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## Who Owns the Moon, Mars, and Other Celestial Bodies: Lunar Jurisprudence in *Corpus Juris Spatialis*

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**WHO OWNS THE MOON, MARS, AND OTHER  
CELESTIAL BODIES: LUNAR JURISPRUDENCE IN  
*CORPUS JURIS SPATIALIS***

DENNISON A. BUTLER\*

ON JULY 20TH, 1969, the United States not only solidified its dominance in the space race against its ideological rival,<sup>1</sup> but also captured the hearts and minds of the entire world with the immortal words of Neil Armstrong, “That’s one small step for man . . . one giant leap for mankind.”<sup>2</sup> However, the real question has become whether the United States owns the Moon because it landed there first—first in time, first in right? Can the United States claim it under John Locke’s labor theory,<sup>3</sup> having merely planted a flag there? Are the Moon and Mars to be used equally by all countries, and how will that work in future years? Can countries or individuals even claim property rights on celestial bodies? And, finally, how can property rights on the Moon and Mars impact space exploration?

With a few words, Neil Armstrong immortalized centuries of people gazing longingly at the Moon and wondering what the human race would find beyond Earth’s atmosphere. Johannes Kepler predicted in 1610 that “[a]s soon as somebody demonstrates the art of flying, settlers from our species of man will not

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<sup>1</sup> *Apollo Anniversary: Moon Landing “Inspired World”*, NAT’L GEOGRAPHIC, [http://news.nationalgeographic.com/news/2004/07/0714\\_040714\\_moonlanding.html](http://news.nationalgeographic.com/news/2004/07/0714_040714_moonlanding.html) (last visited Sept. 6, 2017) [<https://perma.cc/2S96-D6BL>].

<sup>2</sup> DAVID M. HARLAND, *EXPLORING THE MOON: THE APOLLO EXPEDITIONS 27* (2d ed. 2008).

<sup>3</sup> JOHN LOCKE, *LOCKE’S TWO TREATISES OF GOVERNMENT* 283–446 (Peter Laslett ed., 2d ed. 1967).

be lacking [on the Moon and Jupiter].”<sup>4</sup> Jules Verne went on to say that “[i]n spite of the opinions of certain narrow-minded people, who would shut up the human race upon this globe, . . . we shall one day travel to the Moon, the planets, and the stars with the same facility, rapidity and certainty as we now make the voyage from Liverpool to New York!”<sup>5</sup> Although the race to the Moon was originally commenced to establish superiority between the United States and the Soviet Union,<sup>6</sup> the resulting technological advances are still evident in our daily lives—from the mundane to the saving of human lives.<sup>7</sup> Despite the obvious reasons in favor of establishing a presence on the Moon and Mars, the necessity for it in the future, and the United States’ position of influence in the world today, existing treaties, in their current state, severely limit what can be accomplished and have effectively hampered technological advances that should have already been made. The potential harm caused by these treaties will be the focus of this article. Specifically, this article will discuss: (1) the current treaties and laws regarding property rights on the Moon and Mars; (2) the problems with the current laws; and (3) what the law should look like in order to promote lunar and spacial exploration in the future.

## I. TREATIES AND LAWS REGARDING PROPERTY ON CELESTIAL BODIES

The 1959 United Nations Committee on the Peaceful Uses of Outer Space (COPUOS),<sup>8</sup> precipitated the adoption of the 1963 Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space.<sup>9</sup> COPUOS then established broad, guiding principles in the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies

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<sup>4</sup> Letter from Johannes Kepler to Galileo Galilei, “Conversation with the Messenger from the Stars,” (Apr. 19, 1610); 1 JOHN WILKINS, A DISCOURSE CONCERNING A NEW WORLD AND ANOTHER PLANET: IN 2 BOOKES (sic) (1640).

<sup>5</sup> JULES VERNE, FROM THE EARTH TO THE MOON 49 (1865).

<sup>6</sup> See generally CHARLES MURRAY & CATHERINE BLY COX, APOLLO: THE RACE TO THE MOON (1989); see generally JOHN M. LOGSDON, JOHN F. KENNEDY AND THE RACE TO THE MOON (2010); see generally JIM OTTAVIANI ET AL., T-MINUS: THE RACE TO THE MOON (2009).

<sup>7</sup> See NASA Spinoff Database, NASA: MARSHALL SPACE FLIGHT CENTER, TECHNOLOGY TRANSFER OFFICE, <https://spinoff.nasa.gov/spinoff/database/?c=msfc> (last visited Sept. 6, 2017) [<https://perma.cc/YX2A-S6RR>].

<sup>8</sup> See G.A. