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# Government Ethics and Sustainable Space Exploration

ADAM F. GREENSTONE<sup>1</sup>

*This Article is about how government ethics supports humanity's sustained exploration of outer space. Connotations of space sustainability include addressing all bases so that space activity develops to maximize human benefit. NASA's ethics practice advances key mission objectives by supporting workforce talent acquisition, talent transfer to other organizations supporting national space objectives, disseminating public information on NASA's activities, and advancing space commerce development. Following the earlier concurrent development of US government ethics law and human spaceflight, the United Nations Convention Against Corruption (UNCAC) has advanced a global anti-corruption framework of which government ethics is part. The significance of government ethics becoming part of a broader anti-corruption norm is magnified by the extraordinary signaling value of space, exemplified by how space related work has been used to signal power and prestige. Consequently, a reputationally adverse event in space may damage public perception of space activities far out of proportion to its role in the aggregate. Therefore, government ethics considerations are germane to ensuring, in order to keep space exploration on a sustainable route, that space messaging does not signal contrary to evolving international anti-corruption norms. Space exploration actors should individually and in their collective efforts consider the implications for government ethics in their activities to ensure humanity's best future space path.*

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## I. INTRODUCTION

This Article postulates that government ethics law is important to humanity's efforts to sustain our exploration of outer space. To reach this conclusion, I review:

■ Concepts of space sustainability as they relate to ascertaining conditions for sustainable space exploration.

■ The practice of US government ethics law at the National Aeronautics and Space Administration (NASA), as it relates to the agency's mission, and related US administrative law.

■ Government ethics law in the context of international anti-corruption norms and good governance policies.

I will address each of these areas to assess the role of government ethics in sustaining space exploration by supporting underlying international norms.

## II. SPACE SUSTAINABILITY AND SUSTAINABLE SPACE EXPLORATION

Human society's entry to the cosmos has not been linear, at least in terms of physical distance. Less than nine years intervened between Yuri Gagarin's first human spaceflight in April 1961 and Neil Armstrong's first Moon steps in July 1969.<sup>2</sup> As of this writing, no person has traveled beyond "low Earth orbit" (LEO) since Apollo 17's crew Eugene Cernan, Ronald Evans, and Dr. Harrison Schmitt splashed down to Earth forty-nine years ago on December 19, 1972.<sup>3</sup>

During today's compelling dialogue to ensure the physical environment of space for future use, that no person has visited the Moon in half a century reminds us that exploration can only occur when there is the will to do it. In this connection, however presently focused on conserving the

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2. See generally *The Decision to Go to the Moon: President John F. Kennedy's May 25, 1961 Speech Before a Joint Session of Congress*, NASA (Oct. 13, 2013), <https://www.history.nasa.gov/moondec.html> [<https://perma.cc/7QDH-HZPC>] (materials on the United States' response to the first human spaceflight being conducted by the Soviet Union); *Apollo 11*, NASA (July 20, 2021), [https://www.nasa.gov/mission\\_pages/apollo/missions/apollo11.html](https://www.nasa.gov/mission_pages/apollo/missions/apollo11.html) [<https://perma.cc/MGN6-XQLW>]; *Apollo 11 Lunar Surface Journal*, NASA, <https://www.history.nasa.gov/alsj/a11/a11prskit.html> [<https://perma.cc/KP7E-UTMV>] (reproductions of the Press Kit for Apollo 11 providing historical context).

3. See generally *Apollo 17*, NASA (Apr. 7, 2011), [https://www.nasa.gov/mission\\_pages/apollo/missions/apollo17.html](https://www.nasa.gov/mission_pages/apollo/missions/apollo17.html) [<https://perma.cc/HQ3G-J9ZL>]; *Apollo 17 Press Kit*, NASA (Nov. 26, 1972), [https://history.nasa.gov/alsj/a17/A17\\_PressKit.pdf](https://history.nasa.gov/alsj/a17/A17_PressKit.pdf) [<https://perma.cc/AUE5-7R43>].

physical space environment, space sustainability is a concept descending from early questions when space exploration began about technical feasibility and political will.<sup>4</sup> As is often the case for consequential concepts, defining space sustainability is itself an extensive study far beyond the scope of this work. The concept has both broad and specific connotations, and history provides important context. The pace of advancement resulting in the Apollo Moon landings proved unsustainable, as reflected by history's course. Viewed in this broad context, space sustainability asks how humanity can continue its expansion more steadily. Under this perspective, which can be viewed as asking what sustainable space exploration is, an example is human spaceflight that can eventually pay for itself.<sup>5</sup>

More specific connotations of space sustainability now focus on ensuring space activities align with conserving limited natural resources for equitable use, including limitations posed by orbital debris and radio frequency spectrum use.<sup>6</sup> These specific connotations have become particularly relevant as sustainability on Earth becomes a seminal concept in global discourse.<sup>7</sup> These connotations concerning the physical environment can be categorized as relating to operational sustainability,<sup>8</sup> the ability for the space environment to remain usable, as opposed to other elements needed to sustain space activity under a broader definition. Of course, preventing undue limitations in the physical environment is a condition precedent to sustaining space activity. If outer space becomes unusable, all the will to use it will not matter. But the physical environment is only part of the problem. Human exploration beyond LEO did not cease after 1972 because of orbital debris.

