued EO 13556, which again aimed to address the "confusing patchwork" of policies, procedures, and markings that had arisen to manage information not subject to classification under EO 13526 or the Atomic Energy Act but nevertheless still "require[] safeguarding or dissemination controls pursuant to and consistent with laws, regulations, and Government-wide policies."[85] EO 13556 reaffirmed the CUI program and NARA's designation as the executive agent responsible for managing it.[86]

EO 13556 also reinforced that "[t]he CUI categories and subcategories shall serve as exclusive designations for identifying unclassified information throughout the executive branch that requires safeguarding or dissemination

82. Memorandum from George W. Bush, President, to Heads of Exec. Dep'ts & Agencies 2 (May 7, 2008), https://www.archives.gov/files/cui/documents/2008-WH-memo-on-designation-and-sharing-of-cui.pdf [https://perma.cc/M9F4-XEUY].

83. *Id.*

84. Notably, even apart from its 2008 CUI memorandum, the Bush Administration faced significant criticism for its classification decisions, particularly following the attacks of September 11, 2001. *See, e.g.*, Ann Koppuzha, *Secrets and Security: Overclassification and Civil Liberty in Administrative National Security Decisions*, 80 ALB. L. REV. 501, 508 (2017) ("The volume of classified information has only skyrocketed under both the Bush and Obama Administrations."); Brian J. Gorman, *Biosecurity and Secrecy Policy: Problems, Theory, and a Call for Executive Action*, 2 I/S: J.L. & POL'Y FOR INFO. SOC'Y 53 (2006) ("Criticisms abound from the tightening of information that has taken place due to Bush's information policies."); John D. Podesta, *Shadow Creep: Government Secrecy Since 9/11*, 2002 U. ILL. J.L. TECH. & POL'Y 361, 370–72 (criticizing the Bush Administration for its secrecy and for "deeming everything under the sun a secret").

85. Exec. Order No. 13,556, 3 C.F.R. 267 (2011). EO 13526, cited in EO 13556, "prescribes a uniform system for classifying, safeguarding, and declassifying national security information, including information relating to defense against transnational terrorism." Exec. Order No. 13,526, 3 C.F.R. 298.

86. Exec. Order No. 13,556.

controls, pursuant to and consistent with applicable law, regulations, and Government-wide policies."[87] To effect the Order's mandate, among other things, the EO assigned NARA responsibility for "approv[ing] categories and subcategories of CUI and associated markings to be applied uniformly throughout the executive branch."[88] NARA subsequently did so, and the organization continues to maintain a robust CUI Registry.[89]

Significantly, in a 2019 report commissioned by the NSF to study fundamental research security, an elite, scientific advisory board supporting the DoD named JASON recognized that "there is no division or category within the CUI Registry directly concerned with the conduct of academic research, and this appears to be broadly consistent with the principles laid out in NSDD-189."[90] That said, there is no question that certain of the categories of information ultimately included in the CUI Registry clearly have application to fundamental research. For example, JASON stated that "two categories of export controls, namely, 'Export Controls' and 'Export Controlled Research,' come into play for novel technologies and software that could be considered dual use, or which might adversely affect U.S. national security or nonproliferation objectives."[91] Another category, titled "Controlled Technical Information" (CTI), has implications for DoD and National Aeronautics and Space Administration (NASA) research, insofar as CTI is defined as "technical information with military or space application that is subject to controls on the access, use, reproduction, modification, performance, display, release, disclosure, or dissemination."[92]

Notwithstanding JASON's acknowledgment that EO 13556 and its CUI regime were generally consistent with NSDD-189, the panel also observed that CUI categories "remain to be fully reconciled with NSDD-189."[93] Even more, JASON reported to the NSF that the CUI designation "is ill-suited to the pro-

87. *Id.*

88. *Id.*

89. *CUI Categories*, NAT'L ARCHIVES, https://www.archives.gov/cui/registry/category-list [https://perma.cc/6KWZ-QBFG].

90. JASON, FUNDAMENTAL RESEARCH SECURITY 16 (Dec. 6, 2019), https://www.nsf.gov/news/special_reports/jasonsecurity/JSR-19-2IFundamentalResearchSecurity_12062019FINAL.pdf [https://perma.cc/5J8H-LHZZ]. JASON "is an independent scientific advisory body that was established in 1960, . . . [which] consults with the U.S. government on matters of defense science and technology." Robert Levinson, *Pentagon's Advisory Group, JASON, Survives Another Competition*, BLOOMBERG GOVT. (Dec. 1, 2020), https://about.bgov.com/news/pentagons-advisory-group-jason-survives-another-competition [https://perma.cc/56GR-KHRM]; *see also* Ann Finkbeiner, *Jason—A Secretive Group of Cold War Science Advisers—Is Fighting to Survive in the 21st Century*, SCIENCE (June 27, 2019), https://www.science.org/content/article/jason-secretive-group-cold-war-science-advisers-fighting-survive-21st-century [https://perma.cc/2XTK-VFNM] (recounting JASON's history).

91. JASON, *supra* note 90, at 16.

92. *CUI Category: Controlled Technical Information*, NAT'L ARCHIVES, https://www.archives.gov/cui/registry/category-detail/controlled-technical-info.html [https://perma.cc/6GLK-HSDA]. Technical information, in turn, "means technical data or computer software, as those terms are defined in Defense Federal Acquisition Regulation Supplement clause 252.227-7013, 'Rights in Technical Data - Noncommercial Items' (48 CFR 252.227-7013)." *Id*.

