

**NOTE**

**WOMEN ARE EQUAL ON MARS: ENVISIONING GENDER  
EQUALITY IN THE GOVERNANCE OF  
EXTRATERRESTRIAL SETTLEMENTS UNDER  
INTERNATIONAL SPACE LAW**

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ABSTRACT

*With both government agencies and private industry developing plans for early-stage exploration and settlement of Mars, it is more crucial than ever to begin crafting a framework for the governance of long-term human space settlements. As nascent visions for human colonies take shape, scientists, scholars, and lawyers engaging in constitutional design must make every effort to direct focus towards maximizing equality. This Note will primarily address gender equality, and will argue that under the Outer Space Treaty, which stipulates that space activities be carried out “in accordance with international law,” framers of a new society must draft constitutional language that adheres to internationally accepted gender equality principles. Part II summarizes the legal framework underlying international space law and argues that space exploration “in accordance with international law” necessarily includes international treaties on gender, such as CEDAW. Part III addresses the theory behind constitutional design and how to appropriately constitutionalize gender equality. Part IV applies gender-conscious constitutional design principles to a draft constitutive document for a space settlement, proposing draft language that may best serve women’s interests. Part V briefly outlines practical barriers to female success in space that must be eliminated.*

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I. INTRODUCTION

Mars has long been a bright object in the night sky, and the planet has enchanted both ancient cultures and well-known astronomers.<sup>1</sup> Our current culture remains similarly transfixed, yet, unlike earlier explorers, we have been able to launch landers and rovers to actually

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1. *All About Mars*, NASA, <https://mars.nasa.gov/allaboutmars/mystique/history/> (last visited Jan. 17, 2019).

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touch down and explore the planet's dusty red surface.<sup>2</sup> Now, we stand at a new precipice: human exploration, and eventual habitation, of Mars.<sup>3</sup>

NASA anticipates that, after developing the capability to send humans to an asteroid by 2025, it will place human feet on the surface of Mars by the 2030s.<sup>4</sup> While that timeline itself may seem soon, it is fully possible that humans may touch down on the red planet even earlier. Robust efforts by private companies to design, test, and launch space vehicles demonstrate a rapidly growing industry and an advanced space exploration capability. In what is perhaps the most advanced private effort, Elon Musk's SpaceX anticipates designing an Interplanetary Transport System (ITS) that could launch humans to Mars as early as 2023.<sup>5</sup> Given the efforts of both global space powers and their private industry counterparts, human exploration of Mars may not be far off.

Mars, at an average of 142 million miles away from the Sun, is slightly further out in our solar system than our home planet's 93 million miles from the Sun.<sup>6</sup> To live on the red planet requires significant advanced planning: Mars is much colder than Earth at an average of negative 81 degrees Fahrenheit, has about a third of Earth's gravity (meaning humans would experience 62.5 percent less gravity than usual), and has an atmosphere composed mostly of carbon dioxide with some water vapor.<sup>7</sup> In other words, the conditions on Mars are by no means an analog to those on Earth. Moreover, to get there from Earth requires balancing an ever-changing distance between the Earth and Mars, as the two planets each orbit the Sun at different rates—making for an average trip of around 162 days, but potentially requiring as long as 300

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2. *Missions*, MARS EXPLORATION PROGRAM, NASA, [https://mars.nasa.gov/mars-exploration/missions/?page=0&per\\_page=99&order=date+desc&search=&category=167](https://mars.nasa.gov/mars-exploration/missions/?page=0&per_page=99&order=date+desc&search=&category=167) (last visited Jan. 23, 2019).

3. See, e.g., *The Global Exploration Roadmap*, INTERNATIONAL SPACE EXPLORATION COORDINATION GROUP (Jan. 2018), [https://www.nasa.gov/sites/default/files/atoms/files/ger\\_2018\\_small\\_mobile.pdf](https://www.nasa.gov/sites/default/files/atoms/files/ger_2018_small_mobile.pdf). The International Space Exploration Coordination Group (ISECG), a forum that brings together global space agencies to advance long-range human space exploration strategy, has outlined a plan that begins with the ISS and subsequently leads to Mars.

4. *NASA's Journey to Mars*, NASA, <https://www.nasa.gov/content/nasas-journey-to-mars> (last visited Jan. 17, 2019).

5. Katie E. Lee, *Colonizing the Final Frontier: Why Space Exploration Beyond Low-Earth Orbit is Central to U.S. Foreign Policy, and the Legal Challenges it May Pose*, 27 S. CAL. INTERDISC. L.J. 231, 244 (2017).

6. *All About Mars: Mars Facts*, NASA, <https://mars.nasa.gov/all-about-mars/facts/> (last visited Aug. 9, 2019).

7. *Id.*

days.<sup>8</sup> Though rendering precise plans and calculations are all the more crucial, these scientific barriers have hardly stymied the spirit of human exploration.

If science fiction tells us anything at all, it is that the first brushes with Mars will no doubt rapidly expand from initial exploration to an established human settlement—in other words, the development of a Mars habitat, and perhaps even a civilization.<sup>9</sup> Before this happens, humans must be proactive and intentional by envisioning the ultimate by-product of a settlement of this sort—a multinational group of human beings far from their home planet, in need of stability and governance.<sup>10</sup> A Mars settlement is unlike any prior space frontier: while our world space powers have sent forth astronaut crews into the unknown, these groups were small in number and completing short-term missions; in the future, missions may be large in size, long in duration, farther from Earth, and may potentially involve non-professional participants.<sup>11</sup> This requires highly detailed planning for living structures that more closely adhere to social life as we know it on Earth.<sup>12</sup>

Indeed, while the technology to reach Mars has been thoroughly discussed and debated,<sup>13</sup> what a Mars settlement most needs is government—a topic that has received far less attention.<sup>14</sup> Establishing a government requires identifying core values<sup>15</sup> and fostering a sense of purpose and shared culture<sup>16</sup> to establish a solid foundation for a cohesive colony. In identifying such core values, our current civilization has the chance to establish a new and improved world order, putting forth the best

8. Nola Taylor Redd, *How Long Does It Take to Get to Mars*, SPACE.COM (Nov. 14, 2017) <https://www.space.com/24701-how-long-does-it-take-to-get-to-mars.html>.

9. For science fiction depictions of human activity and settlement on Mars, see, e.g., KIM STANLEY ROBINSON, *RED MARS* (1993); GEOFFREY A. LANDIS, *MARS CROSSING* (2000); ANDY WEIR, *THE MARTIAN* (2014). For an early discussion of the potential to colonize Mars, see GEORGE S. ROBINSON, *No Space Colonies: Creating a Space Civilization and the Need for a Defining Constitution*, 30 J. SPACE L. 169, 169–73 (2004).

10. Lee, *supra* note 5, at 251–52.

11. See Jim Pass, *The Astrosociology of Space Colonies: Or the Social Construction of Societies in Space*, AIP CONF. PROC. 1153, 1156 (2006).

12. *Id.*

13. See generally ROBERT ZUBRIN, *THE CASE FOR MARS* (2011).

14. George S. Robinson, *No Space Colonies: Creating a Space Civilization and the Need for a Defining Constitution*, 30 J. SPACE L. 169, 172–73 (2004) (“We seem to be giving no significant and meaningful time to investigating and assessing in a systematic and disciplined fashion the underlying values of the ‘why’ and the ‘how’ of humankind space migration . . . focusing only on the fact that our technology has allowed us access to a near and deep space.”).

15. *Id.* at 176.

16. Pass, *supra* note 11, at 1158.

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aspects of humanity and incorporating them into a government overseeing a vast, faraway land. Mars therefore presents an opportunity to start from scratch, and to incorporate our most valued tenets from the start—principles like freedom, peace, and equality.

This Note will focus on equality, and how the principle may be extended to human activities in space, including Mars and its potential governance. Even on Earth, states have come together to avow a commitment to such a principle. For example, the preamble of the Universal Declaration of Human Rights recognizes that “the inherent dignity and. . . the equal and inalienable rights of all members of the human family is the foundation of freedom, justice and peace in the world,”<sup>17</sup> demonstrating a general global commitment to equal human rights for all. Specifically, this Note will address gender equality: the furnishing of equal rights, responsibilities, and opportunities regardless of sex,<sup>18</sup> and a specific concern for the interests, needs, and priorities of women as a historically disadvantaged class. Gender equality is not merely symbolic; it is “the foundation of a politics of inclusion,”<sup>19</sup> and the law, which has historically been a tool produced and used by men at the expense of the female perspective, can also be used to promote female autonomy and power.<sup>20</sup>

In focusing on gender equality, this Note will argue that because the Outer Space Treaty (OST)—widely considered to be the “constitution” of space—mandates that outer space activities be conducted “in accordance with international law,” any future human settlement on another planet must be governed in compliance with the requirements set out by international gender treaties. Part II will examine Article I of the Outer Space Treaty’s call for space exploration in accordance with international law. The argument follows that international law includes international treaties promoting gender equality, such as the Convention on the Elimination of Discrimination Against Women (CEDAW), and therefore requires that the drafters of any foundational agreement for a space settlement consider gender equality in drafting constitutional language. Part III discusses the theory behind such constitutional design, with special attention paid to scholarship on gender and constitutionalism,

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17. G.A. Res. 217 (A) (III), Universal Declaration of Human Rights, U.N. Doc A/810 at 71 (1948) [hereinafter UDHR].

18. *Gender Equality: Glossary of Concepts and Terms*, UNICEF 3 (2017), <https://www.unicef.org/rosa/media/1761/file/Gender%20glossary%20of%20terms%20and%20concepts%20.pdf>.

19. HELEN IRVING, *GENDER AND THE CONSTITUTION: EQUITY AND AGENCY IN COMPARATIVE CONSTITUTIONAL DESIGN* 36 (2008).

20. Vicki C. Jackson, *Gender Equality, Interpretation, and Feminist Pluralism*, in *CONST. AND GENDER* 221, 225 (Helen Irving ed., 2017).

envisioning principles that might best support women. Part IV will apply the prior section's discussion of constitutional design to the unique landscape of space. Finally, the Note will briefly examine barriers to full gender equality in a space settlement, such as ongoing domestic gender discrimination within science fields and amongst decision makers.

This Note breaks new ground in several ways. First, it envisions human activity beyond the initial rights and ownership stage, and instead goes further in questioning how these new rights will be enforced through efficient and organized government. It therefore departs from the existing, robust subset of space law literature exploring the need for new legal approaches to property rights or liability issues in space by considering next steps. Second, it looks for approaches to government outside the current framework under the Outer Space Treaty, instead offering a constitutive document for space settlement that is not premised on state sovereignty. Along gender lines, while there has been some attention to gender discrimination in domestic space programs, no literature yet provides effective solutions to such discrimination. The present Note's novel, constitution-based approach offers large-scale legal protection by reading gender into the Outer Space Treaty's provisions and by constitutionalizing gender into the governing document of a space settlement. The discussion below therefore contributes to the study of space law by thinking further ahead in considering longer-term challenges to space exploration and governance, and by introducing creative approaches to conducting exploration with inclusivity and equality in mind.

## II. THE LEGAL BASIS: GROUNDING GENDER EQUALITY IN INTERNATIONAL SPACE LAW

While outer space may to some seem to be a lawless sea of unexplored phenomena, this conception is far from the truth—both scientifically and legally. As the frantic flurry of activity that was the space race first began,<sup>21</sup> lawyers started to think about the legal ramifications of space travel and exploration.<sup>22</sup> Today, a robust body of hard and soft law principles under international law governs outer space activities, in

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21. *A Brief History of NASA*, NASA, <https://history.nasa.gov/factsheet.htm> (last visited Jan. 19, 2020) (“After World War II, the United States and the Soviet Union were engaged in the Cold War, a broad contest over the ideologies and allegiances of the nonaligned nations. During this period, space exploration emerged as a major area of contest and became known as the space race.”).

22. *See, e.g.*, Howard J. Taubenfeld, *Regime for Outer Space*, 56 NW. U. L. REV. 129, 129 (1961–1962).

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addition to an array of domestic laws. This section will explore international space law treaties and will opine on how provisions of the Outer Space Treaty (OST) may provide an opening to draw agreements on gender equality and human rights into the field of space law.