Separate from the challenge of defining space sustainability is how to define it for the work of different entities, such as the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS).<sup>9</sup> From the standpoint of US policies, and related to the question of what sustainable

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4. Scott Pace, *Challenges to U.S. Space Sustainability*, 25 *SPACE POL'Y* 156, 156 (2009).

5. See, e.g., *id.* at 159.

6. See, e.g., Peter Martinez, *Development of an International Compendium of Guidelines for the Long-term Sustainability of Outer Space Activities*, 423 *SPACE POL'Y* 13, 13-14 (2018).

7. See, e.g., THE WHITE HOUSE, UNITED STATES SPACE PRIORITIES FRAMEWORK (Dec. 2021), <https://www.whitehouse.gov/wp-content/uploads/2021/12/United-States-Space-Priorities-Framework--December-1-2021.pdf> [<https://perma.cc/57JG-325D>].

8. See Presidential Memorandum, *Space Policy Directive-3, National Space Traffic Management Policy* (June 18, 2018), <https://trumpwhitehouse.archives.gov/presidential-actions/space-policy-directive-3-national-space-traffic-management-policy/> [<https://perma.cc/ELW3-K6A5>] (referring to sustainability of space operations in various contexts).

9. Martinez, *supra* note 6, at 14-17 n.2.

space exploration is, it is imperative that long-term space plans have sufficient justification to maintain support through successive presidential terms and congressional sessions in order to yield desired returns.

Important to the work at hand is recognizing that these sample perspectives under the large tent of space sustainability are not mutually exclusive. This means that other factors, including the role of government ethics and other aspects of determining whether space activity is sustainable, are relevant. Concerns that space plans will be undermined by orbital debris collisions, financial impracticality, or political or policy change are all legitimate.

The best plans will cover all these bases. There is a spectrum of potential outcomes for humanity in space. Some are mediocre scenarios with meager gains. Others may provide socioeconomic benefit and advance international peace by extraordinary magnitudes. One paradigm offered by Dr. Peter Martinez respectively categorizes and compares these outcomes as the “Low Road” and the “High Road,” reasoning that strategic foresight informed by scenario analyses can help us plan to get to the better ones.<sup>10</sup> From this perspective, the more bases that are covered, the higher we can go, which invites answering the question of what the bases are. I argue that government ethics is one of them.

### III. GOVERNMENT ETHICS LAW PRACTICE AT NASA

This section provides insight into how NASA’s practice in government ethics law advances NASA’s mission. Policy thinkers ask questions about what good a NASA program may do. How does having a space station, going back to the Moon, or exploring beyond it help people on Earth? NASA answers these questions to support and sustain its programs. This section addresses NASA’s ethics practice in the same spirit, though the posture is a little different. As a US federal executive branch agency, having an ethics program is legally required,<sup>11</sup> but the fact that something is

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10. Peter Martinez, *High Road or Low Road: Where Are We Headed in the Space Arena?*, 71st INT’L ASTRONAUTICAL CONG. (IAC), IAC-20-E3.2.9 (2020), [https://swfound.org/media/207081/iac2020\\_e329\\_high\\_road\\_or\\_low\\_road.pdf](https://swfound.org/media/207081/iac2020_e329_high_road_or_low_road.pdf) [<https://perma.cc/36KL-WPQK>].

11. The submission of financial disclosure reports by certain federal employees to a designated agency ethics official is required by statute under the Ethics in Government Act of 1978, Pub. L. No. 95-521, 92 Stat. 1824, as amended, §§ 101-107, 5 U.S.C. App. §§ 101-107. This system includes reports accessible to the public, *id.* §§ 101-105, as well as reports that are kept confidential, *id.* § 107. The Ethics in Government Act also established the U.S. Office of Government Ethics (OGE), *id.* § 401, with authority to issue executive branch ethics regulations, *id.* § 402(b)(1) & (b)(2), and conduct executive branch ethics oversight, *id.* § 402. OGE’s government wide ethics regulations are codified at 5 C.F.R. Chapter XVI,

required does not necessarily mean doing it will achieve something beyond its general justification for being a rule. This section explains how NASA's ethics practice does.

US government ethics law is often explained with reference to its major areas. These include rules regarding gifts or gratuities from outside sources<sup>12</sup>—as well as between federal employees<sup>13</sup>—and rules to prevent holding financial interests conflicting with official duties,<sup>14</sup> and rules to address situations involving the appearance of or actual partiality.<sup>15</sup> Also included are rules on seeking post-government employment,<sup>16</sup> limiting activities affecting the government after leaving government service,<sup>17</sup> preventing misuse of official position,<sup>18</sup> and regulating outside personal activities during public service.<sup>19</sup> Oversight of and administrative implementation

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Subchapter B, Parts 2634-41 (2022), including a section focused on ethics program requirements, *id.* Part 2638.

12. 5 C.F.R. § 2635, Subpart B (2022).

13. 5 C.F.R. § 2635, Subpart C (2022).

14. 5 C.F.R. § 2635, Subpart D (2022). Performing official duties affecting a federal executive branch employee's financial interest, or a financial interest imputed to the employee, is a federal crime. 18 U.S.C. § 208 (2022).

15. 5 C.F.R. § 2635, Subpart E (2022).

16. 5 C.F.R. § 2635 (2021), Subpart F (2022). Financial interests imputed to an employee under the federal criminal conflict of interest prohibition include entities an individual is negotiating for employment or has an employment arrangement with. 18 U.S.C. § 208(a) (2022).