93. JASON, *supra* note 90, at 16.

tection of fundamental research areas."[94] JASON therefore urged the NSF to "support reaffirmation of the principles of NSDD-189," and "discourage the use of new CUI definitions."[95] Others in the R&D community have taken critique of the CUI designation a step further, seemingly operating, in effect, as if it does not exist. Citing the JASON study, for instance, one Princeton University professor recently stated that "the creation of intermediate categories" like CUI "would cause confusion and be counterproductive" because they "do[] not map well to the standards of NSDD-189."[96] Given the legal force associated with EO 13556, such comments are curious and raise the question of how the Order should be reconciled with NSDD-189.[97]

F. The Rise of China and Issuance of National Security Presidential Memorandum 33

Other, more recent, presidential and legislative activity has served to further cloud the question of what viability NSDD-189 has today. In large part, this activity has been directed at threats posed by the PRC government and reflects concerns about the rapidity with which China has become a near-peer competitor of the United States. As a National Academies report observed, "Over the past two decades, China has systematically pursued strategies for dominating technology development in key areas."[98] It has done so not only through major investments in its own S&T ecosystem,[99] but also through acquisition of U.S. S&T, "including through illicit means."[100] That is, among other things, "China's intelligence services . . . exploit the openness of American society, especially academia and the scientific community" to advance PRC interests and harm the United States.[101] This exploitation occurs through many vectors, including undisclosed conflicts of interest or commitments, intellectual property theft, cyberattacks, and economic espionage.[102]

To address these threats, in 2021, President Donald Trump issued National Security Presidential Memorandum (NSPM) 33.[103] NSPM-33 stated that the

94. *Id.* at 43.

95. *Id.* at 44.

96. RORY TRUEX, ADDRESSING THE CHINA CHALLENGE FOR AMERICAN UNIVERSITIES 1 n.2 (2020).

97. *See infra* Section II.C.

98. NATIONAL ACADEMIES, *supra* note 6, at 88.

99. *Id.*

100. Fed. Bureau of Investigation, PSA No. 20200716-2, Foreign Government-Sponsored Talent Recruitment Plans, Such as China's Talent Plans, Incentivize Economic Espionage and Theft of Trade Secrets 3 (July 16, 2020), https://www.fau.edu/research/files/notices/psa-on-talent-plans-final-20200717.pdf [https://perma.cc/3RLZ-8KAY].

101. *See, e.g.*, WORLDWIDE THREAT ASSESSMENT, *supra* note 4, at 14.

102. *See* FEDERAL BUREAU OF INVESTIGATION, CHINA: THE RISK TO ACADEMIA 5 (2019).

103. Presidential Memorandum on United States Government—Supported Research and Development National Security Policy, National Security Presidential Memorandum 33 (Jan. 14, 2021) [hereinafter NSPM-33], https://trumpwhitehouse.archives.gov/presidential-actions/presidential-memorandum-united-states-government-supported-research-development-national-security-policy/ [https://perma.cc/YP9X-MXCL].

"memorandum directs action to strengthen protections of United States Government-supported Research and Development (R&D) against foreign government interference and exploitation."[104] Unlike EO 13556—which aims primarily to control the *dissemination* of information like that produced via federally-funded grants—NSPM-33 imposes certain barriers to entry, designed to prevent malign actors from participating in the R&D enterprise. In doing so, NSPM-33 contains several significant features warranting attention.

First, NSPM-33 acknowledges that "[t]he open and collaborative nature of the United States R&D enterprise underpins America's innovation, S&T leadership, economic competitiveness, and national security."[105] Nevertheless, the memorandum underscores that "some foreign governments, including the People's Republic of China, have not demonstrated a reciprocal dedication to open scientific exchange, and seek to exploit open United States and international research environments to circumvent the costs and risks of conducting research."[106] As a result, NSPM-33 stresses that adversaries have been able to "increas[e] their economic and military competitiveness at the expense of the United States, its allies, and its partners."[107]

Second, even while attempting to address this challenge, NSMP-33 mentions NSDD-189, stating that "[m]uch of United States Government-supported R&D is broadly shared and includes fundamental research as defined in" NSDD-189.[108] Thus, while imposing measures that are designed "to protect intellectual capital, discourage research misappropriation, and ensure responsible management of United States taxpayer dollars," in harmony with NSDD-189, NSPM-33 expresses a commitment to "maintaining an open environment to foster research discoveries and innovation that benefit our Nation and the world."[109]

Third, to harden the federally-funded R&D enterprise against malign foreign influence, among other things, NSPM-33 obligates federal agencies that fund R&D activities to "require that participants in the . . . enterprise who significantly influence the design, conduct, reporting, reviewing, or funding of Federally-funded research disclose appropriate information . . . [to] enable reliable determinations of whether and where conflicts of interest and commitment exist."[110] The term *conflict of interest* was given a familiar meaning focused on divided loyalties that might exist due to financial interests or relationships in conflict with the research.[111] The phrase *conflict of commitment* was more nuanced, centering on "a situation in which an individual accepts or incurs conflicting obligations between or among multiple employers or other entities."[112] One specific conflict of commitment that garnered attention in NSPM-33 was

104. *Id.*
105. *Id.*
106. *Id.*
107. *Id.*
108. *Id.*
109. *Id.*
110. *Id.*
111. *Id.*
112. *Id.*

participation in foreign-government sponsored talent recruitment programs, which the memorandum defined as "effort[s] directly or indirectly organized, managed, or funded by a foreign government or institution to recruit S&T professionals or students."[113] As explained in the memorandum, "Some foreign government-sponsored talent recruitment programs operate with the intent to import or otherwise acquire from abroad, sometimes through illicit means, proprietary technology or software, unpublished data and methods, and intellectual property to further the military modernization goals and/or economic goals of a foreign government."[114]

Importantly, NSPM-33 called on the Assistant to the President for National Security Affairs, in collaboration with the Office of Management and Budget (OMB) and the Office of Science and Technology Policy (OSTP), to coordinate implementation of the memorandum's directives.[115]As part of that effort, the OSTP solicited input from the scientific community. Unsurprisingly, this yielded renewed calls for the Biden Administration to reaffirm NSDD-189 and its commitment to unrestricted fundamental research.[116]

G. Recent Legislative Enactments to Protect Federally-Funded R&D

Around the same time that President Trump issued NSPM-33, Congress enacted a flurry of legislation similarly designed to protect the U.S. S&T advantage. For instance, in the fiscal year (FY) 2021 National Defense Authorization Act (NDAA), Congress mandated that federal research agencies "shall require, as part of any application for a research and development award," that certain covered individuals "disclose the amount, type, and source of all current and pending research support received by, or expected to be received by, the individual as of the time of the disclosure."[117] Covered individuals also must certify that the disclosure is "current, accurate, and complete," and must "agree to update such disclosure at the request of the agency."[118] The statute grants various enforcement powers to federal research agencies, including, among other things, rejection of noncompliant applications, suspension or termination of pending R&D awards, and temporary or permanent debarment.[119]

In 2022, Congress also passed the CHIPS and Science Act.[120] As relevant here, the Act requires OSTP to "publish and widely distribute a uniform set of guidelines for Federal research agencies regarding foreign talent recruitment

113. *Id.*
114. *Id.*
115. *Id.*
116. *See, e.g.*, Memorandum from Sylvester James Gates, Jr., President, Am. Physical Soc'y, to the Hon. Eric S. Lander, President's Sci. Advisor & Dir. of the Off. of Sci. & Tech. Pol'y (Oct. 25, 2021).
117. 42 U.S.C. § 6605(a)(1)(A).
118. *Id.* § 6605(a)(1)(B)–(C).
119. *Id.* § 6605(c).
120. CHIPS and Science Act of 2022, Pub. L. No. 117-167, 136 Stat. 1366.

programs."[121] In addition, federal research agencies are mandated by the Act to establish a policy requiring covered individuals to certify they are not a part of a malign foreign talent recruitment program.[122]

Additional recent legislation reflects similar congressional effort to address the challenge of foreign malign influence in the U.S. S&T enterprise. For example, in the FY 2019 NDAA, Congress included a provision requiring the Secretary of Defense to "establish an initiative to work with academic institutions who perform defense research and engineering activities . . . to support protection of intellectual property, controlled information, key personnel, and information about critical technology," and "to limit undue influence, including through foreign talent programs."[123] This provision was modified in each of the two subsequent NDAAs—first to require the Secretary to also develop and update a list of academic institutions of the PRC, Russia, and other countries that engage in certain malign behaviors,[124] and later to require the Secretary to also publish a list "of foreign talent programs that pose a threat to the national security interests of the United States."[125] In addition to imposing the disclosure requirements mentioned above, the FY 2021 NDAA also restricts DoD funding to higher education institutions that host Confucius Institutes, which are assessed by the intelligence community to serve as fronts for PRC intelligence service activities.[126]

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121. *Id.* § 10631(b).

122. *Id.* § 10632(a)(2).

123. John S. McCain National Defense Authorization Act for Fiscal Year 2019, Pub. L. No. 115-232, § 1286, 132 Stat. 1636, 2079–80.

124. National Defense Authorization Act for Fiscal Year 2020, Pub. L. 116-92, § 1281, 133 Stat. 1198, 1704–06 [hereinafter FY20 NDAA]. Specifically, the law requires the Secretary to include on the list institutions that: (1) "have a history of improper technology transfer, intellectual property theft, or cyber or human espionage"; (2) "operate under the direction of the military forces or intelligence agency of the applicable country"; (3) "are known . . . to recruit foreign individuals for the purpose of transferring knowledge to advance military or intelligence efforts" or "provide misleading information or otherwise attempt to conceal the connections of an individual or institution to a defense or an intelligence agency of the applicable country"; or (4) "pose a serious risk of improper technology transfer of data, technology, or research that is not published or publicly available." *Id.* at 1705.

125. William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021, Pub. L. No. 116-283, § 1299(c), 134 Stat. 3388, 3999–4003.

126. *Id.* § 1062, 134 Stat. at 3859–60; Don Lee, *Senate Inquiry Finds Problems with China-Funded Confucius Institute at U.S. Campuses*, L.A. TIMES (Feb. 27, 2019, 3:57 PM), https://www.latimes.com/business/la-na-pol-senate-china-confucius-institute-campuses-20190227-story.html [https://perma.cc/NV6U-LRK5]. While not focused specifically on federally-funded fundamental research, other recent legislation reflects the threat Congress appears to believe China poses to the U.S. S&T enterprise. For example, the FY20 NDAA requires "the Under Secretary of Defense for Acquisition and Sustainment, in coordination with the Director of the Defense Counterintelligence and Security Agency and the heads of other elements of the [DoD]" to "develop an analytical framework for risk mitigation across the acquisition process." FY20 NDAA § 845, 133 Stat at 1500. As part of that framework, the statute requires the Secretary of Defense to "improve the process and procedures for the assessment and mitigation of risks related to foreign ownership, control, or influence (FOCI) of contractors and subcontractors doing business with [DoD]." *Id.* § 847, 133 Stat. at 1505. And, just last year, Congress enacted the SBIR and STTR Extension Act of 2022, which extended authorization for the Small Business Innovation Research (SBIR) and Small Business Technology Transfer

H. Recent Activity Related to National Security Decision Directive 189

This bevy of activity has once again led to national-level discussions focused on the continuing viability, or lack thereof, of NSDD-189. Most recently, the Defense Advanced Research Projects Agency (DARPA)[127] and the NSF "asked the National Academies of Sciences, Engineering, and Medicine (the National Academies) to convene an ad hoc committee to consider policies and practices related to the production and commercialization of research in domains critical to national security."[128] The committee's work yielded a lengthy study issued in September 2022 titled *Protecting U.S. Technological Advantage*, which included four recommendations aimed at protecting the U.S. S&T advantage.[129] As applicable here, the first recommendation was that "[t]he President, through an executive order, should clearly reaffirm that it is the policy of the United States that fundamental research, to the maximum extent possible, should remain unrestricted."[130] The National Academies also recommended that "the executive order should direct the Office of Science and Technology Policy, in coordination with federal agencies, to define criteria for open and restricted research environments within 120 days of issuance of the executive order."[131]

Subsequent efforts by the National Academies have focused even more attention specifically on NSDD-189. For example, in meetings in November 2022 and January 2023, the National Academies convened experts to consider, among other things, "whether now is the time to revisit NSDD-189 and the practical effects of doing so, based on views of the foreign policy, security, scientific, and legislative communities."[132] To date, the meetings do not appear to have yielded consensus on NSDD-189's current status or on the appropriate path forward.

(STTR) programs. SBIR and STTR Extension Act of 2022, Pub. L. No. 117-183, § 4(b), 136 Stat. 2180, 2181–83. In doing so, Congress included a provision requiring federal agencies to institute due diligence programs to assess security risks posed by small businesses seeking SIBR/STTR awards, including risks arising from foreign ownership or other financial ties and obligations to a foreign country, person, or entity. *Id.*

127. DARPA is a U.S. government agency that "make[s] pivotal investments in breakthrough technologies for national security." *About Darpa*, DEF. ADVANCED RSCH. PROJECTS AGENCY, https://www.darpa.mil/about-us/about-darpa [https://perma.cc/3PDG-ZHF6]. To do so, DARPA "works within an innovation ecosystem that includes academic, corporate and governmental partners, with a constant focus on the Nation's military Services, which work with DARPA to create new strategic opportunities and novel tactical options." *Id.*

128. NATIONAL ACADEMIES, *supra* note 6, at 13.

129. *Id.* at 4–9.

130. *Id.* at 5.

131. *Id.*

132. *Fundamental Research, Openness, and Protecting the U.S. Technological Advantage: NSDD-189 in the New Global Context: A Meeting of Experts*, NAT'L ACADS., https://www.nationalacademies.org/event/01-25-2023/committee-on-science-engineering-medicine-and-public-policy-fundamental-research-openness-and-protecting-the-us-technological-advantage-nsdd-189-in-the-new-global-context-a-meeting-of-experts [https://web.archive.org/web/20230321172852/https://www.nationalacademies.org/event/01-25-2023/committee-on-science-engineering-medicine-and-public-policy-fundamental-research-openness-and-protecting-the-us-technological-advantage-nsdd-189-in-the-new-global-context-a-meeting-of-experts].

II. NATIONAL SECURITY DECISION DIRECTIVE 189'S CONTINUING FORCE

As noted at the outset of this Article, there has been very little, if any, focus on what *the law* tells us about the force NSDD-189 continues to hold. That said, it is beyond question that the ongoing debate about the issue is taking place in an unclear legal regime. Even considering only the executive actions discussed above (i.e., NSDD-189, EO 13556, and NSMP-33), there is confusion, for instance, about the legal force of executive orders; what legal significance to give each order relative to the others; and how these specific orders are (or are not) meant to be read in conjunction with one another. The landscape is further muddied by the fact that, as discussed above, both presidential administrations and Congress have continued to issue executive and legislative mandates, respectively, that regulate the conduct and reporting of fundamental research. On their face, certain actions arguably appear to be in tension, if not outright conflict, with one another.

This patchwork of executive action and congressional legislation has created significant confusion and raises several important questions about the current legal framework surrounding fundamental research. Determining the force NSDD-189 has today requires focus on several central questions, three of which are addressed below. Those are: (1) what legal force do executive orders generally hold; (2) what legal distinction, if any, exists between the various forms of executive instruments relevant to this issue; and (3) how is the meaning and effect of various executive orders ascertained, particularly when they appear to be in tension with one another and with surrounding legislation.

A. Lawfully Issued Executive Orders Generally Hold the Force and Effect of Law Until Rescinded or Stricken

As alluded to above, there have been strains of thought in some scientific literature that implicitly reflect a view that NSDD-189 lacks any inherent legal force. For example, in the JASON study discussed above, the authors stated that "[t]he fundamental principles embraced by NSDD-189, along with much of its original wording, were subsequently incorporated into the Federal Acquisition Regulations (FAR) and are therefore the law of the land."[133] A National Academies study similarly expressed that "[c]ontracting officers and universities sometimes do not recognize that the fundamental principles as well as much of the wording of NSDD-189 are incorporated into the Federal Acquisition Regu-

133. JASON, *supra* note 90, at 14.

lations."[134] Such statements strike legal practitioners as peculiar, given the inherent legal force and effect presidential promulgations like NSDD-189 hold.[135]

To be sure, it is clear that "[t]he Constitution does not mention the president's authority to issue orders."[136] Nonetheless, it is also acknowledged that "the president's power to do so is by now beyond dispute."[137] The question of what force such orders hold fundamentally distills down to the question of what authority a president may exercise, in the first instance. Put simply, executive authority is limited and must be found in either Article II of the Constitution or in a delegation of Congress' Article I powers to the president.[138] Thus, by extension, it follows that "[t]he President's power, if any, to issue [an] order must stem either from an act of Congress or from the Constitution itself."[139]

This bedrock principle in turn explains why, from a legal perspective, executive orders hold the force of law.[140] That is, properly issued executive orders or directives have as their legal underpinning constitutional power or, in the case of congressional delegations, a mix of constitutional and statutory power. In either case, the upshot is that if executive orders "are based on appropriate authority," meaning if either Article II or a congressional delegation truly vest authority for the related issue in the president, such orders "have the force and effect of law."[141] Consequently, presidential orders have the impact of placing "institutions, such as Congress, administrative agencies and the courts, as well as the public in the position of responding to or implementing the policy and law they embody."[142]

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134. 9/11 REPORT, *supra* note 3, at 7. These statements seem designed to advance the argument that, because the FAR incorporates NSDD-189's language, it is unlawful for the government to include in contracts for federal awards provisions that impose restrictions on dissemination of research results. This misses the point, though, that NSDD-189's force exists independent of the FAR. Indeed, as a regulatory instrument, the FAR is of lesser weight, legally speaking, than a lawfully issued presidential directive. *See generally* Federal Acquisition Regulations System, 48 C.F.R. §§ 1.101, 1.103 (2013) (describing the FAR's purpose and authority).

135. Perhaps such references to the FAR were offered to avoid the debate about the continuing force of NSDD-189, in favor of interpreting relatively clearer FAR language. Even assuming so, that merely highlights the argument being advanced in this Article; that is, that legal practitioners can assist their clients in understanding the hierarchy of various types of law, regulation, and policy; what interpretive theory to apply to them, particularly when they appear to conflict with each other; and what to make of subsequent legal measures that appear to undermine the continuing viability of earlier issued enactments and promulgations.

136. Kevin M. Stack, *The Statutory President*, 90 IOWA L. REV. 539, 551 (2005).

137. *Id.*

138. *See* Minnesota v. Mille Lacs Band of Chippewa Indians, 526 U.S. 172, 188–89 (1999) (explaining that this principle is "black letter law").

139. Youngstown Sheet & Tube Co. v. Sawyer, 343 U.S. 579, 585 (1952).

140. This is so even though the orders themselves somewhat confusingly purport to announce "policy." *See, e.g.*, NSDD-189, *supra* note 5 (using the word "policy" in its heading and framing the directive's requirements as the "policy" of the Administration). Insofar as presidential orders hold the force of law, it is perhaps conceptually helpful to conceive of them as mechanisms through which presidents convert their policy into law.

141. VIVIAN S. CHU & TODD GARVEY, CONG. RSCH. SERV., RS20846, EXECUTIVE ORDERS: ISSUANCE, MODIFICATION, AND REVOCATION, at ii (2014).

142. Stack, *supra* note 136, at 548.

As importantly, as legal directives of the president, executive orders generally retain their force as law until modified, rescinded, or judicially stricken.[143] Thus, orders that are issued "remain effective [even] upon a change in administration . . . and . . . continue to be effective until subsequent presidential action is taken."[144] That said, a president has nearly unlimited authority to revoke or modify previously issued orders, whether issued by his own administration or a prior one.[145] As Jack M. Beerman states, "All [a] President needs to do to revoke or revise an executive order . . . is issue a new executive order,"[146] which is a power that presidents have exercised numerous times throughout history.[147] Nevertheless, to preserve executive intent, and in the interest of clarity, the law disfavors repeals by implication.[148] Therefore, when later-in-time executive orders are intended to operate as revocations of previously issued orders, it is customary that the former will expressly indicate as much.[149]

As applied here, this framework leads to the conclusion that, as a legal matter, NSDD-189, EO 13556, and NSPM-33 all have the force and effect of law and remain legally viable, so long as they (1) were lawfully issued, and (2) have never been rescinded. With regard to the former, although questions have occasionally arisen over the years about the wisdom of the *policy* embodied in these executive orders, there appears to be no argument about whether they were lawfully issued. To varying degrees, NSDD-189, EO 13556, and NSPM-33, all concern access to R&D information produced through executive branch efforts and all touch upon national security. Further, in EO 13556 and NSPM-33, President Obama and President Trump, respectively, cited as his authority to issue the order "the authority vested in [him] as President by the Constitution and the laws of the United States of America."[150] Although NSDD-189 does not expressly

143. JONATHAN M. GAFFNEY, CONG. RSCH. SERV., R46738, EXECUTIVE ORDERS: AN INTRODUCTION 15 (2021). To be sure, though not implicated here, there are limited exceptions, such as when an order includes a sunset provision or when Congress revokes delegated authority under which an order was issued. *See id.* at 17–20.

144. Memorandum from Randolph D. Moss, Acting Assistant Attorney General, Office of Legal Counsel, to the President, Legal Effectiveness of a Presidential Directive, As Compared to an Executive Order 29 (Jan. 29, 2000), *reprinted in* 24 OPINIONS OF THE OFFICE OF LEGAL COUNSEL OF THE UNITED STATES DEPARTMENT OF JUSTICE 29 (2000) [hereinafter OLC Opinion]. It is thus of no moment that an executive order may purport to merely announce "policy of this Administration." *See, e.g.*, NSDD-189, *supra* note 5.

145. Jack M. Beerman, *Presidential Power in Transitions*, 83 BOSTON UNIV. L. REV. 947, 994–95 (2003). Notably, while not implicated here, some revocations could raise due process considerations. *See* Stack, *supra* note 136, at 553 ("The only potential constitutional source of procedural constraint on presidential orders is the Fifth Amendment's Due Process Clause.").

146. Beerman, *supra* note 145, at 994–95.

147. *See, e.g.*, CHU & GARVEY, *supra* note 141, at 7–9.

148. *Cf.*, Posadas v. National City Bank, 296 U.S. 497, 503 (1936) ("The cardinal rule is that repeals by implication are not favored.").

149. *See, e.g.*, Exec. Order No. 13,693, 80 Fed. Reg. 15,871, 15,880 (Mar. 19, 2015) (stating that Executive Order 13514 and certain presidential memoranda were revoked).

150. Exec. Order No. 13,556, 3 C.F.R. 267 (2011); NSPM-33, *supra* note 103.

indicate the authority on which it is based, on its face it aims to address "a significant threat to our national security."[151]

From a constitutional perspective, the scope of a president's Article II powers has been a matter of heated debate that remains somewhat unsettled.[152] Discussions on the topic often begin with Justice Robert Jackson's concurring opinion in *Youngstown Sheet & Tube Co. v. Sawyer*, which offered a three-part framework for assessing a president's powers.[153] Under Justice Jackson's framing, a president's authority is (1) at its zenith when he acts pursuant to congressional authorization, (2) at its lowest ebb when he acts in contravention of Congress, and (3) in a "zone of twilight" when he "acts in absence of either a congressional grant or denial of authority."[154] According to Justice Jackson, when operating within the twilight zone, the "test of power is likely to depend on the imperatives of events and contemporary imponderables rather than on abstract theories of law."[155]

While Justice Jackson's concurring opinion in *Youngstown* may provide a useful conceptual construct, as a practical matter, it has been criticized as "provid[ing] almost no guidance as to how . . . cases should be decided" and, thus, being "of no help."[156] Regardless, although the exact reach of the executive's national security powers remains unclear, it is beyond debate that courts have afforded presidents great deference when considering their scope. For example, perhaps considering national security matters to be what Justice Jackson referred to as "imperatives of events"[157] in *Haig v. Agee*, the Supreme Court affirmed the president's authority to "withhold passports on the basis of substantial reasons of national security and foreign policy."[158] More significantly, as in *Department of Navy v. Egan*, the Court has extended this authority even to instances in which the president relies on inherent authority. There, the Court concluded that the president's "authority to classify and control access to information bearing on national security . . . flows primarily from this constitutional

151. NSDD-189, *supra* note 5.

152. *See* H. COMM. ON GOVT. OPERATIONS, 85TH CONG., EXECUTIVE ORDERS AND PROCLAMATIONS: A STUDY OF A USE OF PRESIDENTIAL POWERS 14 (Comm. Print 1957) ("The nature and limitations of Executive Power have been a matter of controversy from the very beginning of our Nation."); Richard K. Sala, *The Illusory Unitary Executive: A Presidential Penchant for Jackson's* Youngstown *Concurrence*, 38 VT. L. REV. 155, 156 (2013) ("The reach of the powers granted to the Executive, beyond those enumerated in Article II of the U.S. Constitution, is far from settled.").

153. *Cf.* Youngstown Sheet & Tube Co. v. Sawyer, 343 U.S. 579, 635–38 (1952) (Jackson, J., concurring).

154. *Id.* at 635–38.

155. *Id.* at 637.

156. Erwin Chemerinsky, *Controlling Inherent Presidential Power: Providing a Framework for Judicial Review*, 56 S. CAL. L. REV. 863, 870 (1983).

157. *Youngstown*, 343 U.S. at 637.

158. Haig v. Agee, 453 U.S. 280, 293 (1981); *see also* Am. Ins. Ass'n v. Garamendi, 539 U.S. 396, 414, 429 (2003) (dispensing with the case based on "the President's independent authority 'in the areas of foreign policy and national security'").

investment of power in the President and exists quite apart from any explicit congressional grant."[159]

Thus, in short, the president's inherent Article II powers are at their zenith in matters of national security, as is true here with respect to the issuance of NSDD-189, EO 13556, and NSPM-33. Moreover, as noted above, at least with respect to EO 13556 and NSPM-33, Presidents Obama and Trump also cited to "the laws of the United States of America" as their authority for issuing the orders, and it is easy to imagine the executive branch making a similar contention concerning NSDD-189.[160] Assessing the efficacy of such claims is complicated by their lack of specificity—a condition suffered by numerous other executive orders.[161] One can surmise, though, that the executive might point to the National Security Act of 1947;[162] Espionage Act of 1917;[163] the National Science and Technology Policy, Organization, and Priorities Act of 1976;[164] FY 2021 NDAA;[165] or any number of other statutes, including congressional authorizations and appropriations for specific federally-funded R&D programs,[166] as the statutory bases for these promulgations.

Precisely which statutory regime the executive branch might point to hardly seems to matter; the upshot is likely the same. As one author concluded following a robust study of the issue, "courts lack a theory of the executive order's role in our separation of powers system and . . . in the absence of such a theory, doctrine has developed along lines that augment executive branch power at Con-

159. Department of Navy v. Egan, 484 U.S. 518, 527 (1987); *see also* United States v. Nixon, 418 U.S. 683, 710 (1974) ("As to these areas of Art. II duties the courts have traditionally shown the utmost deference to Presidential responsibilities.").

160. Exec. Order No. 13,556, 3 C.F.R. 267 (2011); NSPM-33, *supra* note 103.

161. *See, e.g.*, Amy L. Stein, *A Statutory National Security President*, 70 FLA. L. REV. 1183, Appendix A (2018) (providing examples of various national security-related executive orders and their cited authority, many of which included the similarly vague phrase "the authority vested in me as President by the Constitution and the laws of the United States of America").

162. 50 U.S.C. § 402(i)(4)(F) (2010) (current version at 50 U.S.C. § 3021) (vesting the executive branch with authority to "develop policies and procedures to ensure the effective sharing of information about transnational threats among Federal departments and agencies"); 50 U.S.C. § 403-1(i)(2)(A) (2010) (current version at 50 U.S.C. § 3024) (bestowing on the executive branch power, within the intelligence community, to establish and implement guidelines for the classification of information).

163. 18 U.S.C. § 793(a) (granting the president authority to designate "prohibited place[s]" and determine when certain activity therein "would be prejudicial to the national defense" in the context of protecting national defense information); 18 U.S.C. § 795(a) (vesting the president with authority to "define[] certain vital military and naval installations or equipment as requiring protection against the general dissemination of information relative thereto").

164. 42 U.S.C. §§ 6601, 6611, 6614 (establishing the OSTP in the Executive Office of the President and vesting the organization with authority over S&T "policies, plans and programs of the Federal Government").

165. 42 U.S.C. § 6605(b) (requiring the OSTP director to ensure that federal agency policies about certain disclosures mandated under 42 U.S.C. § 6605(a) are consistent).

166. *See, e.g.*, 15 U.S.C. § 7501 (stating that "[t]he President shall implement a Nanotechnology Program" and that the Executive Branch shall undertake program management of it). There are numerous similar programs. *See generally* CONG. RSCH. SERV., R47161, FEDERAL RESEARCH AND DEVELOPMENT (R&D) FUNDING: FY2023 (2022).

gress's expense."[167] This is true whether a president issued an executive order under constitutional or statutory authority. In the latter case, it can be argued that "while courts often seek to effectuate (some version of) congressional intent when interpreting statutes, their guiding principle when interpreting executive orders—including Article I executive orders—has generally been to give effect to *presidential* intent."[168]

Even more, in affirming actions taken under executive orders, "courts sometimes draw on Article II powers to *imply* statutory authority" supporting them.[169] Exemplary of this approach is *Dames & Moore v. Regan*.[170] There, the Supreme Court affirmed use of an executive order that, in the context of the Iran Hostage Crisis, suspended pending lawsuits of American citizens against Iran.[171] Although the government had argued that the order was authorized by the International Emergency Economic Powers Act (IEEPA) and Hostage Act, the Court "declined to conclude that the [statues] *directly* authorize[d] the President's suspension of claims."[172] Nevertheless, the Court found the statutes "highly relevant in the looser sense of indicating congressional acceptance of a broad scope for executive action in circumstances such as those presented in this case."[173] That is, the Court relied on the "general tenor of Congress' legislation," and "the enactment of legislation closely related to the question," in upholding the president's action under the executive order.[174] Thus, at bottom, whether viewed through the lens of constitutional authority, statutory authority, or some combination of the two, there appears to be no credible argument that NSDD-189, EO 13556, and NSPM-33 were not lawfully issued.[175]

There also is no evidence that any of these orders have been rescinded. As previously explained, it is a customary practice that when a president intends to revoke a previously issued order, he expressly says as much given that the law disfavors repeals by implication. NSDD-189, EO 13556, and NSPM-33 contain no such indication. In fact, on the contrary, NSPM-33 expressly mentions NSDD-189 by way of acknowledging that "[m]uch of United States Government-supported R&D is broadly shared and includes fundamental research as defined in [NSDD-189]."[176] If the intent had been for NSPM-33 to wholly disrupt that regime, one would not expect to see such favorable language. Additionally, although some have suggested that the orders are in conflict with one

167. Erica Newland, Note, *Executive Orders in Court*, 124 YALE L.J. 2026, 2049 (2015). Newland presents results of a methodologically based survey of executive orders and analyzes how courts have interpreted them. *Id.* at 2034.