### A. *A Primer on the Law of Outer Space*

Our modern system of international regulation of space activities began in the early 1960s.<sup>23</sup> The framework for international space law lies primarily in five dominant treaties that govern outer space, commonly known as the Outer Space Treaty, the Rescue Agreement, the Liability Convention, the Registration Convention, and the Moon Agreement.<sup>24</sup> All five treaties, with the legal status of General Assembly resolutions, are legally binding upon the states that have ratified them, and provide the widely accepted rules, standards, and governing provisions for space-related activities.<sup>25</sup> Additionally, like other hard law principles, the United Nations Space Law Treaties are subject to traditional treaty interpretation under the Vienna Convention on the Law of Treaties.<sup>26</sup>

Of the five leading space treaties, the Outer Space Treaty (OST) is the main governing treaty,<sup>27</sup> and is widely considered to be a constitution or *magna carta* for outer space activities.<sup>28</sup> This overarching document spawned the four additional agreements that provide further clarity on its provisions. The Rescue Agreement of 1968 solidifies the duties described in the OST that direct states to provide “all possible assistance to astronauts . . . and [to] return objects launched into outer space.”<sup>29</sup> The Liability Convention of 1972 clarifies the rules in the OST on a state’s liability for its extraterrestrial activities.<sup>30</sup> The Registration Convention of 1974 requires that states launching into space register

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23. See, e.g., UNITED NATIONS, INTERNATIONAL AGREEMENTS AND OTHER AVAILABLE LEGAL DOCUMENTS RELEVANT TO SPACE-RELATED ACTIVITIES (1999).

24. *Space Law Treaties and Principles*, UNITED NATIONS OFF. FOR OUTER SPACE AFF., <http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties.html> (last visited Jan. 19, 2020).

25. UNITED NATIONS OFF. FOR OUTER SPACE AFF., <http://www.unoosa.org/oosa/en/informationfor/faqs.html> (last visited Jan. 19, 2020).

26. Steven Freeland, *The Use of Soft Law Within the International Legal Regulation of Outer Space*, 36 ANNALS AIR & SPACE L. 409, 416 (2011).

27. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty].

28. FRANCIS LYALL & PAUL B. LARSEN, *SPACE LAW: A TREATISE* 53-54 (2009).

29. Brian Abrams, *First Contact: Establishing Jurisdiction over Activities in Outer Space*, 42 GA. J. INT’L & COMP. L. 797, 801 (2014) (internal quotations omitted).

30. *Id.* at 805.



their space objects in a central registry maintained by the Secretary-General of the U.N.<sup>31</sup> Finally, the most recent agreement, the Moon Agreement of 1979, provides general principles for activities on the moon; however, given that only fifteen countries are party to the Moon Agreement, it is not binding international law for most states.<sup>32</sup> In contrast, the remaining four treaties have been ratified by many states, including the major space-faring nations, and many of the principles contained within them represent customary international law that binds states and non-states alike.<sup>33</sup>

The formulation and ratification of these treaties have occurred under the auspices of international space organizations. The early and current leader in space law has been the U.N. Committee on the Peaceful Uses of Outer Space (UNCOPUOS), which was converted from an ad hoc committee to a permanent U.N. body in 1959.<sup>34</sup> It has led the charge in the formulation of space policy, and as such, all five U.N. Space Law Treaties were drafted and finalized through the organization.<sup>35</sup> Looking forward, space scholars anticipate that UNCOPUOS will remain at the forefront of the development of space law as the principal multilateral forum in which treaties will be finalized.<sup>36</sup> A subsidiary organization, the U.N. Office for Outer Space Affairs, was initially created to service the committee, and since 1992, has existed as UNOOSA within the Department of Political Affairs.<sup>37</sup>

### B. *Understanding the Outer Space Treaty*

This Note will focus almost exclusively on the OST. Adopted by the General Assembly of the U.N. in Resolution 2222 (XXI) and entering into force on October 10, 1967, the OST features broad, sweeping language of general applicability.<sup>38</sup> As of January 1, 2018, the OST has been ratified by 107 countries,<sup>39</sup> including states with space launch capabilities, such as China, France, India, Japan, Russia, South Korea,

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31. *Id.* at 801.

32. *Id.*

33. Freeland, *supra* note 26, at 427.

34. *Id.* at 425.

35. *Id.*

36. *Id.*

37. *History*, UNITED NATIONS OFF. FOR OUTER SPACE AFF., <http://www.unoosa.org/oosa/en/aboutus/history/index.html> (last visited Jan. 19, 2020).

38. Outer Space Treaty, *supra* note 27.

39. Comm. on the Peaceful Use of Outer Space, *Status of International Agreements Relating to Activities in Outer Space as at 1 January 2018*, U.N. Doc. A/AC.105/C.2/20/2018/RP.3 (Jan. 2018).



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and the United States.<sup>40</sup> Given the general nature of its almost entirely undefined terms, many consider the treaty to be a sort of constitution for space—the open-ended legal background governing all space activities.<sup>41</sup>

The OST is composed of seventeen articles.<sup>42</sup> The first thirteen articles contain the substantial provisions of the treaty, which span issues such as establishing space as the province of all mankind; provisions for the rescue of astronauts; state responsibility for national activities in space; environmental provisions; and the promise of co-operation and mutual assistance.<sup>43</sup> The final four provisions concern administrative matters such as its entry into force.<sup>44</sup> The majority of OST's provisions apply to the moon and other celestial bodies.<sup>45</sup> While the term “celestial bodies” is not defined, which has led to some debate regarding non-planetary physical objects,<sup>46</sup> the term most certainly applies to a planet like Mars.<sup>47</sup>

Article I, of principal concern for this Note, states in paragraph 1 that “[t]he exploration and use of outer space . . . shall be the province of all mankind.”<sup>48</sup> Paragraph 2 makes clear that:

Outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and *in accordance with international law*, and there shall be free access to all areas of celestial bodies.<sup>49</sup>

Article I, paragraph 2 is of the utmost importance for several reasons. It states quite broadly that space exploration shall be conducted “on a

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40. At present, states with launch capability include: China, France, India, Iran, Israel, Italy, Japan, North Korea, Russia, South Korea, Ukraine, and the United States. See Steve Lambakis, *Foreign Space Capabilities: Implications for U.S. National Security*, NAT'L INST. FOR PUB. POL'Y 12 (2017) (describing launch capabilities as of 2017). It is worth noting that some space activities are conducted through space agencies comprised of multiple states, such as the European Space Agency.

41. See LYALL & LARSEN, *supra* note 28.

42. Outer Space Treaty, *supra* note 27.

43. See *id.* arts. 1, 5, 6, 9.

44. Julia Neumann, *An Interpretation of the Outer Space Treaty After 40 Years*, 50 PROC. ON L. OUTER SPACE 431, 435 (2007).

45. Abrams, *supra* note 29, at 804.

46. *Id.*

47. See *id.* at 804-05.

48. Outer Space Treaty, *supra* note 27, art. 1.

49. *Id.* (emphasis added).

basis of equality.”<sup>50</sup> Importantly, this key language applies solely to relationships among states; in other words, a state cannot unduly discriminate against another state while engaging in space exploration.<sup>51</sup> Though not applying on an individual level, the language demonstrates that the drafters of the OST did value equal access to space, among states at the very least. More importantly, paragraph 2 also indicates that space activities must comply with “international law.”<sup>52</sup> Further analysis of what constitutes such international law is discussed in the following subsection.

Other language both supports and adds to the general themes of equality, free exploration, and commitment to international law that are espoused in Article I, paragraph 2. Article II states that outer space is not subject to “national appropriation by claim of sovereignty, by means of use or occupation, or by any means.”<sup>53</sup> Article II’s non-appropriation language may prove important in the development of a space colony in that no one state may lay claim to a settlement on another planet. Article III reiterates that the exploration and use of outer space must be “in accordance with international law, including the Charter of the United Nations,” in the interest of promoting international cooperation and understanding.<sup>54</sup> Article VI, the provision on state responsibility, requires that states “bear international responsibility for national activities in outer space.”<sup>55</sup> This state responsibility includes activities by governmental agencies or by non-governmental agencies and requires that states supervise private entities.<sup>56</sup> While not directly relevant to the principle of equality, these provisions may prove relevant for a Mars settlement should a private entity be the first to settle

50. *Id.*

51. See Neumann, *supra* note 44, at 435 (describing space law as “develop[ing] at a time when the only actors in outer space were States,” and international law more generally as “based on the sovereignty and equality of States.”). The text of Article I, paragraph 2 also supports this reading. See Outer Space Treaty, *supra* note 27, art. 1 (“Outer space . . . shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality” (emphasis added)). Though the equality provision itself applies solely to states, this does not mean that states and non-state organizations bear no obligation to respect equality on an individual level. The requirement to respect individual equality, as will be explored further below in parts II.C. and III, relies instead on the “in accordance with international law” provision of Article I.

52. Outer Space Treaty, *supra* note 27, art. 1.

53. *Id.* art. 2.

54. *Id.* art. 3.

55. *Id.* art. 6.

56. *Id.* Article VI requires states to bear international responsibility “whether such activities are carried on by governmental agencies or by non-governmental entities,” and requires states to engage in “continuing supervision” of non-governmental entities.

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Mars. States party to the OST and other international law could, for example, require that their domestic space counterparts meet domestic and international law standards. Finally, Article XIII ensures that the provisions apply whether or not activities are conducted by a single state party, jointly with other states, or when carried on within the framework of an international intergovernmental organization.<sup>57</sup> On the whole, the OST thus sets out principles of equality, affirms a commitment to other international law, and regulates how states conduct their activities themselves or with other states, international organizations, or private industry.

### C. *Reading Gender Equality and Human Rights into Space Law*

As explored above, the foundational document for space exploration, the OST, includes several provisions proscribing equality and adherence to international law. Most clearly, Article I of the OST states that space exploration must be carried out “in accordance with international law.” The question therefore arises: how should the international community interpret the term “international law?”

Interpreting “international law” first involves determining what meaning to assign to the term. As used in the OST, the term “international law” appears to take its ordinary meaning.<sup>58</sup> The Vienna Convention on the Law of Treaties (VCLT) instructs that “[a] treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose.”<sup>59</sup> As the OST does not at all define

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57. *Id.* art. 8.

58. “Ordinary meaning” is a doctrine proscribing that legal text should be interpreted using the simplest, commonly understood meaning of the terms. See BRIAN G. SLOCUM, *ORDINARY MEANING: A THEORY OF THE MOST FUNDAMENTAL PRINCIPLE OF LEGAL INTERPRETATION* 2 (2015) (noting that “courts have agreed that words in legal texts should be interpreted in light of accepted and typical standards of communication”).

59. Vienna Convention on the Law of Treaties art. 31, May 23, 1969, 1155 U.N.T.S. 331 [hereinafter VCLT]. The VCLT is applicable to the OST even though the VCLT entered into force after it. See Christopher Gawronski, *Where No Law Has Gone Before: Space Resources, Subsequent Practice, and Humanity’s Future in Space*, 79 OHIO ST. L.J. 175, 181 (2018). “Although written into the VCLT, the treaty interpretation rules are recognized to be a statement of preexisting customary international law. This means that Article 31 is generally applicable to all treaties even if they were concluded before the VCLT came into force, and even if the states parties to such treaties are not parties to the VCLT. This is important because it means the treaty interpretation rules are applicable to both the Outer Space Treaty and the United States, even though the Outer Space Treaty came into force before the VCLT.”

what is meant by international law,<sup>60</sup> it is unlikely that any specialized meaning unknown to the general reader should be read into the term. Without any clear statement to the contrary from the terms of the treaty, there is little reason to depart from the default “ordinary meaning” guidance of the VCLT.<sup>61</sup> Therefore, traditional, commonly understood definitions of international law should apply.

International law, or public international law, is known as “the body of legal rules, norms, and standards that apply between sovereign states and other entities that are legally recognized as international actors.”<sup>62</sup> It binds states in their international relationships with one another, giving rise to both rights and obligations.<sup>63</sup> In evaluating what constitutes such law, scholars often rely on the sources of international law,<sup>64</sup> as best articulated in Article 38 of the Statute of the International Court of Justice.<sup>65</sup> It states:

1. The Court, whose function is to decide in accordance with international law such disputes as are submitted to it, shall apply:
  - a. international conventions, whether general or particular, establishing rules expressly recognized by the contesting states;
  - b. international custom, as evidence of a general practice accepted as law;
  - c. the general principles of law recognized by civilized nations;
  - d. subject to the provisions of Article 59, judicial decisions and the teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules of law.<sup>66</sup>

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60. See Outer Space Treaty, *supra* note 27; see also Neumann, *supra* note 44, at 435–37 (describing the OST’s general tendency to leave most of its terms undefined).

61. See Neumann, *supra* note 44, at 432 (quoting the International Court of Justice (ICJ) in the Competence of the General Assembly for the Admission of a State to the United Nations case: “[W]hen the Court can give effect to a provision of a treaty by giving to the words used in it their natural and ordinary meaning, it may not interpret the words by seeking to give them some other meaning.”).