17. Restrictions on representational activity after leaving federal service are established in the U.S. Criminal Code. 18 U.S.C. § 207 (2022). These include, among other prohibitions, a permanent restriction on representing a new employer or other entity (hereinafter called a representational restriction) on particular matters involving specific parties the individual worked on in federal service, *id.* § 207(a)(1), a two-year representational restriction on such matters that were under an individual's official authority, *id.* § 207(a)(2), a one-year representational restriction for certain former senior level employees on communicating to or appearing before their former agency, *id.* § 207(c), a one-year restriction to the same senior level group on representing, aiding, or advising a foreign government or foreign political party with intent to influence a U.S. executive branch decision, *id.* § 207(f), and an additional two-year restriction for former very senior officials including former cabinet secretaries, senior White House staff, and US Vice Presidents on certain activities, *id.* § 207(d). OGE interpretive regulations for 18 U.S.C. § 207 are codified at 5 C.F.R. Part 2641 (2022). Additionally, there are specific procurement integrity restrictions for former contracting officials prohibiting them from accepting compensation from organizations receiving amounts exceeding \$10 million through certain decisions the employee was involved in certain roles for a year following the decision. 41 U.S.C. § 2104 (2021). Implementing regulations for the procurement integrity compensation ban are issued in the Federal Acquisition Regulation (FAR) Part 3.104, including on procedures for requesting and receiving advisory opinions from an agency ethics official at FAR Part 3.104-6.

18. 5 C.F.R. § 2635, Subpart G (2022).

19. 5 C.F.R. § 2635, Subpart H (2022) (government-wide provisions for employee outside activities); 5 C.F.R. § 2636, Subpart C (2022) (outside earned income limitation for political appointees). Recent U.S. presidents have also required political appointees to sign

of these requirements for the US executive branch is provided by the US Office of Government Ethics (OGE).<sup>20</sup>

Three pillars provide key support to the US government ethics system. First, agency ethics officials provide advice to agency officials and employees at all levels on compliance with ethics requirements.<sup>21</sup> This advice is incentivized by a rule that an employee who seeks and follows their ethics official's advice in good faith cannot be punished by the agency for it.<sup>22</sup> Although consulting an agency ethics official does not guarantee against prosecution for conduct implicating a criminal statute, it is a factor the US Department of Justice can consider in determining whether to prosecute the individual.<sup>23</sup> Second, certain employees are required to file financial disclosure reports listing personal and financial interests, including but not limited to financial holdings, other jobs, and their spouses' employment, liabilities, and certain gifts. Senior officials, senior professionals, and political appointees file public reports that—true to their name—are released to members of the public on request.<sup>24</sup> Other filers file a confidential report that is not subject to these public access requirements.<sup>25</sup> Ethics officials review the forms to identify issues meriting consultation, provide appropriate advice and cautions for the individual, and certify reports for compliance.<sup>26</sup> If a potential compliance issue is identified, ethics officials work with the individual and their managers to take corrective action, which may involve divesting an asset to prevent future conflicts.<sup>27</sup> Third, agency ethics officials provide ethics training to employees, both in person and through

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an ethics pledge committing to additional in service and post-employment requirements. *See* Exec. Order No. 13490, 74 Fed. Reg. 4673 (Jan. 21, 2009); Exec. Order No. 13770, 82 Fed. Reg. 9333 (Jan. 28, 2017), *revoked by* Exec. Order No. 13983, 86 Fed. Reg. 6835 (Jan. 19, 2021), Exec. Order No. 13989, 86 Fed. Reg. 7029 (Jan. 20, 2021). Some U.S. presidents have revoked post-employment restrictions imposed by their executive order at the end of their administration. *See* Exec. Order No. 13983, 86 Fed. Reg. 6835 (Jan. 19, 2021); Exec. Order No. 13184, 66 Fed. Reg. 697 (Dec. 28, 2000) (revoking Exec. Order No. 12834, 58 Fed. Reg. 5911 (Jan. 20, 1993)).

20. Ethics in Government Act, *supra* note 11, § 492 & § 402(b)(1). A separate organization, the U.S. Office of Special Counsel, investigates and takes enforcement action regarding allegations of prohibited personnel practices and partisan political activity in the U.S. executive branch. 5 U.S.C. §§ 1211-1216 (2022). Restrictions on partisan political activity in the federal workplace are codified at 5 U.S.C. §§ 7321-7326 (2022). Prohibited personnel practices in federal service are specified at 5 U.S.C. § 2302 (2022).

21. 5 C.F.R. § 2635.107(a) (2022).

22. 5 C.F.R. § 2635.107(b) (2022).

23. *Id.*

24. 5 U.S.C. App. §§ 101-106 (2022); 5 C.F.R. Part 2634 (2022).

25. 5 U.S.C. App. § 107 (2022); 5 C.F.R. Part 2634, Subpart I (2022).

26. 5 C.F.R. § 2634.605, § 2634.906 (2022).

27. 5 C.F.R. § 2635.402(e) (2022).

virtual methods, including automated platforms of increasing sophistication.<sup>28</sup>

Recruitment of NASA leaders exemplifies how ethics practice areas and NASA's ethics program intersects with NASA's mission. NASA's most senior leaders often join the agency already with advanced and varied career paths across both public and private sectors. Since NASA achieves its most ambitious exploration, scientific, and research ends through contracts with industrial partners—including both major corporate and research enterprises and smaller industrial and academic organizations—it is unsurprising that a public/private experience mix can be sought for senior leadership. At the time of their candidacy, NASA senior leaders may have business and employment relationships with NASA contractors, corporate board appointments, and securities holdings as pay for that work. For positions appointed by the President with US Senate confirmation, such as the NASA Administrator and Deputy Administrator,<sup>29</sup> NASA's ethics lawyers work with candidates prior to announcement of the President's intention to nominate the individual to develop an ethics agreement outlining commitments to ensure compliance with US government ethics requirements once confirmed so they may be appointed.<sup>30</sup> The ethics agreement is developed in conjunction with preparing the individual's Public Financial Disclosure Report, OGE Form 278. Remedies typically identified are resigning outside positions, divesting assets such as stock and/or stock options of NASA's business partners, and disqualification from work affecting a former employer or consulting client for a certain time period.<sup>31</sup> In certain cases where involvement in matters affecting a former employer or client would interfere with the individual's ability to effectively do their job, a waiver subject to applicable administrative standards will be considered in coordination

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28. 5 C.F.R. Part 2638, Subpart C (2022). NASA's and the U.S. Department of Agriculture's (USDA) current online ethics training platform is a program employing a storyline where a team of NASA and USDA employees collaborate to address a power failure on a future Moon-based greenhouse. A public version of the training program is at <https://www.ethics.usda.gov/docs/USDA%20Annual%20Ethics%20Training%20v1.091%20-%20Storyline%20output/story.html> [<https://perma.cc/S7P8-5EZ2>].

29. 51 U.S.C. § 20111 (2021).

30. 5 C.F.R. § 2634.803(b) (2022).

31. The last three presidential administrations have required political appointees to recuse themselves from matters relating to former employees or former clients, as defined in the orders, for their first two years of service. *See* executive orders cited *supra* note 19. Impartiality regulations issued by OGE additionally impute a "covered relationship" to an employee's former employers or clients for a year after the relationship ends, 5 C.F.R. § 2635.502(b)(1)(iv) (2022), in addition to relationships with other individuals and entities, *id.* § 2635.502(b)(1), often resulting in disqualification or mitigated involvement under the prescribed procedures. *See id.* § 2635.502.



with OGE and the Office of the Counsel to the President.<sup>32</sup> NASA's ethics practitioners work to ensure NASA's presidential nominees obtain confirmation and appointment without ethical controversy, and are situated to effectively perform their jobs given prior roles in compliance with their ethics obligations.

NASA's ethics practice also supports talent acquisition and management objectives in its technical and professional workforce. For example, scientists and other professions from academic institutions and certain other kinds of organizations may be detailed to NASA under the Intergovernmental Personnel Act (IPA),<sup>33</sup> enabling them to perform most roles a civil servant could do while maintaining their employment relationship with the sending institution. Individuals detailed to federal agencies under the IPA are subject to the federal conflict of interest prohibition codified at 18 U.S.C. § 208,<sup>34</sup> which carries civil and criminal penalties,<sup>35</sup> and the financial interests of their home institution are imputed to the detailee for §208's conflicts analysis.<sup>36</sup> NASA's ethics lawyers work with IPA candidates and detailees to remedy conflicts, including in exceptional cases preparing statutory waivers of § 208 pursuant to § 208(b)(1) requiring coordination with OGE subject to a carefully considered mitigation plan.<sup>37</sup> These legal services enable NASA to bring individuals with frontier, outside research experience into its workforce for a specified period and gain from their talent.

National objectives that NASA works to accomplish are also supported by external organizations such as contractors, commercial launch providers, universities, research organizations, and associations who may recruit NASA employees. Former NASA employees may have extraordinary and even unique skills developed in or enhanced by their NASA service, enabling new employers to support NASA and US policy objectives, such as in spaceflight safety, exploration project management, technologi-

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32. See Exec. Order No. 13989, *supra* note 19, Sec. 3; U.S. OFF. OF GOV'T ETHICS, LEGAL ADVISORY LA-21-04 (Feb. 18, 2021). Effecting such a waiver may also entail guidance pursuant to 5 C.F.R. § 2635.502 (2022).

33. Intergovernmental Personnel Act of 1970 (IPA), as amended, 5 U.S.C. §§ 3371-3375 (2022).

34. 18 U.S.C. § 208 (2022). See also U.S. OFF. OF GOV'T ETHICS, MEMORANDUM 06 X 10 AT 2 (Oct. 19, 2006), [https://www.oge.gov/Web/OGE.nsf/0/0CC488A084012146852585BA005BED05/\\$FILE/06x10\\_.pdf](https://www.oge.gov/Web/OGE.nsf/0/0CC488A084012146852585BA005BED05/$FILE/06x10_.pdf) [<https://perma.cc/TV6S-GA7B>] (discussing the applicability of federal employee ethics laws and regulations to individuals performing work for federal agencies under the IPA).

35. 18 U.S.C. § 216 (2022).

36. 18 U.S.C. § 208(a) (2022).

37. 18 U.S.C. § 208(b)(1) (2022); 5 C.F.R. Part 2640, §§ 2640.301-2640.304 (2022).

cal/engineering disciplines related to astronautics, and aeronautics, as well as to science, technology, engineering, and mathematics (STEM) education. Statutory post-employment restrictions, including in the US Criminal Code, may implicate the ability of former NASA employees to contribute to these objectives in these roles.<sup>38</sup> NASA's ethics attorneys endeavor to provide post-employment advice enabling participation in post-employment opportunities, including those supporting NASA objectives, to the greatest degree possible consistent with ensuring full legal compliance.<sup>39</sup>

NASA's statutory mission includes that the agency "provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof . . . ."<sup>40</sup> This obligation is achieved in various ways, including but not limited to broadcasts and information provided to media, speeches and community visits, publications and internet content, and outreach and education resources for students. NASA's ethics program supports this mission in different respects, including through ethics advice on accepting gifts. NASA officials and employees frequently receive invitations for widely attended events providing the opportunity to share information on NASA's programs and plans with a broad array of communities. NASA's ethics officials exercise authority to enable NASA personnel to attend these events, including accepting the gift of attendance implicit in such invitations, in accordance with regulatory criteria.<sup>41</sup> NASA's ethics officials also provide advice on speaking opportunities for agency leaders to enable them to reach diverse communities while ensuring they are not, or perceived to be, endorsing or fundraising for event sponsors.

Spaceflight activities are also directly supported by NASA's ethics attorneys. NASA's partners in spaceflight communications include, for example, organizations that produce films, manufacture toys, make computer software, and run professional sports. Such opportunities enable NASA communications to broaden its reach, including to individuals and communities not easily reached through conventional media. In these efforts, care is taken to ensure that NASA and its personnel, including NASA astronauts, do not endorse or promote the partner or its products, or create an appearance that they do. Such care ensures compliance with US government ethics regulations prohibiting endorsements of products or services,<sup>42</sup>

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38. See provisions discussed *supra* note 17.

39. Post-employment advice to former federal employees is provided by federal agency ethics officials pursuant to OGE regulations at 5 C.F.R. § 2641.105 (2022).

40. 51 U.S.C. § 20112(a)(3) (2022).

41. 5 C.F.R. § 2635.204(g) (2022).

42. See 5 C.F.R. § 2635.701(c) (2022). Basic principles in OGE regulations federal employees are expected to follow, and which are applied when a situation not addressed in 5 C.F.R. Part 2625 is encountered, include ensuring against actions appearing to violate the

appropriations law prohibitions on using agency resources for unauthorized publicity purposes,<sup>43</sup> and with NASA's organic authorities to operate as an agency, which do not accord NASA statutory authority to promote specific private interests.<sup>44</sup> NASA's ethics practice advises agency planners to ensure activities are structured to meet these standards, including entering into appropriate understandings with the cooperating party.

NASA's statutory mission also includes to "seek and encourage, to the maximum extent possible, the fullest commercial use of space . . . ."<sup>45</sup> To advance this goal, in 2019, NASA established a policy for the agency to make agreements with the private sector for commercial and marketing activities on the "International Space Station" (ISS).<sup>46</sup> Unlike NASA's public communications activities with partners, which do not involve promotion, commercial and marketing activities under these agreements are business activities which can include marketing. However, NASA and its employees remain under the same restrictions in commercial and marketing activities as they do for NASA's public communications activities. Consequently, NASA's ethics practice advises on NASA's policy for commercial and marketing activities, including to ensure that opportunities are structured to ensure that NASA or its personnel do not endorse any product or service, or appear to.<sup>47</sup>

Legal compliance achieved with the support of NASA's ethics practice also prevents reputational damage associated with conduct undermining public integrity. In all these areas, publicity about conduct contrary to ethical principles can undermine program support even beyond the immediate legal consequences of non-compliance, jeopardizing their completion.<sup>48</sup>

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law or ethics regulations as judged from the "perspective of a reasonable person with knowledge of the relevant facts." §§ 2635.101(a)-(b)(14).

43. See, e.g., Consolidated Appropriations Act, 2021, Pub. L. No. 116-260, § 8001, 134 Stat. 1182, 1302 (2020).

44. Administrative authorities for NASA's operation are codified in U.S. Code Title 51, Chapter 201. See generally Adam F. Greenstone, *Ethics and Public Integrity in Space Exploration*, 143 ACTA ASTRONAUTICA 322, 323 (2018) (discussing NASA's basic authorities in the context of lacking statutory promotion authority).

45. See 51 U.S.C. § 20112(a)(4) (2022).

46. *NASA Interim Directive (NID 8600.121): Use of International Space Station (ISS) for Commercial and Marketing Activities*, NASA (June 6, 2019), [https://www.nasa.gov/sites/default/files/atoms/files/nid\\_8600\\_121\\_tagged.pdf](https://www.nasa.gov/sites/default/files/atoms/files/nid_8600_121_tagged.pdf) [<https://perma.cc/H3D9-53ZD>].

47. See *supra* notes 42-44 and accompanying text.

48. Greenstone, *supra* note 44, at 323.

## IV. GOVERNMENT ETHICS LAW AND INTERNATIONAL ANTI-CORRUPTION

Returning to our effort to assess the role of government ethics in space affairs, the position of government ethics law in global anti-corruption trends is germane to understanding its role in sustaining space exploration. The emergence of international anti-corruption norms is an important development on the international scene. Emblematic of this direction is the creation of the United Nations Convention Against Corruption (UNCAC).<sup>49</sup> Entering into force on December 14, 2005,<sup>50</sup> UNCAC includes various requirements for public sector compliance including—specifically with reference to areas correlating with US federal government ethics practice—establishing public employee codes of conduct,<sup>51</sup> reporting personal financial interests to prevent conflicts of interest,<sup>52</sup> screening for conflicts in government procurements,<sup>53</sup> and training to prevent corruption.<sup>54</sup> UNCAC also advances transparency into public administration,<sup>55</sup> and establishes criminal prohibitions on bribing domestic<sup>56</sup> and foreign (including international organization) public officials,<sup>57</sup> and on public officials embezzling,<sup>58</sup> trading in influence,<sup>59</sup> and abusing office for advantage.<sup>60</sup> This trend is also reflected by the proliferation in forming ethics offices within international organizations,<sup>61</sup> including the International Monetary Fund in 2000,<sup>62</sup> the

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49. United Nations Convention Against Corruption (UNCAC), *opened for signature* Dec. 9, 2003, 2349 U.N.T.S. 41, [https://treaties.un.org/doc/Treaties/2003/12/20031209%2002-50%20PM/Ch\\_XVIII\\_14p.pdf](https://treaties.un.org/doc/Treaties/2003/12/20031209%2002-50%20PM/Ch_XVIII_14p.pdf) [<https://perma.cc/GKD3-8NQC>]; United Nations, *United Nations Convention Against Corruption*, OFF. ON DRUGS & CRIME (Sept. 2004), [https://www.unodc.org/documents/treaties/UNCAC/Publications/Convention/08-50026\\_E.pdf](https://www.unodc.org/documents/treaties/UNCAC/Publications/Convention/08-50026_E.pdf) [<https://perma.cc/64WS-ZQF9>].

50. See United Nations, *United Nations Convention Against Corruption*, OFF. ON DRUGS & CRIME, <https://www.unodc.org/unodc/en/corruption/uncac.html> [<https://perma.cc/MZ9R-TP8A>]. Listed parties to the treaty are at *United Nations Convention Against Corruption*, U.N. TREATY COLLECTIONS (Oct. 31, 2003) [https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg\\_no=XVIII-14&chapter=18](https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XVIII-14&chapter=18) [<https://perma.cc/66LT-WG27>].

51. UNCAC, *supra* note 49, art. 8.

52. *Id.* art. 8(5).

53. *Id.* art. 9(1)(e).

54. *Id.* art. 9(1)(d).

55. *Id.* art. 10.

56. UNCAC, *supra* note 49, art. 15.

57. *Id.* art. 16.

58. *Id.* art. 17.

59. *Id.* art. 18.

60. *Id.* art. 19.

61. See generally Greenstone, *supra* note 44, at 323.

62. See *Accountability*, INT'L MONETARY FUND, <https://www.imf.org/external/about/govaccount.htm#:~:text=Its%20recommendations%20st>

UN's Secretariat in 2006,<sup>63</sup> other major UN entities,<sup>64</sup> and the World Bank.<sup>65</sup> OGE, in consonance with its US government ethics oversight role, also provides expertise assistance and information in conjunction with international anti-corruption efforts in coordination with the US Department of State, including expertise and knowledge sharing.<sup>66</sup>

International anti-corruption efforts respond to a spectrum of societal challenges, including protecting and preventing diversion of resources that support economic development and fight poverty, building and maintaining public trust in institutions and the rule of law, countering crime and violence, and advancing and maintaining international peace and security.<sup>67</sup> To these ends, the Preamble to the Corruption Convention articulates various concerns, including "that corruption is no longer a local matter but a transnational phenomenon that affects all societies and economies, making international cooperation to prevent and control it essential . . . ."<sup>68</sup> In addition to the public sector initiatives above, UNCAC also addresses corruption in private sector accounting,<sup>69</sup> public participation in countering corruption,<sup>70</sup> preventing money laundering,<sup>71</sup> and punishing private sector bribery,<sup>72</sup> embezzlement,<sup>73</sup> and money laundering.<sup>74</sup>

The great span of international anti-corruption activity is indicated by particulars of UNCAC's implementation, including participation in the Conference of State Parties to the United Nations Convention against Corruption (COSP) established under UNCAC, Article 63. COSP holds regu-

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rong-ly%20influence%20the%20Fund's%20work.&text=The%20IMF%20also%20has%20its,of%20unethical%20behavior%20and%20misconduct.

63. See *What is the UN Ethics Office?*, UN ETHICS OFF., <https://www.un.org/en/ethics/> [<https://perma.cc/B2HF-LZLQ>]. The United Nations Ethics Office for the UN Secretariat was formed in 2006.

64. Deborah Wynes & Mounir Zahran, *Ethics in the United Nations System*, UN JOINT INSPECTION UNIT, JIU/REP/2010/3 (2010), <https://digitallibrary.un.org/record/684262?ln=en> [<https://perma.cc/UEC5-HUSV>].

65. *Ethics and Business Conduct Department*, THE WORLD BANK (last updated Jan. 13, 2022), [https://www.worldbank.org/en/about/unit/ethics\\_and\\_business\\_conduct](https://www.worldbank.org/en/about/unit/ethics_and_business_conduct) [<https://perma.cc/XC55-4QS5>].

66. *Resources for International Anti-Corruption Bodies*, U.S. OFF. OF GOV'T ETHICS, [https://oge.gov/web/oge.nsf/about\\_anti-corruption](https://oge.gov/web/oge.nsf/about_anti-corruption) [<https://perma.cc/Y73S-2242>].

67. See Patrick Keuleers, *9 December Is the International Anti-Corruption Day, An Opportunity to Re-affirm Our Commitment to Fight Corruption*, UNDP ANTI-CORRUPTION FOR DEV. (Dec. 9, 2017), <https://anti-corruption.org/12991/> [<https://perma.cc/LBG5-JJUM>].