168. *Id.* at 2069.

169. *Id.* at 2051 (emphasis added).

170. 453 U.S. 654 (1981).

171. *Id.* at 686.

172. *Id.* at 678 (emphasis added).

173. *Id.* at 677.

174. *Id.* at 678.

175. To be sure, NSDD-189 arguably has been somewhat cabined by certain congressional enactments discussed throughout this Article. However, congressional action on this front has mirrored that of presidential action. For example, as discussed above, both NSPM-33 and the FY 2021 NDAA seek to neutralize the national security threat posed by foreign talent programs.

176. NSPM-33, *supra* note 103.

another, as explained below, the better view is that they are complementary and can be harmonized. Put simply, there is no obvious reason to believe that NSDD-189, EO 13556, or NSPM-33 has been rescinded, either explicitly or implicitly.

B. No Legal Distinction Exists Between Executive Promulgations Based on the Form the Instruments Take

Another question that has arisen in this setting is whether there is any legal significance to the fact that NSDD-189 is a presidential *directive*; EO 13556 is an executive *order*; and NSPM-33 is a presidential *memorandum*. The more general question of how to conceive of different presidential pronouncements has vexed observers for some time. One source suggests that "[a] widely accepted description of executive orders and proclamations comes from a report issued in 1957 by the House Government Operations Committee," which stated the following:

> Executive orders are generally directed to, and govern actions by, Government officials and agencies. . . . [while] [p]roclamations in most instances affect primarily the activities of private individuals. Since the President has no power or authority over individual citizens and their rights . . . the President's proclamations are not legally binding.[177]

This framework, however, has been criticized for neglecting "the fact that even orders formally directed at other government officials can have practical effects on private parties."[178]

Ultimately, as one author has noted, "Attempts by legal scholars and political scientists to classify these different forms of orders have been unavailing."[179] This is because, in general, there is no difference between these instruments as concerning their legal force and effect.[180] As explained by the Department of Justice's Office of Legal Counsel, "it is the substance of a presidential determination or directive that is controlling and not whether the document is styled in a particular manner."[181] The only apparent difference between various types of presidential pronouncements is procedural, rather than substantive. That is, under the Federal Register Act, executive orders and proclamations are required to be published in the Federal Register,[182] whereas other instruments only require publication "when the President determines they have 'gen-

177. CHU & GARVEY, *supra* note 141, at 1 (quoting H. COMM. ON GOVT. OPERATIONS, *supra* note 152).

178. Stack, *supra* note 136, at 548 n.19; *see also* PHILLIP J. COOPER, BY ORDER OF THE PRESIDENT: THE USE AND ABUSE OF EXECUTIVE DIRECT ACTION 16–19 (2002) (calling the issue "somewhat more complex and not nearly so neatly defined").

179. Stack, *supra* note 136, at 548 n.19.

180. *See* Wolsey v. Chapman, 101 U.S. 755 (1879) (finding no legal significance between a presidential proclamation and order).

181. OLC Opinion, *supra* note 144, at 29.

182. 44 U.S.C. § 1505(a).

eral applicability and legal effect.'"[183] That said, in part because there is no legally binding definition of the term *executive order*, and because "there are almost no legally enforceable procedural requirements that the president must satisfy before issuing (or repealing) an Executive Order or other presidential directive," the form a presidential promulgation ultimately takes "may reflect nothing more than a bureaucratic choice."[184] Consequently, as relevant here, there is no legal distinction to be drawn from the fact that NSDD-189, EO 13556, and NSPM-33 each take a unique form.

C. Executive Orders and Statutes Should be Harmonized With One Another

Having demonstrated that NSDD-189, EO 13556, and NSPM-33 hold the force and effect of law, have not been rescinded, and are of equal force despite their different forms, the question remains of how they should be interpreted, both in conjunction with one another and with congressional legislation at least arguably occupying the same space. This is a particularly significant question given concerns that have been voiced by some experts that the executive instruments are in tension, if not outright conflict, with one another and laws passed by Congress.

As Tara Leigh Grove observes, "The federal judiciary . . . has regularly grappled with the meaning of presidential directives for well over a century."[185] Although limited authority suggests that there is an open question about the interpretive theory applicable to such directives,[186] over time, a substantial body of caselaw has emerged in which "federal courts have repeatedly asserted that presidential directives should be treated just like statutes."[187] Indeed, in considering a case requiring it to interpret the meaning of an executive order, the Supreme Court has stated that it would "approach the construction of [an] Executive Order . . . as [it] would approach the construction of legislation."[188] This somewhat uncomplicates the analysis related to NSDD-189, given that the applicable legal landscape is formed by both executive orders and legislation.

To determine the meaning of legislation, courts often employ various canons of construction,[189] which the Supreme Court has referred to simply as "rules

183. *See, e.g.*, GAFFNEY, *supra* note 143, at 21.

184. Stack, *supra* note 136, at 547, 552.

185. Tara Leigh Grove, *Presidential Laws and the Missing Interpretive Theory*, 168 U. PA. L. REV. 877, 880 (2020).

186. *See* City and Cty. of San Fransisco v. Trump, 897 F.3d 1225, 1238 (9th Cir. 2018) ("In contrast to the many established principles for interpreting legislation, there appear to be few such principles to apply in interpreting executive orders.").

187. Grove, *supra* note 185, at 887, 887–88 & n.45 (collecting cases). Grove notes that, aside from *City and Cty. of San Francisco*, she found only one other case "that clearly questioned the assumption that presidential directives should be treated like statutes." *Id.* at 888 & n.45.