62. Malcolm Shaw, *International Law*, ENCYCLOPEDIA BRITANNICA, <https://www.britannica.com/topic/international-law> (last visited Oct. 1, 2019).

63. Freeland, *supra* note 26, at 415.

64. *Id.* at 422–23.

65. *Id.*

66. Statute of the International Court of Justice art. 38, ¶ 1.

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As stated in Article 38(1)(a), the primary source of law is treaty law, where a treaty is defined as “an international agreement concluded between States in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation.”<sup>67</sup> Article 38(1)(b) identifies customary international law<sup>68</sup> as another primary source of law.<sup>69</sup> These commonly accepted sources of international law make clear that when the OST mandates that space exploration occur in accordance with the entire body of international law, the OST includes treaties and customary international law.

If outer space exploration must be conducted in accordance with treaty law, and no qualifications are given as to which treaties would apply, then this suggests that states conducting activities in outer space must necessarily respect gender treaties. When it comes to gender discrimination and international law, several agreements are particularly relevant. The primary agreement is the Convention on the Elimination of Discrimination Against Women (CEDAW), an international treaty that entered into force in September 1981.<sup>70</sup> Additional treaties that address full and equal rights for women are the International Covenant for Civil and Political Rights (ICCPR), which entered into force in March 1976,<sup>71</sup> and the International Covenant on Economic, Social, and Cultural Rights (ICESCR), which entered into force in January 1976.<sup>72</sup> Finally, though not a treaty, the Universal Declaration of Human Rights (UDHR) is a form of soft law that provides moral guidance as to how states should best respect and protect human rights.<sup>73</sup> These agreements will be addressed in turn below.

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67. VCLT, *supra* note 59, art. 2(1)(a).

68. See Tullio Treves, *Customary International Law*, in MAX PLANCK ENCYCLOPEDIA OF PUBLIC INTERNATIONAL LAW ¶¶ 15-16 (2006) (internal quotations omitted). Customary international law “is formed by the practice of states which they accept as binding upon them.” For “a new customary rule to be formed not only must the acts concerned amount to a settled practice, but they must be accompanied by the *opinio juris sive necessitatis*,” whereby states subjectively believe that “this practice is rendered obligatory by the existence of the rule of law requiring it.”

69. Statute of the International Court of Justice art. 38, ¶ 1(b).

70. Convention on the Elimination of All Forms of Discrimination Against Women, Dec. 18, 1979, 1249 U.N.T.S. 13 [hereinafter CEDAW].

71. International Covenant on Civil and Political Rights, Dec. 16, 1966, 999 U.N.T.S. 171 [hereinafter ICCPR].

72. International Covenant on Economic, Social, and Cultural Rights, Dec. 16, 1966, 993 U.N.T.S. 3 [hereinafter ICESCR].

73. See UDHR, *supra* note 17, at 71.

1. Treaty Law on Gender Discrimination: CEDAW

The Convention on the Elimination of Discrimination Against Women (CEDAW) is an international treaty of thirty articles that condemns gender discrimination and calls on states to adopt measures to ensure positive rights for women.<sup>74</sup> Its provisions instruct states to promote full development and advancement for women, modify social and culture patterns of conduct to eliminate prejudices and cultural ideas of male superiority, protect political rights, and provide access to education, health care, and the justice system.<sup>75</sup>

Article 1 of CEDAW defines discrimination against women as any “distinction, exclusion, or restriction made on the basis of sex which has the effect or purpose of impairing or nullifying the recognition, enjoyment, or exercise by women, irrespective of their marital status, on a basis of equality of men and women, of human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field.”<sup>76</sup> This definition both protects against discrimination on the basis of sex, which provides protection for a wider field of gender identities, and also specifically provides for the protection of women.

Article 2 is of particular interest for the development of a governing body for space. It calls on states to “embody the principle of the equality of men and women in their national constitutions or other appropriate legislation if not yet incorporated therein, and to ensure, through law and other appropriate means, the practical realization of this principle.”<sup>77</sup> While applying to municipal constitutions, Article 2 makes clear that when designing a constitutional document meant to govern a class of people, attention should be given to enshrining gender equality within that governing text. The Article goes on to suggest the means for effectuating gender equality: for example, in Article 2(b), “[t]o adopt appropriate legislative and other measures . . . prohibiting all discrimination against women,”<sup>78</sup> in Article 2(c), “[t]o establish legal protection of the rights of women on an equal basis with men,”<sup>79</sup> or in Article 2(d) to ensure that “public authorities and institutions” act in conformity with the obligation.<sup>80</sup> Moreover, Article 2(e) extends this protection to discrimination by private entities; it calls on states “[t]o take all

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74. CEDAW, *supra* note 70.

75. *See id.*

76. *See id.* art. 1.

77. *Id.* art. 2(a).

78. *Id.* art. 2(b).

79. *Id.* art. 2(c).

80. *Id.* art. 2(d).

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appropriate measures to eliminate discrimination against women by any person, organization or enterprise.”<sup>81</sup> Article 2(e) is thus particularly useful for the space industry, where a private company may be the first to establish a human settlement on Mars.

CEDAW may also help support the ability for women to serve as astronauts or envoys to a Mars settlement. Article 8 declares that states “shall take all appropriate measures to ensure women, on equal terms with men and without any discrimination, the opportunity to represent their Governments at the international level and to participate in the work of international organizations.”<sup>82</sup> While it is not clear that the drafters of CEDAW necessarily contemplated the application of Article 8 to domestic astronaut programs, Article 8 does provide support for the notion that women should be equally represented in a space colony given that, as the first settlers of another planet, these envoys represent the entirety of the planet Earth. Article 8 could help pave the way for greater numbers of female astronauts representing their government at the international level on missions to Mars.

### 2. Additional Treaty Law Protecting Women’s Rights: ICCPR and ICESCR

The International Covenant on Civil and Political Rights (ICCPR) and the International Covenant on Social and Cultural Rights (ICESCR) are international treaties that ensure a wide range of rights for citizens in ratifying states. Together with CEDAW and UDHR, these agreements constitute the “International Bill of Rights.”<sup>83</sup> While not geared specifically towards gender equality, these treaties do attempt to limit global gender discrimination, as explored below.

The ICCPR recognizes the inherent dignity and the equal and inalienable rights of all members of the human family.<sup>84</sup> Article 3 requires that states ensure “the equal right of men and women to the enjoyment of all civil and political rights set forth in the present Covenant.”<sup>85</sup> These rights include, as exemplified in Article 25, the right to take part in the conduct of public affairs, vote and be elected, and have access on terms of equality to public service.<sup>86</sup> It also requires that the law prohibit discrimination, and protect against it,

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81. *Id.* art. 2(e).

82. *Id.* art. 8.

83. Freeland, *supra* note 26, at 434.

84. ICCPR, *supra* note 71, Preamble.

85. *Id.* art. 3.

86. *Id.* art. 25.



on the grounds of sex.<sup>87</sup> Provisions such as Articles 3, 25, and 26, as just described, provide further protection against gender discrimination by specifically detailing women's civil and political rights.

The ICESCR functions similarly for social and cultural rights. It calls for the free determination of political status and each individual's ability to pursue economic, social, and cultural development.<sup>88</sup> Article 3 of the ICESCR address gender equality by providing that state parties "ensure the equal right of men and women to the enjoyment of all economic, social, and cultural rights."<sup>89</sup> Article 3, taken together with the provisions of the ICCPR, provides a comprehensive set of internationally-recognized positive rights that cover many aspects of women's daily lives.<sup>90</sup> They, on the whole, demonstrate international law's commitment to ensuring women retain certain rights.

As treaty law, CEDAW, the ICCPR, and the ICESCR represent binding obligations on ratifying states to uphold the values contained within. These obligations extend to activities in space because they constitute international law, which states must respect when engaging in space exploration.

### 3. Beyond Treaty Law: UDHR as a Standard for Equality

In contrast to treaty law, the Universal Declaration of Human Rights (UDHR) is not necessarily binding on states. Instead, its status is that of soft law: written multilateral instruments in the public domain that specify rules of conduct or standards of achievement but are not intended to be binding.<sup>91</sup> Though it may not compel states to act, the UDHR can in fact be quite persuasive. Parties often cite its provisions in arguments before national and international tribunals,<sup>92</sup> demonstrating its persuasive power as an aspirational norm for the international community. Moreover, some scholars argue that the UDHR has risen

87. *Id.* art. 26.

88. ICESCR, *supra* note 72, art. 1.

89. *Id.* art. 3.

90. Some have criticized such provisions as not providing adequate protections for areas where women are still marginalized, notably that of family life (child rearing, pregnancy discrimination). This is true of gender equality doctrine on the whole. *See, e.g.*, Beverly Baines & Ruth Rubio-Marin, *Introduction: Toward a Feminist Constitutional Agenda*, in *THE GENDER OF CONST. JURIS.* 10 (Beverly Baines & Ruth Rubio-Marin ed., 2005). "Often the most serious forms of discrimination are those that women encounter in the private sphere." This is important as family life concerns may inhibit female astronauts' ability to successfully participate in space exploration.

91. Freeland, *supra* note 26, at 430.

92. Catalina-Adriana Ivanus, *Prohibition of Gender Discrimination in Some International Regulations*, *AGORA INT'L J. JURID. SCI.* 59, 60 (2014).

to the level of customary international law, which would bind all states, regardless of their disposition towards the UDHR.<sup>93</sup> If it were to be customary law, it would bind all states in their space exploration by requiring that they respect human rights, including the UDHR's provisions on gender equality, in their activities. While the UDHR's status as that of customary international law may be disputed, there are still several implications for space law. Even without reaching the level of customary law, the UDHR serves as a common understanding amongst mankind as to what constitutes true equality, given that the agreement represents the global recognition of certain human rights.<sup>94</sup> At the very least, the UDHR provides aspirational norms that are important to keep in mind when drafting a constitution meant to encapsulate the best of Earth's values.

The UDHR preamble provides helpful language demonstrating mankind's commitment to principles of dignity and equality.<sup>95</sup> The document continues on in Article 1 to recognize that "[a]ll humans are born free and equal in dignity and rights."<sup>96</sup> Article 2 specifically speaks out against sex discrimination in noting that "[e]veryone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as . . . sex."<sup>97</sup> Article 7 addresses legal protections by providing that all are equal before the law and entitled, without any discrimination, to equal protection of law, and to protection from any instance of discrimination.<sup>98</sup> Finally, Article 28 states that everyone is "entitled to a social and international order in which the rights and freedoms set forth in this Declaration can be fully realized."<sup>99</sup> If applicable, this final provision suggests that a government for a space settlement under international law should, at least in aspiration, be the kind of system in which all can exercise equal rights regardless of sex and receive the same protections from the state against discrimination. The

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93. *Id.*

94. *See* UDHR, *supra* note 17, Preamble. It notes that "the peoples of the United Nations have in the Charter reaffirmed their faith in fundamental human rights. . . ." and that the "Member States have pledged themselves to achieve, in cooperation with the United Nations, the promotion of universal respect for and observance of human rights and fundamental freedoms."

95. *Id.* The preamble recognizes, in part, "the inherent dignity and . . . the equal and inalienable rights of all members of the human family," that all "human rights should be protected by the rule of law," that human rights "is essential to promote the development of friendly relations between nations," and that the United Nations has reaffirmed "the equal rights of men and women."

96. *Id.* art. 1.

97. *Id.* art. 2.

98. *Id.* art. 7.

99. *Id.* art. 28.

UDHR, on the whole, provides useful, universal norms that can help guide the establishment of values for the governance of a space settlement. Moreover, if it were to crystallize into international law, it would create binding obligations for the states involved in such a settlement to ensure equal rights for all.

#### 4. Limitations to Gender Equality Under International Law

Treaty obligations that do not also constitute customary international law are not binding on states that have not ratified the treaty.<sup>100</sup> The United States, for example, has not ratified CEDAW,<sup>101</sup> and therefore is not compelled to abide by the gender protections the treaty affords. When a state is not a party to a treaty, the obligations for the non-party state are, at best, moral obligations, which may or may not persuade the state to comply.<sup>102</sup> In terms of CEDAW, this does not mean that the treaty is irrelevant—on the contrary, 189 states have ratified CEDAW, making it binding on the vast majority of the world.<sup>103</sup> Still, ratification issues could generally provide a limitation to gender treaties when states decide not to sign on, leaving the provisions as merely a moral yardstick,<sup>104</sup> lacking full force.