68. UNCAC, *supra* note 49, pmb1.

69. *Id.* art. 12.

70. *Id.* art. 13.

71. *Id.* art. 14.

72. *Id.* art. 21.

73. UNCAC, *supra* note 49, art. 22.

74. *Id.* art. 23.

lar sessions biannually, issuing a wide range of resolutions and decisions.<sup>75</sup> Over 180 nations have become UNCAC state parties.<sup>76</sup>

While the expectation of integrity in public service has ancient origins,<sup>77</sup> the current framework of US government ethics law and human space exploration developed in tandem.<sup>78</sup> Following the parallel development of early US space programs and administrative implementation of ethics requirements through President Johnson's 1965 Executive Order, "Prescribing Standards of Ethical Conduct for Government Officers and Employees,"<sup>79</sup> the Ethics in Government Act entered into effect the same day, October 26, 1978, as NASA issued a regulatory notice preventing personal mementoes brought into space by US Space Shuttle crew members from being used for commercial purposes or private gain.<sup>80</sup> Ethics principles were further incorporated in the 1998 international agreement for the construction and operation of the ISS, called the Agreement among the Government of Canada, Governments of the Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and Government of the United States of America Concerning Cooperation on the Civil International Space Station ("Intergovernmental Agreement" or "IGA").<sup>81</sup> This was achieved through the ISS Crew Code of Conduct issued under the IGA's Article 11(2).<sup>82</sup>

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75. See United Nations, *Conference of the States Parties to the United Nations Convention Against Corruption*, OFF. ON DRUGS & CRIME, <https://www.unodc.org/unodc/en/corruption/COSP/conference-of-the-states-parties.html> [<https://perma.cc/22RV-2PVR>].

76. See United Nations Convention Against Corruption, *opened for signature* Dec. 9, 2003, 41 U.N.T.S. 2349, [https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg\\_no=XVIII-14&chapter=18](https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XVIII-14&chapter=18) [<https://perma.cc/P6KU-YJTX>]; United Nations, *Signature and Ratification Status*, OFF. ON DRUGS & CRIME (Nov. 18, 2021), <https://www.unodc.org/unodc/en/corruption/ratification-status.html> [<https://perma.cc/4R63-BCSH>].

77. Greenstone, *supra* note 44, at 322.

78. *Id.* at 323.

79. Exec. Order No. 11,222, 3 C.F.R. §§ 101-706 (1964-1965).

80. Articles Authorized to be Carried on Space Transportation System Flights, 43 Fed. Reg. 49, 979-49, 981 (Oct. 26, 1978) (codified as subsequently amended at 14 C.F.R. Subpart 1214.6).

81. Agreement Among the Government of Canada, Governments of the Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and Government of the United States of America Concerning Cooperation on the Civil International Space Station (IGA), Jan. 29, 1998, T.I.A.S. No. 12927, <https://www.state.gov/wp-content/uploads/2019/02/12927-Multilateral-Space-Space-Station-1.29.1998.pdf> [<https://perma.cc/R8BH-4DFU>].

82. Code of Conduct for the International Space Station Crew (ISS Crew Code), 14 C.F.R. § 1214.403 (2022). The ISS Crew Code includes for example prohibitions on conduct reflecting "undue preferential treatment," *id.* § 1214.403(II)(B), adversely affecting public

In contrast, global coordination on anti-corruption has only more recently come of age. By the receipt of the thirtieth accession to the treaty enabling its entry into force on December 14, 2005,<sup>83</sup> humanity was forty-four years into human space exploration when UNCAC entered into force. While modern day government ethics is one cornerstone of international anti-corruption principles, there are others as the substantive reach of the international anti-corruption movement is much broader.

#### V. GOVERNMENT ETHICS AND SUSTAINABLE SPACE EXPLORATION

A direct contribution of government ethics to space exploration is to enable a national space agency to advance its public objectives without legal or reputational setbacks jeopardizing mission success. As exemplified by NASA's ethics practice reviewed in Part III above, this includes advancing various strategic objectives, including talent management, dissemination of public information about government space activities, and stimulating space commerce. An intervening development, introduced in Part IV above, is that government ethics law itself has become part of a broader international anti-corruption initiative.

The significance of government ethics practice being positioned with a broader global anti-corruption framework can be seen by considering the power of messaging through space exploration. This is demonstrated by the willingness of individuals and polities to commit resources to space science and astronautics beyond what can be explained by conventional justifications.<sup>84</sup> While the Apollo program is habitually discussed in the context of the "Cold War" competition between the United States and the Soviet Union, the United States dedicated resources considerably beyond military necessity to send people to the Moon.<sup>85</sup> The nineteenth century boom in constructing privately funded observatories in the United States resulted in 102 US observatories by 1907, a number of telescopes far exceeding the capacity, and support at that time for astronomers to conduct scientific research.<sup>86</sup> Alternative explanations for these premium resource commitments

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confidence in ISS partners, *id.*, using position for private gain, *id.* § 1214.403(II)(C), and selling mementoes for personal gain, *id.* § 1214.403(II)(D). See Greenstone, *supra* note 44, at 323-24. The application of certain parts of the ISS Crew Code to Private Astronaut Mission (PAM) crew is currently being evaluated.