188. *Ex parte* Endo, 323 U.S. 283, 298 (1944). Importantly, courts have done so regardless of whether the orders derived from the executive's Article II powers, or from congressionally delegated Article I powers. *See, e.g.*, *id.*

189. To be sure, some scholars have challenged the utility of canons of construction, contending that "there are two opposing canons on almost every point." Karl N. Llewellyn, *Remarks on the*

of thumb."[190] Several canons could conceivably lend aid to the question of what to make of NSDD-189's current force, but two are of particular utility: first, "[a]s is true of interpretation of statutes, the interpretation of an Executive Order begins with its text," which "must be construed consistently with the Order's 'object and policy,'"[191] and second—and perhaps more importantly—"when two statutes are capable of coexistence, it is the duty of the courts, absent a clearly expressed congressional intention to the contrary, to regard each as effective."[192]

Of course, the first rule of construction is to "[r]ead the statute,"[193] but as explained above, merely reading the plain text of NSDD-189, EO 13556, NSPM-33, and contemporaneous, related legislation like the FY 2021 NDAA does not yield an obvious answer about whether or how the instruments work together. However, considering their text in the context of their "object and policy" is insightful. NSDD-189, NSPM-33, the FY 2019, FY 2020, and FY 2021 NDAA, and the CHIPS and Science Act all arose in the midst of grave national concerns about the threat posed by malign acquisition of U.S. R&D by foreign adversaries. Thus, while NSDD-189 is often overread with an eye entirely focused on the directive's unrestricted fundamental research provision, as discussed above, NSDD-189 also explicitly recognized the "significant threat to our national security" posed by procurement of U.S. technology by foreign actors.[194] Indeed, the text of NSDD-189 also expressly reflected that further refinement of the directive's thrust should be expected, given its acknowledgment that "the government-university-industry partnership activities" on which it was focused was only then "emerging."[195] As such, the directive left open that "a more significant problem may well develop,"[196] and fully conceded that additional restrictions on federally-funded fundamental research might be "provided in applicable U.S. Statutes."[197] As explained, following issuance of NSDD-189, such legislation has materialized, which has had the effect of placing additional

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Theory of Appellate Decision and the Rules or Canons About How Statutes Are to Be Construed, 3 VAND. L. REV. 395, 401–06 (1950) (famously setting forth a "thrust" and "parry" of twenty-eight different canons). However, more recent scholarship has challenged the assumption that judges use "dueling canons." Anita S. Krishnakumar, *Dueling Canons*, 65 DUKE L.J. 909, 914 (2016) (providing results of an empirical study that revealed "the overall rate of dueling canon or interpretive tool use in the Roberts Court's first five terms was low"). In any event, the fact is that canons "have been used since antiquity, and their general contours have been remarkably stable over time." Jacob Scott, *Codified Canons and the Common Law of Interpretation*, 98 GEO. L.J. 341, 344–45 (2010) (further arguing that "reliance on the canons in the Supreme Court's majority opinions has experienced a dramatic uptick").

190. Varity Corp. v. Howe, 516 U.S. 489, 511 (1996).

191. Bassidji v. Goe, 413 F.3d 928, 934 (9th Cir. 2005) (quoting Nw. Forest Res. Council v. Glickman, 82 F.3d 825, 830 (9th Cir. 1996)).

192. Morton v. Mancari, 417 U.S. 535, 551 (1974).

193. John Paul Stevens, *Shakespeare Canon of Statutory Construction*, 140 U. PA. L. REV. 1373, 1374 (1992).

194. NSDD-189, *supra* note 5, at 1.

195. *Id.*

196. *Id.*

197. *Id.* at 2.

restrictions on fundamental research, despite the effect those measures have had on restricting, to some degree, conduct and reporting of fundamental research.

In fact, the second canon introduced above, sometimes referred to as the "harmonization canon," also leads to the conclusion that NSDD-189, EO 13556, NSPM-33, and the aforementioned, related legislative efforts must be read "to give effect to each if we can do so while preserving their sense and purpose."[198] U.S. caselaw is replete with examples of harmonization efforts of this type arising when courts were faced with arguably conflicting laws.[199] Significantly, this is true not only in the context of statutes, but also, as here, with respect to executive orders.[200] At work in this approach are two fundamental principles that resonate here: (1) courts, and by extension executive departments and agencies, "are not at liberty to pick and choose" which laws to enforce,[201] and (2) "[i]n the absence of some affirmative showing of an intention to repeal, the only permissible justification for a repeal by implication is when the earlier and later statutes are irreconcilable."[202]

When taken together, the aforementioned authority leads to the conclusion that, to the extent NSDD-189, EO 13556, NSPM-33, and related legislative enactments are in any tension, they must be reconciled to give each the fullest effect possible.

D. NSDD-189's Core Principle Remains *Lex Terrae*

At the heart of NSDD-189 rests the foundational tenet that, to the maximum extent possible, the conduct and reporting of federally-funded R&D should be unrestricted. That principle remains as potent today as it was when President Reagan issued the directive in 1985. What has changed is not the government's commitment to that precept, but rather the nature of the threat that the U.S. R&D enterprise faces from malign foreign actors. NSDD-189 itself recognized that possibility and, in various ways described above, the law accounts for it. At bottom, as a matter of law, while subsequent presidential and congressional actions have surely cabined, to some degree, the "maximum extent" to which fundamental research can remain unrestricted, the fact remains that NSDD-189's core feature remains legally viable.

The debate about what controls to put on the performance and distribution of government-funded research in the name of national security is enduring and unlikely to abate. Largely missing from that conversation, though, is the perspective of legal practitioners, who can bring clarity about what the law says. The value of doing so is perhaps no more evident than in connection with ques-

198. Watt v. Alaska, 451 U.S. 259, 267 (1981).

199. *See* Newland, *supra* note 167, at 2066 n.164 (collecting cases).

200. *See id.* As Newland explains, this is true regardless of whether the executive orders were grounded in constitutional or congressionally delegated authorities. *Id.*

201. Morton v. Mancari, 417 U.S. 535, 551 (1974).

202. Saint Martin Evangelical Lutheran Church v. South Dakota, 451 U.S. 772, 788 (1981) (quoting *Morton*, 417 U.S. at 550).

tions currently being considered at a national level of whether now is the time to revisit NSDD-189. That question is inherently a matter of future policy, but to answer it, one must understand what the law tells us about it today.