Additionally, states retain the capacity to issue reservations to those parts of the treaties with which they take issue. Reservations “are a means whereby the parties to a treaty may, individually, modify the extent of their consent to the terms of the treaty.”<sup>105</sup> Even when becoming parties, some states have expressed reservations to particular articles of CEDAW, such as Article 2 or 16, on religious, cultural, and historical grounds (with certain countries often citing a conflict with Sharia law).<sup>106</sup> While these reservations may appear limited in scope, they undermine the international community’s efforts to protect

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100. Malgosia Fitzmaurice, *Treaties*, in MAX PLANCK ENCYCLOPEDIA OF PUBLIC INTERNATIONAL LAW ¶¶ 14–15 (2010).

101. Treaty Status as at Jan. 23, 2019, UNITED NATIONS TREATY COLLECTION, [https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg\\_no=IV-8-b&chapter=4&lang=en](https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=IV-8-b&chapter=4&lang=en) (last visited Jan. 23, 2019).

102. Noreen Burrows, *International Law and Human Rights: The Case for Women’s Rights*, in HUMAN RIGHTS: FROM RHETORIC TO REALITY 90 (1986).

103. Many of the major space powers have ratified CEDAW, including China (1980), France (1983), Germany (1985), India (1993), Japan (1985), Spain (1984), and the United Kingdom (1986), amongst many others. Treaty Status, *supra* note 101.

104. *Id.*

105. Fitzmaurice, *supra* note 100, ¶ 57.

106. Wendy Lacey, *Gender Equality: International Law and National Constitutions*, in CONSTITUTIONS AND GENDER 135, 144 (Helen Irving ed., 2017).

women, and leave individual women with less legal recourse. On the whole, reservations, custom, tradition, and weak enforcement can at times contravene CEDAW's true purpose.<sup>107</sup>

A final limitation involves the applicability to private entities. Treaty law typically does not apply to private companies, as these agreements concern the relationship between states, not the relationship between states and the private sector, or states and individuals.<sup>108</sup> However, Article VI of the OST does make states responsible for the activities of their own domestic space companies,<sup>109</sup> and these states could require that their space companies comply with gender treaties before issuing permits allowing those companies to launch. State supervision of domestic space companies, and the involvement of private industry generally, will be further discussed in Part III.

### 5. A Foundation for Gender Equality in Space

As demonstrated in the foregoing discussion, the OST provides a clear textual hook for gender equality in space in mandating that space exploration be carried out "in accordance with international law." This requirement is binding on states party to the treaty, which includes all major space-faring nations. Treaty interpretation suggests that "international law" likely takes its ordinary meaning,<sup>110</sup> whereby the ordinary, commonly understood definition of international law includes sources such as treaties and customary international law. Treaty law includes treaties that protect against gender discrimination, including CEDAW, ICCPR, and ICESCR. The inclusion of gender equality provisions within the body of existing international law makes gender a necessary consideration in the planning of space activities. Looking forward, states that hope to colonize Mars do so against the existing legal backdrop, in the absence of any new agreements to the contrary.<sup>111</sup> States therefore must adhere to the present legal framework, which, as has

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107. *Id.* at 139.

108. *See* Burrows, *supra* note 102.

109. Outer Space Treaty, *supra* note 27, art. 6 ("States Parties to the Treaty shall bear international responsibility for national activities in outer space . . . whether such activities are carried on by governmental agencies or by non-governmental entities.").

110. *See* VCLT, *supra* note 59, art. 31(1) (stipulating that treaty terms be interpreted according to their ordinary meaning).

111. The argument could certainly be made that countries conducting activities in space are already bound by gender agreements outside of the space context, such that this international law would already extend to their space activities. However, it is uncertain to what extent international law might independently apply to Mars. In contrast, the Outer Space Treaty clearly applies to all activities involving other "celestial bodies." The framework of working through the

been shown, legally requires that space activities be conducted with due sensitivity towards the needs of women. In sum, space-faring nations must consider the prevention of gender discrimination in conducting their activities, and any constitutional language meant to govern space settlements must be drafted to reflect such gender equality, as will be discussed in Parts III and IV.

III. THEORETICAL UNDERPINNINGS FOR THE DESIGN OF A SPACE SETTLEMENT:  
CONSTITUTIONAL DESIGN, EQUALITY, AND GENDER

To leave the human settlers of Mars ungoverned would be to subject them to extraterrestrial anarchy, with only governance by diverse and rival states on Earth, located on average 225 million kilometers away, to help settle disputes. This model is insufficient for real humans with needs, quarrels, and, most importantly, robust political and human rights to uphold. Instead, Mars needs its own form of government. However, the need for a functional, extraterrestrial government raises the question: what principles should underlie the design of a Mars governing body? How can the gender equality framework, as read into the OST in Part I, best be effectuated and enshrined within a governing document? This section attempts to partially answer that question by imparting a feminist perspective on constitutional design.

A. *General Exercises in Constitutional Design*

Humans, whether formally or informally, have always found a way to order their activities through a set of rules or general practices.<sup>112</sup> Indeed, “[a]ny human society has a set of rules or practices of some kind that governs the relations between its members and the ways in which they make decisions affecting the group as a whole.”<sup>113</sup> Similarly, as long as there have been societies, there have been scholars driven to

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OST therefore may be the best means to effectuate individual equality space, given its unique tailoring to the needs of space, familiarity to domestic space actors, and clear applicability.

112. A great deal could be said, before delving into the specifics of constitutionalism, about the political theory and philosophy behind a community’s creation. The question of how humans should live together and govern themselves on Mars, and whether settlement on Mars is wise in the first place, involves clear questions of political theory, philosophy, sociology, critical theory, policy, environmentalism, and history, amongst other fields of study. Each of these important approaches merits full consideration; however, there was unfortunately insufficient room in the present Note for a robust theoretical discussion across diverse disciplines. This Note therefore takes solely a legal and constitutional approach to space governance, and leaves to future papers the philosophical question of why settle and the theoretical question of how best to govern society.

113. Cheryl Saunders, *Constitution-Making in the 21<sup>st</sup> Century*, 4 INT’L REV. L. 1, 2 (2012).

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examine and theorize on their organization.<sup>114</sup> The means by which these societies have come together, the values enshrined in any governing text, and the power of the document to change human behavior have, however, greatly transformed over time—in particular, in the last two centuries.<sup>115</sup> Today, we see the formation of multi-cultural societies that are diverse in religion, culture, and thought, and that at times lack the common history, religion, or language that bound societies in the past.<sup>116</sup> In the face of this diversity, a great weight is placed upon constitutions. As noted by the Colombian Supreme Court:

The function of a constitution today is to [i]ntegrate diverse social groups, to conciliate opposing interests, in the search for what has been called constitutional consensus, so that agreement on the content of the Constitution becomes a fundamental premise for the establishment of public order, [to serve] the attainment of social harmony, the coexistence of citizens and peace, with all that concept implies, as the ultimate end of governmental organization.<sup>117</sup>

Constitutions serve to bind divergent viewpoints into a single voice, to unite opposing parties in their support for a cohesive and responsive government, and to protect minorities against the decisions of the majority.<sup>118</sup>

As a single document meant to encapsulate an overarching vision for the governance of an entire people, a constitution often uses broad, aspirational language.<sup>119</sup> This aspirational nature is beneficial—it provides an ideal, a framework of goodness, equality, justice, and peace to which all national laws should aspire and adhere. The constitution should “state or stand for the things that are best or most noble in people.”<sup>120</sup> Aspirational language is more than mere symbolism for

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114. See generally GEORGE HOLLAND SABINE, *A HISTORY OF POLITICAL THEORY* (1937).

115. Saunders, *supra* note 112, at 2.

116. *Id.* at 2–3.

117. Colombian Supreme Court, *quoted in* Helen Irving, *GENDER AND THE CONSTITUTION: EQUITY AND AGENCY IN COMPARATIVE CONSTITUTIONAL DESIGN* 24 (2008).

118. Saunders, *supra* note 112, at 2–3.

119. See, e.g., Beth Goldblatt, *Constitutional Approaches to Gender and Social and Economic Rights*, in *CONSTITUTIONS AND GENDER* 485 (Helen Irving ed., 2017). One study surveying the constitutions of 195 countries found that a full third of countries had aspirational social and economic rights, while another third had rights that were partially aspirational, partially justiciable.

120. HELEN IRVING, *GENDER AND THE CONSTITUTION: EQUITY AND AGENCY IN COMPARATIVE CONSTITUTIONAL DESIGN*, 24–25 (2008).

symbolism's sake. In describing the community in ways that are more inclusive, open, and equal than society might be at the time of drafting, a constitution can help push its citizens in the right direction. It can "name disadvantage" by pointing out historic mistreatment, exclusion, or discrimination that has hindered the progress of certain classes of persons in the past,<sup>121</sup> and can expressly include those people as full members of society going forward. This will prove important in the case of gender, where aspirational language that recognizes a history of past sex discrimination can help ensure better treatment in the future.

Broad, aspirational language can also provide a textual basis for legal interpretation that increases the rights of future citizens living under changed circumstances. Constitutions are highly visible documents whose textual provisions are well known to advocates, judges, historians, and political actors. The text permeates throughout the legal culture—indeed, in the United States, certain provisions of the Bill of Rights have led to their own political subcultures replete with staunch supporters.<sup>122</sup> Constitutions take the opposite approach from statutes, which provide a more specific and clearly codified set of rights.<sup>123</sup> Where constitutions prevail is in their openness to interpretation by skilled advocates. In the past, women around the world have successfully utilized their constitution's broad language to fight "pregnancy and employment discrimination, domestic violence, political underrepresentation, sexual harassment, military service discrimination, sex crimes and/or their accompanying procedures, or unfair marriage, divorce, and succession rules."<sup>124</sup> Women and minorities worldwide have managed to secure additional protections through language written broadly enough to allow for such interpretations;<sup>125</sup> similarly, constitutional design going forward can rely on broad or aspirational language to help ensure the availability of more rights than can be envisioned or provided for initially.

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121. *Id.* at 25.

122. The Second Amendment is a good example of a constitutional provision that has bred its own subculture of advocates for particular interpretations. *See, e.g.*, Glenn H. Utter & James L. True, *The Evolving Gun Culture in America*, 23 *J. AM. CULTURE* 67, 67 (2004).

123. BEVERLEY BAINES & RUTH RUBIO-MARIN, *THE GENDER OF CONSTITUTIONAL JURISPRUDENCE* 8–9 (2005).

124. *Id.* at 9.

125. *Id.*



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### B. Gender and Constitutionalism

Various scholars have analyzed how constitutional design and interpretation can be to the legal detriment or benefit of women, both in terms of domestic constitutional jurisprudence and through comparative constitutional design. This scholarship, as will be discussed below, has evaluated and recommended certain government structures that have traditionally yielded greater equality and protections against discrimination than their counterparts.

Two concerns guide our present inquiry into the relationship between gender and constitutionalism: whether women are equal and active participants in the drafting of a constitution, and whether language promoting gender equality and women's rights features in the text of the constitutional document itself. Constitutional drafting, history, current trends in constitutional practice, and a need for future constitutional legitimacy suggest that focusing on gender equality will be imperative in the drafting of any new constitution. Historically, women have been overwhelmingly excluded from the formulation of political processes.<sup>126</sup> For example, not a single woman took part in the Philadelphia Convention of 1787, where the "Founding Fathers" crafted the U.S. Constitution, and no women were allowed to exercise any say as delegates to the state ratifying conventions<sup>127</sup>—even as Abigail Adams implored her husband to "Remember the Ladies."<sup>128</sup> Those women lost their chance to take part in the design of the U.S. Constitution seemingly for good, as there has since been little change to its text.<sup>129</sup> Rather than gender, most countries' historical state

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126. See, e.g., John Kang, *Patriarchy and Constitutional Origins*, in CONSTITUTIONS AND GENDER 513 (Helen Irving ed., 2017) (describing the exclusion of women in both British and early American politics. Regarding U.S. politics, "[n]o woman participated in the most vital events that led to the creation of the American republic: the signing of the Declaration of Independence in 1776 and the Philadelphia Convention in 1787. . . . We must infer that the anti-patriarchal ethos embodied in the Constitution's principle of 'We the People' was never meant by the framers to encompass women generally.") (internal citations omitted).

127. IRVING, *supra* note 19, at 4–5.

128. Letter from Abigail Adams to John Adams (Mar. 31 – Apr. 5, 1776), *Adams Family Papers: An Electronic Archive*, MASSACHUSETTS HISTORICAL SOCIETY, <https://www.masshist.org/digitaladams/archive/doc?id=L17760331aa>. Abigail Adams wrote to her husband, who was involved in revolutionary efforts and the subsequent design of new laws: "I desire you would Remember the Ladies, and be more generous and favourable to them than your ancestors. Do not put such unlimited power into the hands of the Husbands. Remember all Men would be tyrants if they could." Based on the design of the new constitution, which does not mention gender at all, it seems he did not heed her request.