83. United Nations Convention Against Corruption art. 68(1), Dec. 9, 2003, 2348 U.N.T.S. 41; United Nations, *Signature and Ratification Status*, OFF. ON DRUGS & CRIME (Nov. 18, 2021), <https://www.unodc.org/unodc/en/corruption/ratification-status.html> [<https://perma.cc/4R63-BCSH>].

84. ALEXANDER MACDONALD, *THE LONG SPACE AGE: THE ECONOMIC ORIGINS OF SPACE EXPLORATION FROM COLONIAL AMERICA TO THE COLD WAR* 160-206 (2017).

85. *Id.* at 165-66.

86. *Id.* at 100-102.

include to broadcast national supremacy,<sup>87</sup> to elevate a city's stature,<sup>88</sup> and to establish a personal legacy.<sup>89</sup> These and other examples, arguably founded in innate human admiration,<sup>90</sup> testify to the extraordinary signaling value of space.<sup>91</sup>

A corollary of this point is that, just as certainly as space can be deliberately leveraged to signal power, prestige, and other attributes, space activities can communicate unintended messages to worldwide audiences. This can be seen by considering for comparison the high degree of adverse publicity that can be generated by conduct involving astronauts. In the regular business of advancing global anti-corruption norms, UNCAC parties disseminate information on their initiatives through the COSP, commendably including an internet portal with trove of general and country specific information.<sup>92</sup> One can easily imagine how conduct in space contrary to anti-corruption norms including government ethics principles could, however unreflective of humanity's aggregate spaceborne activity, adversely affect public perception beyond the ability of an international collaboration like COSP to advance understanding of real global progress.

Returning to the range of potential outcomes for humanity in space, and specifically the variables that can determine their quality for human benefit, signaling in consonance with and in support of evolving global anti-corruption norms, including public sector ethics principles, is one of them. We are at a convergence of transformative space activity. In conjunction with implementing the Artemis program to return humanity to the Moon, NASA is modernizing international space cooperation principles through the Artemis Accords,<sup>93</sup> and has opened the ISS to a range of LEO commercial activity,<sup>94</sup> as well as private astronaut missions.<sup>95</sup> Companies led by visionary entrepreneurs have now flown suborbital and orbital vehicles carrying private citizens.

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87. *Id.* at 187-90.

88. *Id.* at 54-55.

89. MACDONALD, *supra* note 84, at 73-74.

90. *Id.* at 169-70.

91. *Id.* at 160-206.

92. United Nations, *Conference of the States Parties to the United Nations Convention Against Corruption*, OFF. ON DRUGS & CRIME, <https://www.unodc.org/unodc/en/corruption/COSP/conference-of-the-states-parties.html> [<https://perma.cc/22RV-2PVR>].

93. Brian Dunbar, *The Artemis Accords: Principles for a Safe, Peaceful, and Prosperous Future*, NASA, <https://www.nasa.gov/specials/artemis-accords/index.html> [<https://perma.cc/9AAD-N356>].

94. See NASA, *supra* note 46, and accompanying text.

95. Ana Guzman, *Private Astronaut Missions*, NASA (Apr. 29, 2021), <https://www.nasa.gov/leo-economy/private-astronaut-missions> [<https://perma.cc/T9HW-RM5T>].



The range of people and organizations in space is burgeoning, with a span far beyond the very small group of technologically advanced nations which previously enjoyed exclusive access. While each of these individuals and entities has its own reasons, including signaling, for undertaking the still extraordinary commitment to access space, their convergence into the space enterprises of tomorrow may collectively signal differently than might be reflected by the sum of the parts. In this connection it is possible, due to space exploration's immense messaging power, that a single reputationally adverse event in space may damage the aggregate message of spacefaring enterprise to a degree far out of proportion to the internal reality of the collective system. In terms of humanity achieving a high road in space,<sup>96</sup> a path sustainable by quality of human benefit, the content of this collective signal is important, and a base that must be covered.

## VI. CONCLUSION

NASA's government ethics practice advances NASA's mission by supporting NASA's public integrity. More specifically, NASA's ethics practice enables NASA's employees and decisionmakers to make choices that do not produce compliance risk or adverse reputational developments jeopardizing mission success. However, with the confluence of evolving global conduct standards of which public sector ethics is part, and the extraordinary ability of space exploration to amplify human messages, our practice has become part of a larger value ecosystem. In this ecosystem, ethics principles protecting public integrity have corollary effects going beyond a particular space mission. They advance and support global anti-corruption norms that through cooperation of state parties conserve development resources, end poverty, reduce conflict, and ultimately advance global peace. Ensuring against financial conflicts by public employees also ensures signaling in consonance with international norms to prevent conflicts of interest. Ensuring that government personnel do not accept inappropriate gifts guards against signaling contrary to international public sector anti-corruption norms. Ensuring that public agencies and employees do not obtain an undue advantage for a private entity, such as by promotion or endorsement, prevents signaling contrary to international norms against abuse of public office. All these corollary effects apply to conduct by space agency employees just as any public sector worker, and for highly visible space travelers and agency leaders these effects are magnified by space's extraordinary messaging power to an outsized degree.

While reasons and ambitions for space travel, exploration, and commerce vary, progress toward sustainable space exploration is apt to increase

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96. See Martinez, *supra* note 10.

returns for all people and organizations, public and private, involved. Government ethics is part of this normative framework, therefore part of the scenario analyses charting humanity's path to its most beneficial space outcome. What this means for individual actors and collective efforts will differ, but what is important is that they each from their respective vantage points sincerely consider what it should be, and respond accordingly.