129. See Richard S. Kay, *Formal and Informal Amendment of the United States Constitution*, 66 AM. J. COMP. L. 243, 243 (2018). Regarding the U.S. Constitution, "notwithstanding that it is sometimes

building has focused on other considerations: it is economic, cultural, or religious conflicts that have often shaped how constitution drafters in various countries chose their form of government, leaving little room for a frank discussion on sex discrimination.<sup>130</sup> Historical inattention to the needs of women left the world with constitutions written solely by male hands with their own interests primarily in mind.<sup>131</sup> This only began to change in postwar constitutionalism, as women pushed for the embrace of formal equality and a specific commitment to sex equality.<sup>132</sup> Today's markedly different social and political landscape has made it such that "it is unlikely that a modern constitutional process would be viewed as adequately participatory if it did not include women."<sup>133</sup>

As women have begun to secure greater political power and have gained a voice in constitutional drafting—making consideration of women's needs crucial during constitutional design—there has been an increasing commitment to gender equality within constitutional text itself. No democratic constitution written post-1980 has been silent on gender equality or has excluded mentioning women's important role in the constitutional community.<sup>134</sup> No longer do countries ask the moral and philosophical questions of whether women's equality should be a constitutional matter at all; this question having long been answered, what remains up for discussion is what language and design best serves women's rights.<sup>135</sup> Looking forward towards the next constitutional frontier, that of an outer space settlement, it is clear that women must be given ample opportunity to participate in constitutional conventions, and to insert and shape the text enshrining gender

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credited with inventing the very idea of machinery for modification of a constitutional text, it has continued in much the same form as when ratified. There have been twenty-seven amendments, but really it has 'been amended' only eighteen times. The first ten amendments, dealing with individual rights [the Bill of Rights], were presented to the states by the first Congress in a single package."

130. BAINES & RUBIO-MARIN, *supra* note 123, at 11.

131. See Jackson, *supra* note 20, at 222 ("State laws and legal institutions generally derive from systems initially designed, controlled, implemented and interpreted by men. Thus, they are likely to have taken as paradigmatic the concerns their male creators knew from personal experience, ignoring or obscuring the effects on women.").

132. BAINES & RUBIO-MARIN, *supra* note 123, at 7.

133. Susan H. Williams, *Introduction: Comparative Constitutional Law, Gender Equality, and Constitutional Design*, in CONSTITUTING EQUALITY: GENDER EQUALITY AND COMPARATIVE CONSTITUTIONAL LAW 20–21 (Susan H. Williams ed., 2009).

134. IRVING, *supra* note 19, at 58.

135. BAINES & RUBIO-MARIN, *supra* note 123, at 13.

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equality in the constitution, for there to be any semblance of legitimacy or any real notion of equality.

### C. *Feminist Framers: Sullivan's Framework for Constitutionalizing Women's Equality*

Having established the importance and international norm of including provisions on gender equality in any new constitutions, what might those provisions look like? While it can be a daunting task to build such a constitution from the ground up, the question of feminist constitutional provisions has thankfully been previously considered. In *Constitutionalizing Women's Equality*, Kathleen Sullivan envisions what a set of female framers might consider in drafting a constitution. She asks: "What choices would a hypothetical set of feminist drafters face if they were to constitutionalize women's equality from scratch?"<sup>136</sup> Sullivan's framework is particularly apt for the present purposes of designing a Mars governing body that, with no prior history or existing constitutive document, can similarly start from scratch.

Sullivan asserts that when female founders sit down to write the best constitution for the promotion of gender equality, it will involve making choices along five distinct lines.<sup>137</sup> Such drafting would require choosing:

- (1) between a general provision favoring equality or a specific provision favoring sex equality,
- (2) between limiting classifications based on sex or protecting the class of women,
- (3) between reaching only state discrimination or reaching private discrimination as well,
- (4) between protecting women from discrimination or also guaranteeing affirmative rights to the material preconditions for equality, and
- (5) between setting forth only judicially enforceable or also broadly aspirational equality norms.<sup>138</sup>

These choices represent considerations that are often debated in feminist scholarship as potential and at times opposing methods for

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136. Kathleen Sullivan, *Constitutionalizing Women's Equality*, 90 CAL. L. REV. 735, 747 (2002).

137. *Id.*

138. *Id.*

securing equality. Sullivan reaches an ultimate conclusion, based on these factors, as to the ideal constitutional structure for women: “Our hypothetical feminist drafters . . . might draft [a constitution] that is specific, asymmetric, extended to private action and positive rights, and culturally aspirational; one that, in short, looks more like CEDAW, which goes so far as to mandate equality in child-rearing and the modification of social and cultural prejudices.”<sup>139</sup> Sullivan’s ultimate, ideal constitution is an important perspective, and will be considered below; however, attention will also be paid to the ways in which the analysis may differ when the constitution at hand is meant to govern a space settlement.<sup>140</sup>

1. The Sullivan Framework’s Applicability to a Space Settlement:  
General or Specific Language

The first question that arises under Sullivan’s framework is whether the constitution should have a single, broad provision that espouses equality and nondiscrimination for all, or a provision that specifically addresses women’s needs.<sup>141</sup> The choice between general or targeted language holds great weight in that it indicates who will serve as the ultimate decision-maker: general language leaves interpretation and proper attention to the needs of women to a future court or actor, whereas specific language functions more like a rule, giving more interpretive persuasiveness to the framers’ intentions and allowing less future discretion.<sup>142</sup>

Sullivan’s choice of specific language does much to advance the cause of women. It first provides a symbolic benefit in calling attention to women directly in the constitutional document, which both acknowledges their importance as a historically disadvantaged class

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139. *Id.* at 762.

140. It is worth noting that another set of scholars has provided an additional useful framework for analyzing a constitution’s treatment of gender. *See* BAINES & RUBIO-MARIN, *supra* note 124, at 4. They advocate developing a feminist constitutional agenda that must “address the position of women with respect to: (i) constitutional agency; (ii) constitutional rights; (iii) constitutionally structured diversity; (iv) constitutional equality; and give special attention to (v) women’s reproductive rights and sexual autonomy; (vi) women’s rights within the family; (vii) women’s socioeconomic development and democratic rights.” Their framework, and Sullivan’s proposed considerations, serve as the leading “tests” for gender and constitutionalism. While Baines and Rubio-Marín provide a very good and detailed model, Sullivan’s may fit the needs of space better.

141. Sullivan, *supra* note 136, at 747.

142. *Id.* at 747–48.

and provides fodder for future protection.<sup>143</sup> Further, it has some benefits over general language, which leaves to the interpreter's imagination the scope of "equality" and the best way to effectuate societal change. One potential criticism of specificity is that the language used might be too narrow, essentially committing states to only protecting those rights that have been enumerated. Though a legitimate concern, Sullivan provides CEDAW as an example of textual provisions that are both specific and broad.<sup>144</sup> CEDAW manages to span a wide number of areas in which women face sex discrimination, such as in politics, employment, and cultural attitudes; yet, while setting out certain rights, it uses language that remains broad enough to allow some interpretive discretion.<sup>145</sup> CEDAW's model of specific constitutional language could prove useful for a space settlement in ensuring that specific attention is paid towards the needs of women in space; in other words, that women are not forgotten amongst the many other concerns that will arise.

At the same time, the space environment differs from the world of Sullivan's hypothetical framers in that there are far greater unknowns. Any number of factors may arise that change the needs of the colonists and, given the ideological diversity of the states likely to be involved, any updates would be far easier through changed interpretation than through an amendment to the constitutional document. Under these circumstances, language should be written broadly enough to allow for the utmost flexibility. Even under constitutions of general language, women have managed to secure a vast number of rights; using general language here would likely allow for similar freedoms gained through interpretation.<sup>146</sup>

Based on the need for general language to account for changed circumstances, and specific language to provide the greatest possible attention to women's causes, a space constitution would do well to incorporate both types of language. The need for both general and specific language suggests that a space constitution could include preamble language and a broadly written article preventing discrimination and calling for equality amongst all settlers, while also including specific provisions on women's rights.

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143. *Id.* at 749 ("Specificity helps isolate and focus legal resources upon those social groups that are likely to experience irrational discrimination more commonly.").

144. *Id.* at 748.

145. *See, e.g.*, CEDAW, *supra* note 70, arts. 3, 5, 10, and 11.

146. *See* CEDAW, *supra* note 70, Part III (regarding numerous rights women have secured worldwide under general language).

2. Symmetrical vs. Asymmetrical Language

The symmetry debate in constitutional drafting theory involves the choice between banning discrimination based on certain classifications versus protecting particular classes.<sup>147</sup> Symmetrical language, for example, would ban discrimination based on a classification, such as sex, race, or national origin. This symmetry allows any party to sue, not just one in a protected class—for example, a man could challenge a law as being discriminatory towards men on the basis of gender, just as an individual identifying with a state’s racial majority could allege discrimination on the basis of race on the same footing as a racial minority. Asymmetry, on the other hand, extends protections to classes—for example, women, African Americans, or those identifying as LGBT. Concentrating on the particular, disadvantaged group protects the potentially vulnerable class from those with greater social and political power. Both types of language are in use in various ways: while most antidiscrimination laws in the United States regulate classifications, rather than classes,<sup>148</sup> other constitutions, such as the Ugandan Constitution,<sup>149</sup> are asymmetrical in that they specifically mention women’s equality. In Uganda, “women shall be accorded full and equal dignity of the person with men.”<sup>150</sup>

In space, as with the debate over general and specific language, both symmetrical and asymmetrical provisions would be useful. Symmetrical provisions are the most inclusive in that they, as with general language, provide for a broad range of circumstances. In the United States, advocates have attempted to expand the scope of the word “sex” as it is used in various discrimination statutes to include, for example, sexual harassment<sup>151</sup> or sexual orientation.<sup>152</sup> A symmetrical formulation may also be more sensitive to changed circumstances such as today’s greater recognition of the fluidity of gender identities. Moreover, some feminists have advanced their positions by first advocating for the rights of the

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147. Sullivan, *supra* note 136, at 750.

148. *Id.* at 751.

149. *Id.*

150. *Id.*

151. *See* Meritor Sav. Bank v. Vinson, 477 U.S. 57 (1986). The Supreme Court recognized sexual harassment as a form of sex discrimination in violation of Title VII of the Civil Rights Act, which prevents discrimination in employment. This opened the door to the creation of a body of law around sexual harassment as sex discrimination, securing more workplace protections for women.

152. *See, e.g.,* Hively v. Ivy Tech Cmty. College, 853 F.3d 339 (7th Cir. 2017). The Seventh Circuit held that discrimination on the basis of sexual orientation was sex discrimination in violation of Title VII of the Civil Rights Act of 1964.

majority. Ruth Bader Ginsburg's sex equality advocacy relied on "freeing both men and women from the gender roles in which historical socialization has trapped them,"<sup>153</sup> which tore down stereotypes from both sides and ultimately afforded women more freedoms. Ginsburg's strategy was born out of a symmetrical framework.

On the other hand, these efforts to secure a seat at the table may have also been born out of necessity based on the law's structure, not because the law was written in a way that benefitted the disadvantaged class. As Sullivan has recognized, asymmetrical language might in fact go the farthest in helping women.<sup>154</sup> Even with changing conceptions of gender, women still form a traditionally disadvantaged class, and the law must recognize the realities of history. Asymmetrical language also takes into account real, sex-based differences, and can provide more flexibility when it comes to the law on issues such as pregnancy discrimination. In space, which is often heavily biology-focused,<sup>155</sup> acknowledging real differences and particular needs may prove useful. Therefore, an initial, broad provision could include symmetrical language, with an asymmetrical section to ensure women are afforded certain rights unique to them.

### 3. Private Action vs. State Action

Sullivan's third factor questions whether a constitution should apply only to state action, as does the U.S. Constitution, or whether it should also extend to private, nongovernmental discriminatory action.<sup>156</sup> For space, there is a clear answer: the constitution must cover discrimination by individuals and private industry. On Earth, most common law countries restrict gender discrimination challenges to state activity, while civil law countries often allow challenges to private action as well.<sup>157</sup> These common law countries that deny challenges to private action have often stood for the proposition that "[t]he social institutions of liberal democracy need not be liberal or democratic all the way down; private associations should not all be colonized as outposts of public virtue."<sup>158</sup> Yet a model that does not touch private action cannot

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153. Sullivan, *supra* note 136, at 752.

154. *Id.* at 753.

155. See Devlin Healey, *There Are No Bras in Space: How Spaceflight Adapted to Women and How Women Adapt to Spaceflight*, 19 GEO. J. GENDER & L. 593, 604-05 (2018), for a historical description of the U.S. space program's concern with biological differences between men and women.

156. Sullivan, *supra* note 136, at 754.

157. BAINES & RUBIO-MARIN, *supra* note 123, at 10.

158. Sullivan, *supra* note 136, at 755.



function in space. It very well may be that private actors will be the first to reach and settle Mars, and on such a settlement, private action would impact every issue from employment to family planning. In a private settlement scenario, a company's actions must be subject to some kind of control, and one way to achieve accountability is through women's ability to sue for private discrimination. Private action language, as evidenced by civil law countries that constitutionalize prohibitions on private discrimination, is not novel.<sup>159</sup> The South African Constitution, for example, achieves these goals by stating that "[t]he state may not unfairly discriminate directly or indirectly . . . on [grounds of sex]," and "[n]o person may unfairly discriminate directly or indirectly against anyone on [the basis of sex]."<sup>160</sup> A space constitution could function similarly.

#### 4. Negative Rights vs. Positive Rights

Another choice facing female drafters would be that between negative rights, which protect against legal exclusion or discrimination, and positive rights, which guarantee certain rights that might help women succeed.<sup>161</sup> For example, positive rights could ensure that women have a right to work and that they receive equal payment for such work; that women are protected from pregnancy discrimination and restrictions on their reproductive autonomy; that women have guaranteed access to equal and sufficient health care; or, that women and girls receive equal educational opportunities.<sup>162</sup> A positive rights framework would mirror many of the international agreements set forth in the International Bill of Rights, such as those providing for social, economic, and civil and political rights.<sup>163</sup>

Sullivan advocates for a constitution based on positive rights.<sup>164</sup> Unlike other categories mentioned above, this does not differ significantly in space, and a space constitution would do well to ensure

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159. *Id.* at 754-55.

160. S. AFR. CONST., 1996, ch. 2 art. 9. The full text of subsection (3) reads "[t]he state may not unfairly discriminate against anyone on one or more grounds, including race, *gender*, *sex*, pregnancy, marital status, ethnic or social origin, colour, sexual orientation, age, disability, religion, conscience, belief, culture, language, and birth" (emphasis added). Subsection (4) states that "[n]o person may unfairly discriminate directly or indirectly against anyone on one or more grounds in terms of subsection (3)."

161. Sullivan, *supra* note 136, at 759.

162. *Id.*

163. *Id.* at 760.

164. *Id.* at 762.

positive rights, as do CEDAW, ICESCR, and the UDHR.<sup>165</sup> Enshrining positive rights for women, whether or not they can be effectuated immediately, serves the purpose of the generally aspirational nature of an initial constitution, which is to provide goals towards which society and its leadership should strive. Positive rights provide greater protection for women by putting forth specific goals in various areas of women's lives upon which the government will seek to improve.

#### 5. Judicially Enforceable Standards vs. Hortatory Norms

The final choice Sullivan envisions any female founders having to make concerns that between measurable, enforceable standards and grand, hortatory goals.<sup>166</sup> In choosing judicially enforceable standards, the framers would be promoting modest, discrete goals that are easy for judges to interpret and enforce, and that therefore produce clear rules that are difficult to ignore. While a noble goal for a stable constitutional democracy, a focus on justiciable rules is less fitting for a new state hoping to inspire cultural and societal change. Instead, a constitution provides the opportunity to nudge society in the right direction, and a bold commitment to equality and justice through broad, aspirational language provides a roadmap for how to get there. Human settlement in space is itself a bold endeavor; a constitution meant to govern this exploration must be similarly grand, aspiring to best govern the greatest feat humankind has yet attempted.

In sum, Sullivan's framework serves as a useful tool for considering what structure and language would best entrench gender equality into a constitutional document. When applied to outer space, her considerations point towards a constitution that begins with a general, symmetrical provision on sex equality that espouses the constitution's aspirations and goals; contains specific, asymmetrical language that evokes a commitment to gender equality and describes positive rights to effectuate that goal; and includes broad language throughout to reflect the flexibility needed in the unknown world of outer space. Appropriate constitutional language will be further explored in Part IV. C.

### IV. WHERE NO CONSTITUTION HAS GONE BEFORE: FORMULATING A GOVERNMENT DESIGNED FOR THE UNIQUE NEEDS OF SPACE

Although traditional constitutional principles do apply to the formulation of a space colony's governing body, there are certain differences

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165. *See id.* at 760 (describing how the UDHR, ICESCR, and CEDAW all include positive rights).

166. *Id.* at 761.

that make a space government a wholly new endeavor. Regardless of whether a private company or state first reaches and settles Mars, any eventual governing body will involve multiple states, potential private partners, and a complex property rights regime. It may therefore require a different legal structure or framework than that which a traditional, single-state government requires. This section raises some of those issues before ultimately proposing draft constitutional language for whatever form this space colony takes.

A. *Issues with Traditional Forms of Government*

Based on the non-appropriation clauses of the OST, a state cannot own property or claim sovereignty to territory on the moon or Mars.<sup>167</sup> This approach alters the traditional notion of sovereignty, complicating the usual model whereby one group of people contributes to the design of their own government. As a result, states must work together to collectively build and develop a space settlement, making the above framework, which envisions a gender-conscious constitution for a single state, slightly off.<sup>168</sup> Instead, the government must be devised to serve a community formed through the scientific development, financial investment, and interest of *multiple* states. These space-faring states will likely care deeply about the ultimate outcome of constitutional design and will all come to the negotiating table with their own domestic governments, potentially divergent interests, and a citizenry with their own history and values.

One factor that may mitigate the extreme difficulty of this task is the recent trend in which the international community is more involved in the creation of domestic constitutions. The twenty-first century has seen increasing involvement by international organizations in constitution-making, something that has traditionally been the sole concern of a state and its people.<sup>169</sup> This increase in international involvement may in part stem from the number of constitutional revisions born out of international conflicts that have drawn the attention of the international

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167. See, e.g., Lee, *supra* note 5, at 249 (“Under general international law, outer space, like the high seas, is *extra commercium* and therefore not subject to national appropriation.”).

168. Given the prohibition on appropriation of outer space under the OST, this Note attempts to use “governing body” instead of the word government and “constitutive document” instead of the word constitution wherever possible to distinguish the Mars effort from the traditional governments of sovereign states. Any reference to a Mars “government” is meant more so as a “council” or “governing body,” established by treaty and governing collectively, wholly separate from the legal meaning of the word government.

169. Saunders, *supra* note 112, at 3.

community. In a different sense, international human rights concepts are also now frequently incorporated into constitutions, whether these constitutions mention international treaties or agreements, or whether they replicate those values in their own governing text.<sup>170</sup> Though this does not directly address the multiple-state problem in the drafting of a constitution, it, and other exercises in international cooperation, demonstrate that constitutionalism no longer exists as a purely domestic endeavor.

### 1. Departure from Existing International Space Law

Another difficulty to drafting a constitutive document for space is its novelty, even within the field of space law. One of the greatest feats in international cooperation, the International Space Station (ISS), is likely the best analog to a space settlement because it involves multiple countries sending envoys to live and work together in space. Yet as similar as the endeavors may be, the legal landscape required to govern the two workspaces vastly differs.

Three types of law govern the ISS: (1) the treaties and customary law known as international space law that govern outer space activities, (2) the multilateral and bilateral agreements drawn up to bring the ISS to life, and (3) domestic or regional law that governs each country's space program and that binds that country's nationals.<sup>171</sup> The primary multilateral agreement that governs the ISS and serves as its "constitution" is the International Space Station Inter-Governmental Agreement (IGA), signed in 1998.<sup>172</sup> This document sets out all the obligations and rules participating states must abide by.<sup>173</sup> The ISS IGA format of a multilateral agreement that imposes obligations on states is similar to what might be the ultimate governance structure of a permanent settlement on Mars.

Where the structure breaks down and ultimately proves untenable for a Mars settlement is in property and sovereignty. Within the ISS, each country retains quasi-territorial jurisdiction over its own space

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170. *Id.*

171. E. T. A. van Asten, *Legal Pluralism in Outer Space*, 53 PROC. INT'L INST. SPACE L. 67, 68 (2010).

172. Agreement Among the Government of Canada, Governments of Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America Concerning Cooperation on the Civil International Space Station, Jan. 29, 1998, 1998 U.S.T. LEXIS 303; *see also* Rochus Moenter, *The International Space Station: Legal Framework and Current Status*, 64 J. AIR L. AND COMMERCE 1035 (1999).

173. Van Asten, *supra* note 171, at 69.

station components and compartments.<sup>174</sup> Retaining jurisdiction remains permissible under international law because the space station, in orbit around earth, does not constitute “the moon and other celestial bodies”—in other words, the OST prevents appropriation of land on another planet, but the space station serves as an exception as it does not stand on *terra firma*.<sup>175</sup> On Mars, however, to retain quasi-territorial jurisdiction would be to tread dangerously close towards the OST’s prohibition on national appropriation.<sup>176</sup> The requirement of non-appropriation implies that one state cannot own and govern its own portion of a Mars settlement—instead, the land must remain *territorium extra commercium* and be cooperatively governed.<sup>177</sup> Therefore, while the space station helps clarify how countries may form legal agreements to embark on joint ventures in space, it cannot serve as an exact model for a space settlement because it still relies on quasi-territorial jurisdiction.

## 2. Involvement of Private Actors

Finally, the participation of private actors in the development of a space settlement differs from traditional constitutional design. Historically, states have often held constitutional conventions where a country’s top leaders engaged in rigorous debate over the document’s terms.<sup>178</sup> The most successful conventions encourage public participation, which often leads to improved compliance and legitimacy, but private companies are typically limited in their participatory capacity as spelled out through the emerging political process — they are not directly involved in the constitution’s design. The separation between government and corporate entities may be hard to achieve in space if a private actor is the first to settle another planet.<sup>179</sup>

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174. *Id.*

175. Lee, *supra* note 5, at 251.

176. Outer Space Treaty, *supra* note 27; *see also* Frans von der Dunk, *International Space Law*, in *HANDBOOK OF SPACE LAW* 56 (Frans von der Dunk ed., 2015) (noting that the Outer Space Treaty “establishes outer space as a realm beyond national territorial jurisdiction, essentially akin to the high seas. One consequence thereof is that no state may extend the scope of its territorial jurisdiction . . . to outer space or any celestial body.”).

177. *See* Lee, *supra* note 5, at 249.

178. *See* Saunders, *supra* note 112, at 5–6 (describing the agenda setting, design, and approval stages that frequently occur in the creation of a constitution).

179. A private actor will be heavily invested in its space colony and may assert certain rights or exert significant lobbying efforts to secure its goals. Additionally, there may be existing private contracts between the company and its envoys that governs their relationship.

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What poses great difficulty is that under current international law, it is challenging to control the activities of private industry.<sup>180</sup> Private corporate entities lack the legal capacity to enter into treaties, making them entirely unbound by existing treaty law.<sup>181</sup> Virtually no treaties impose duties upon private corporations, and if so, serve as only “soft law” instruments.<sup>182</sup> Currently, despite there being many private space actors that frequently prepare space vehicles or launch into space, they still remain free from the grasp of international law.<sup>183</sup>

Rather than being subject to international law, private space entities must be controlled by domestic law. The OST provides for state responsibility for their private industry actors in Article VI.<sup>184</sup> Yet Article VI “provides no mechanism for such authorization and supervision,” leaving it to the states to devise appropriate supervision measures.<sup>185</sup> States have an incentive to do so given that the state itself will be held responsible should a private actor cause damage in space, and often this occurs through a state’s licensing regime.<sup>186</sup> However, it remains up to the state to impose obligations, and some states hoping to get their domestic space industry off the ground may be lax in supervision.

A legal regime of state supervision, rather than direct international regulation of private space companies, comes into conflict with the gender equality norms addressed above. Private companies are not parties to international treaties and agreements such as CEDAW or the UDHR, which means they have no obligation beyond municipal law to refrain from gender discrimination.<sup>187</sup> In a country such as the United States, which has not ratified CEDAW, it is unlikely that the state will impose any gender equality requirements on private actors before they can launch into space.<sup>188</sup> This framework means that private companies can

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180. Freeland, *supra* note 26, at 429–30.

181. *Id.* at 419.

182. *Id.*

183. *Id.* at 419–20.

184. Outer Space Treaty, *supra* note 27. Article VI states: “States Parties to the Treaty shall bear international responsibility for national activities in outer space. . . whether such activities are carried on by governmental agencies or by non-governmental entities. . . . The activities of non-governmental entities in outer space . . . shall require authorization and continuing supervision by the appropriate State Party to the Treaty.”

185. Freeland, *supra* note 26, at 420.

186. See P.J. Blount, *Renovating Space: The Future of International Space Law*, 40 DENV. J. INT’L L. & POL’Y 515, 530-31 (2011).

187. Freeland, *supra* note 26, at 419.

188. These companies would still be subject to municipal law. In the U.S., for example, this could be in the form of Title VII, which would prohibit employment discrimination based on sex. See 42 U.S.C.A. § 2000e et seq (current through Pub. L. No. 116-72).

evade important equality protections put forth in international treaties, potentially including the OST itself, because their activities are not coherently regulated.

Beyond the current legal landscape, employment figures make it unclear how diverse a space settlement would be if private actors who are not subject to international equality protections lead the charge. The space field notoriously struggles with gender diversity: for example, though SpaceX has not published cogent diversity numbers, a 2016 report found that only 14% of SpaceX employees were women.<sup>189</sup> This number is devastatingly low, though unfortunately not a complete outlier compared to the industry at large.<sup>190</sup> A settlement on Mars requires positions from astronauts to engineers to lawyers who will help design a government. If private industry doesn't take extreme steps to recruit women, their voices will not be in the room, and much like the 1789 U.S. Constitutional Convention, women may lose their chance to contribute to the writing of the constitution—for good. The inapplicability of treaties that might ensure private companies appropriately diversify is thus a significant issue for equality in a space colony.

#### B. *Re-Conceptualizing the Mars Settlement as an International Organization*

Conceptualizing a Mars settlement as an international organization (IO) remedies many of the difficulties brought on by the involvement of multiple states, the non-appropriation clauses of the OST, and lack of control over private companies. An IO could achieve this feat by representing the interests of all states, thereby avoiding the issue of a single state claiming sovereignty over Mars territory. By definition, an IO is “an organization established by a treaty or other instrument governed by international law and possessing its own international legal personality. [IOs] may include as members, in addition to states, other entities.”<sup>191</sup> By design, these organizations feature a constitutive document that institutionalizes the system of participation for members, can craft treaty-like international agreements, and are subject to special immunities as well as obligations as

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189. Alison Coil, *Commentary: What the SpaceX Launch Was Missing*, SAN DIEGO UNION-TRIB. (Feb. 15, 2018), <https://www.sandiegouniontribune.com/opinion/commentary/sd-oe-spacex-diversity-women-20180215-story.html>.

190. See *infra* section V.A for a discussion on diversity within the space industry as a whole.

191. Rep. of the Int'l Law Comm'n, *Draft Articles on Responsibility of International Organizations*, 63rd sess., U.N. Doc. A/66/10, art. 2(a), (2011), [https://legal.un.org/ilc/texts/instruments/english/draft\\_articles/9\\_11\\_2011.pdf](https://legal.un.org/ilc/texts/instruments/english/draft_articles/9_11_2011.pdf).



a result of their legal personality.<sup>192</sup> Space law frequently relies on IOs to accomplish joint ventures: the European Space Agency (ESA), International Telecommunications Union (ITU) and the European Telecommunications Satellite Organization (EUTELSAT) are all space IOs,<sup>193</sup> with perhaps the most well-known organization being UNCOPUOUS, an organization through which all major space treaties have been discussed, promulgated, and ratified.<sup>194</sup>

An IO could easily bind multiple states under a cohesive, constitution-like document by structuring this document like a treaty. Unlike a traditional constitution, which is meant to govern one state, IOs are typically established by and can promulgate treaty law, which serves as an easy mechanism to involve and to bind many states.<sup>195</sup> Some IOs, considered regulatory organizations, cooperate on political and legal questions and draft guidelines, recommendations, and rules that are binding for internal purposes.<sup>196</sup> This could prove beneficial in space as these rules, as written in a constitutive document would have an efficient means of promulgation and a general applicability.<sup>197</sup> The organization could also serve as a single, cohesive public face for non-member states. Additionally, some IOs provide a more operational benefit, pooling “financial, technical, and scientific resources to actually undertake activities in the extremely alien, risky, and costly realm of outer space activities.”<sup>198</sup> The Mars IO could function similarly in order to financially support the settlement, as a joint effort, and to allow for future research.

Recognizing the Mars settlement as the product of an IO that represents all of mankind’s efforts in space, rather than permitting each state to retain sovereignty over the physical parts it built for the settlement, reduces potential conflicts with the OST. As previously stated, one reason the International Space Station model cannot function on Mars is that under the ISS’s IGA, each state retains quasi-territorial jurisdiction over its contributions to the ISS.<sup>199</sup> On Mars, to do so would represent an impermissible form of national appropriation over territory on a

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192. Frans von der Dunk, *International Organizations in Space Law*, in *HANDBOOK OF SPACE LAW* 269-70 (Frans von der Dunk ed., 2015).

193. Freeland, *supra* note 26, at 417.

194. *See supra* Section II.A, of UNCOPUOUS; *see also* von der Dunk, *supra* note 192, at 274.

195. Von der Dunk, *supra* note 192, at 269-70.

196. *Id.* at 270-71.

197. *Id.* at 270.

198. *Id.*

199. *See supra* section part IV.A.1 for a discussion describing the functioning of the ISS.

celestial body.<sup>200</sup> Instead, a potential workaround to this problem could be to follow the example of another international organization's physical outpost: the United Nations Headquarters in New York. Though located in the United States, the Headquarters is considered a "district" that remains under the control and authority of the United Nations (U.N.).<sup>201</sup> The U.N. has the power to make regulations operative within the Headquarters District for any purpose necessary to fully carry out its functions. While the Headquarters District has a duty to respect the laws and regulations of the United States, where there is legally binding U.N. policy under the relevant agreements that law supersedes the application of U.S. law. Similarly, the functional immunity provisions of the agreement restrict U.S. authorities from enforcing U.S. laws within the district, absent certain special permission from the U.N. Secretary-General.<sup>202</sup> The Mars settlement could function similarly: the IO would "own" the property associated with the settlement district, though this would not be ownership in truth, for the district would be accessible to all parties to the treaty and held in the interests of all humankind. The Mars IO's constitutional document could govern to the exclusion of all other law, and the territory would be accessible, though functionally inviolable. Such a scheme, permitting use for all and protecting the settlement through the IO's regulations, provides a potential workaround to non-appropriation concerns stemming from the OST.<sup>203</sup>

Finally, an IO might go further than the OST in controlling the activities of private companies. Though companies traditionally cannot be parties to treaties, the governing treaty could require states to go much further than the OST requires in supervising and regulating their private actors. Such a treaty could require that states mandate that their private actors comply with the terms of the constitution, which would include nondiscrimination provisions that protect women's rights in space. To require companies to comply with gender equality provisions before they are allowed to launch might help increase their obligations and provide some accountability.

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200. See Lee, *supra* note 5, at 249.

201. Agreement regarding the Headquarters of the United Nations, U.N.-U.S., art. III, § 7(a), June 26, 1947, T.I.A.S. No. 1676.

202. *Id.* art. III, § 9(a).

203. See *supra* section IV.A, regarding the non-appropriation provisions of the OST. The present discussion seeks to avoid the issue of any one state appropriating territory on Mars by having an intergovernmental organization own and govern a Mars territory, which would no longer represent the activities of one state.

## WOMEN ARE EQUAL ON MARS

### C. Draft Language on Gender Equality for a Mars Constitutive Document

Having established that an IO might be the best format for a Mars government, the next step involves writing a constitutional treaty. Writing a constitution for Mars would involve many stakeholders, public participation, and some period of time for negotiations and deliberation, not to mention the initial theorizing that goes into any political instrument. Before undertaking such a complicated process, many nations begin by establishing aspirations for the community, which may later be written into an Interim Constitution that framers can then draw on in formulating a draft for a final document.<sup>204</sup> Schemes involving provisional, initial measures met success in several instances, such as the American framers' Virginia Plan developed before the Philadelphia Convention or the pre-constitution developed for Australia.<sup>205</sup> South African constitution-making also followed a similar format.<sup>206</sup>

Preliminary resolutions assist framers in designing a final constitutional document by providing broad language that can later be revised and tailored. A Mars constitution, an enormous undertaking, would benefit from resolutions that theorize different articles which will eventually form part of the constitution. Based on the above discussion, gender equality might be enshrined in several places in a Mars constitutional document, such as in preamble language and in articles that specifically articulate women's rights. To promote gender equality, articles would include a general, symmetrical provision on sex equality that espouses the constitution's aspirations and goals; provisions with specific, asymmetrical language that evokes a commitment to gender equality and describes positive rights to effectuate that goal; and broad language throughout to reflect the flexibility needed in the unknown world of outer space. These articles are drafted below as mere examples of language that would put into words the broad values of gender equality that should comprise part of a Mars preliminary resolution.

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204. IRVING, *supra* note 19, at 38.

205. *Id.*

206. See Saunders, *supra* note 112, at 6. In South Africa, "[a] multi-party negotiating forum (MPNF) agreed on 34 principles with which the final Constitution was required to comply. These included, for example, a democratic system of government based on equality and non-discrimination; separation of powers; judicial independence; proportional representation; freedom of information; and the protection of linguistic and cultural diversity. The 34 principles were enshrined in an interim Constitution, which was written by the MPNF but formally enacted by the white majority Parliament."

The following provisions of the Mars Preliminary Resolution would address gender equality:

Preamble

Whereas, a human settlement on Mars represents a new chapter for humanity, where humankind can shed the social ills that plagued civilizations on Earth and establish a new order based on shared universal values,

Whereas, these values include a commitment to the equal treatment of all persons, to the abstention from violence, and to the promotion of peace throughout the universe,

Whereas, the Charter of the United Nations and the Universal Declaration of Human Rights recognize the dignity of every human person and each individual's fundamental human rights,

Whereas, the Convention on the Elimination of Discrimination Against Women recognizes that these human rights include women's rights, and that women are full and equal members of society,

Now, the parties to this treaty agree to the following articles as the foundation for the establishment of a Mars Colony, to be governed exclusively by this agreement in addition to established international law:

Article 1 [human rights clause]

All human beings are born free and equal in dignity and rights.

Article 2 [symmetrical clause]

The government shall not unfairly discriminate, directly or indirectly, against any individual on the basis of sex, race, national origin or any combination thereof.<sup>207</sup>

Article 3 [asymmetrical clause, positive rights]

Recognizing that sex discrimination long-plagued women on Earth and has caused women the denial of full and equal worth in society and under the law, diminished access to equal opportunities in education, employment, healthcare, and political participation, and that this discrimination was fundamentally wrong as a denial of equality;

- a) The Mars government as a whole, and each state party to this agreement, recognizes and condemns discrimination

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207. Ideally, Article 2 would ultimately protect several other aspects of identity. As this Note primarily concerns sex, it does not provide a full list of suggested protected classifications.

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- against women, and commits to ensuring that women be treated as full equals in society.
- b) The government shall not discriminate, directly or indirectly, against women; however, discrimination on the basis of sex shall be excepted for positive discrimination intended to remedy or correct for past harms.
  - c) No person or entity, whether or not representing the government, shall unfairly discriminate against women.
  - d) Though the government strives to prohibit discrimination against women in all forms and by all actors, it shall pay particular attention to upholding the rights of women in relation to:
    - 1. Equal access to healthcare facilities, medical treatment, and accommodations necessary to support pregnancy.
    - 2. Equal employment opportunities, workplace rights and benefits, and compensation, and fair treatment at work.
    - 3. Equal opportunities to represent the Mars government and to participate in all levels of political life, and to any accommodations necessary to ensure full political participation.
    - 4. Equal access to a quality education.
    - 5. Equal treatment before the law and the right to a fair and just trial before a group of peers that includes at least one person of the same gender.

These provisions are by no means comprehensive, nor do they benefit from the careful drafting they would be afforded by a committee dedicated to ensuring proper language and wording.<sup>208</sup> However, they provide a starting point, and at the very least a reminder to any framers that gender equality must be enshrined in both the preamble and the body of constitutional text.

### V. CHALLENGES TO FULL GENDER EQUALITY IN SPACE

The above framework demonstrates that there is both a foundation for gender equality in space through the OST, and that this

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208. Many countries utilize a specific committee to help refine the document's text and ensure the words will be properly interpreted in the future. For example, the United States relied on two committees, the Committee of Detail and the Committee of Style and Arrangement, to draft and organize the Constitution's terms. See DAVID O. STEWART, *THE SUMMER OF 1787: THE MEN WHO INVENTED THE CONSTITUTION* 229–30 (2008).

nondiscrimination goal can be effectuated through well-drafted constitutional language promoting sex equality. However, an effectively written constitutive document is but one factor in the realization of full and equal rights for women. Social and cultural factors, particularly as regarding women at work, also serve as barriers to women's equality in the space industry.

A. *Conditions on Earth that Hinder Women's Equality*

The space industry is no stranger to gender inequality.<sup>209</sup> Early efforts to design a space program saw significant discrimination against women as scientific theories co-mingled with prevailing societal norms that permitted workplaces to be more inhospitable to women than they are today.<sup>210</sup> During the early space race, shortly after the launch of Sputnik, NASA engineers seemed initially open-minded to female astronauts; however, this openness soon changed, and female exclusion hardened into official NASA policy:

At the time, NASA engineers were considering the weight of the spacecraft that would be sent into space, and American scientists hypothesized that a woman would be a superior choice for the first American astronaut because women are 'generally smaller, lighter, and eat less than men.' However, the gender mores of the time – as well as a fear that sending a woman into space would make the United States look weak – effectively silenced the concerns of scientists and an all-male spaceflight program was born.<sup>211</sup>

The early decision to exclude women from the astronaut program set an initial tone for NASA that extended well into the late 1970s.<sup>212</sup> It was not until 1983 that the first American woman was even able to

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209. For a depiction of the barriers women faced in early days at NASA, see generally MARGOT LEE SHETTERLY, *HIDDEN FIGURES: THE AMERICAN DREAM AND THE UNTOLD STORY OF THE BLACK WOMEN WHO HELPED WIN THE SPACE RACE* (2016), and the film version, *HIDDEN FIGURES* (20<sup>th</sup> Century Fox 2016).

210. See Healey, *supra* note 155, at 596–600.

211. *Id.* at 596.

212. It is worth noting that this was not necessarily the case elsewhere; the first woman in space was Valentina Tereshkova, a Russian woman who completed a three-day mission in space on June 16, 1963. See *Valentina Tereshkova*, SMITHSONIAN NAT'L AIR AND SPACE MUSEUM, <https://airandspace.si.edu/people/historical-figure/valentina-tereshkova> (last accessed Feb. 2, 2019).

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represent her country as an astronaut in space.<sup>213</sup> Though today the astronaut program involves women, the U.S. space program's early misogyny effectively held women back for many years, and still affects current statistics on women's overall involvement in space.<sup>214</sup> NASA's restrictions stymied what could have been equal and robust female involvement in early space efforts. Every effort must be made to ensure women are fully involved in the future, even amongst the great unknown of future long-term space missions.<sup>215</sup>

Looking forward towards envisioning the development of a space colony, one of the greatest difficulties in achieving gender equality will be related to career opportunities as gender inequality still permeates many fields.<sup>216</sup> For a space colony, the greatest barriers will lie in gender discrimination within the space industry, the greater scientific community, and among lawmakers and leaders. First, despite improvements in the astronaut program, the broader space community does not fare well—in 2016, women constituted only 20% of space industry employees, which is no better than how women fared 30 years ago.<sup>217</sup> When it comes to Science, Technology, Engineering, and Math (STEM) careers on the whole, the figures are at times even worse. Women made up only 1% of engineers in 1960, and by 2000 comprised only 11% of the field.<sup>218</sup> Of scientists engaged in research and development, only 28.8%

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213. *Sally Ride: First American Woman in Space*, SPACE.COM (Jan. 18, 2018), <https://www.space.com/16756-sally-ride-biography.html>. Sally Ride applied to NASA and was accepted into the astronaut program in 1978. She became the first American woman in space in 1983.

214. *Space for Women*, UNOOSA, <http://www.unoosa.org/oosa/en/ourwork/topics/spaceforwomen/index.html> (last visited Oct. 6, 2019). Over 560 people have been to space since 1961, but only 11% have been women. This is in part due to early restrictions and their lingering effects.

215. Healey, *supra* note 155, at 604 (“Overall, the trajectory at NASA is inclusive for women. Women are being considered for and participating in spaceflight missions more and more frequently. However, NASA’s goal of a manned mission to Mars appears to have reset the progression, as NASA is once again collecting data on the effects of spaceflight on women and the results could impact how NASA moves forward in staffing long-duration spaceflight missions. In effect, longer-duration spaceflight may mean again adapting to the unique needs of women in space.”).

216. See generally Valerie N. Streets & Debra A. Major, *Gender and Careers: Obstacles and Opportunities*, in THE OXFORD HANDBOOK OF GENDER IN ORGANIZATIONS 293 (Savita Kumra et al. eds., 2014).

217. *Space for Women*, UNOOSA, <http://www.unoosa.org/oosa/en/ourwork/topics/spaceforwomen/index.html> (last visited Oct. 6, 2019).

218. Catherine Hill, Christianne Corbett, & Adresse St. Rose, *Why So Few? Women in Science, Technology, Engineering, and Mathematics*, AAUW 14 (2010), [https://www.aauw.org/aauw\\_check/pdf\\_download/show\\_pdf.php?file=why-so-few-research](https://www.aauw.org/aauw_check/pdf_download/show_pdf.php?file=why-so-few-research).



are women.<sup>219</sup> In academia, an area in which women could contribute to ongoing efforts by conducting research, publishing, or mentoring female students, women make up only 19% of math faculty, 18% in the physical sciences, and 12% in engineering.<sup>220</sup>

While critics may suggest that women simply aren't interested in science,<sup>221</sup> this assessment fails to adequately take into account extensive data showing girls are discouraged from entering science fields at an early age.<sup>222</sup> Data strongly suggests that teachers frequently over-assess the skills of boys in science fields, yielding a positive and significant effect on boys' overall future achievements, while exhibiting the opposite behavior towards girls.<sup>223</sup> Women also face barriers entering science fields due to the sex discrimination and toxic workplace culture female scientists often face once beginning work.<sup>224</sup> The world has been led to believe that science is a field for men,<sup>225</sup> and this long-held belief has proved a remarkable burden for women hoping to participate in the field. Barriers to full female career success pose serious risks for space, which relies on a diversity of perspectives in contemplating scientific challenges regarding astronaut habitats or ascertaining supply needs.<sup>226</sup> Female success also matters because early missions rely on crew

219. UNESCO Inst. for Stat., *UIS Fact Sheet: Women in Science* (2018), <http://uis.unesco.org/sites/default/files/documents/fs51-women-in-science-2018-en.pdf>

220. Hill, *supra* note 218, at 15.

221. *See id.* at xiv.

222. *See id.* at 22. "Culturally prescribed gender roles also influence occupational interest," suggesting that societal views that women do not belong in science may discourage women from even developing an interest in the first place.

223. Victor Lavy & Edith Sand, *On the Origins of Gender Human Capital Gaps: Short and Long Term Consequences of Teachers' Stereotypical Biases*, 167 J. OF PUB. ECON. 263, 278 (2018). These effects persist through middle and high school and actually have dramatic implications on the probability of receiving a diploma. Favoritism of boys by math and science teachers also greatly impacted test scores and the likelihood of completing advanced studies at statistically significant levels.

224. Hill, *supra* note 218, at 24. Female scientists in one study cited "feelings of isolation, an unsupportive work environment, extreme work schedules, and unclear rules about advancement and success as major factors in their decision to leave."

225. *Id.* The authors noted that "even individuals who espouse a belief of gender equity and equality may harbor implicit biases about gender and, hence, negative gender stereotypes about women and girls in science and math." A 2002 study quoted within also found that "majorities of both women and men of all racial-ethnic groups hold a strong implicit association of male with science and female with liberal arts."

226. During the preparations for Sally Ride's trip to space, male engineers famously asked her if one hundred tampons would be enough for her weeklong mission. *See* Healy, *supra* note 155, at 606. A space colony involves many such practical, human concerns, and without women in leadership, mistakes will continue to be made based on an ignorance over gender-specific needs.

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members having science skills to effectively carry out science experiments in space,<sup>227</sup> which means there must be a sufficient pool of female scientists from which space organizations can draw.

Finally, for there to be female founders of a Mars settlement, there needs to be a sufficient number of women in politics, domestic and international law, and leadership at major space organizations who can contribute to the legal and political theory needed to write a constitutive document. In the United States, women make up just 35% of all lawyers;<sup>228</sup> worldwide, only fifty-two countries have greater than 30% female representation among employed lawyers.<sup>229</sup> In terms of politics, women make up 24.3% of all national parliamentarians, with only twelve women leading their country as Head of Government.<sup>230</sup> These figures impact who will make up a future constitutional convention, and great attention must be given to anticipating and correcting barriers women may face to participating in those deliberations:

[T]here are significant and systematic barriers to women's participation in the political processes that lead up to and include constitutional drafting. These barriers include cultural expectations about women's abilities, interests, and behaviors; educational disadvantages that reduce women's chances for the training in law or politics that would facilitate their participation in constitution making; economic disadvantages created by women's responsibility for household survival and child care; and political habits and cultures that keep women from holding positions in mainstream political organizations that would naturally lead to their presence in constitutional deliberations.<sup>231</sup>

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227. ZUBRIN, *supra* note 13, at 7–8.

228. COMM'N ON WOMEN IN THE PROFESSION, AM. BAR ASS'N, A CURRENT GLANCE AT WOMEN IN THE LAW (2018). <https://www.americanbar.org/content/dam/aba/administrative/women/a-current-glance-at-women-in-the-law-jan-2018.pdf>.

229. *Women in the Global Legal Profession*, THE PRACTICE, May–June 2015, <https://theppractice.law.harvard.edu/article/women-in-the-global-legal-profession/>.

230. U.N. WOMEN, FACTS AND FIGURES: LEADERSHIP AND POLITICAL PARTICIPATION, <http://www.unwomen.org/en/what-we-do/leadership-and-political-participation/facts-and-figures> (last updated Feb. 2019). There are still 27 states in which women hold less than 10% of parliamentary seats; 3 chambers have no women at all.

231. Williams, *supra* note 133, at 21.

Having a female perspective in “the room where it happens”<sup>232</sup> matters. No law can be considered legitimate unless both genders contribute to its formulation and implementation.<sup>233</sup> To ensure that gender equality makes it into a Mars constitutive document at all, women must participate in deliberations at all stages. Mars represents a new world, a second chance at ensuring all humans are treated equally, with dignity and respect; when it comes to gender equality, it means that women must be involved from the beginning in writing the document meant to govern a world with these ideals.

## VI. CONCLUSION

One day not too far from now, humans may stand on the surface of Mars, looking out across its dusty red surface towards the horizon, and even further, towards the direction of Earth. These envoys will be beacons of hope for those who remain earthbound, left to dismantle ongoing inequalities and divisions. Instead, these initial settlers have the opportunity to build a new and better order. How will this be accomplished?

To devise a space settlement built on equality and justice first requires establishing a legal basis for equality in space. The framework for equality in space, as established by this Note, has already been accomplished through the OST, which calls for space exploration in accordance with international law.<sup>234</sup> Adherence to international principles, agreements, and custom ensures that a much broader set of issues remain at the forefront of space experts’ minds when planning missions. In fact, it requires that a subject that may at first seem only tangentially related to space—gender—be respected in conducting space activities. To explore space in accordance with international law means to avoid gender discrimination, and to treat all humans as equal partners in the race to explore new worlds.

For human envoys to Mars to successfully embody our shared human value of equality, they must have some sort of principles to guide this noble pursuit. In other words, some structure must be in place to effectuate equality for a space colony. The best way to do so would be through a governing body beholden to the values set forth in a comprehensive, carefully considered constitutional document. When it comes to gender, scholars can at times disagree as to the proper legal and

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232. LIN-MANUEL MIRANDA, *THE ROOM WHERE IT HAPPENS*, *on* HAMILTON: AN AMERICAN MUSICAL (Atlantic Records 2015).

233. Jackson, *supra* note 20, at 222.

234. Outer Space Treaty, *supra* note 27, art. 1.

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political means for promoting equality. Yet in space, where the needs are still unclear and the widest possible protection of women is merited, it is clear that a constitution would do well to be both broad and aspirational, as well as targeted to the specific needs of women in areas already promising to be problematic in space, such as in family planning.

The path ahead will not be easy. If anything, the current landscape on gender and space provides even more proof that protections are needed in the future. With widespread gender discrimination in science fields, leadership, and law; biological questions of fitness for long-term missions differing based on sex; and a long history of sex discrimination by national space agencies, there are a number of issues potentially impairing women's ability to succeed. As rockets heavy with human cargo launch for far away planets, it is best they leave behind the rampant gender discrimination that has long plagued our current civilization. Instead, the law can help protect this new world, by ensuring it is one based on equality for all.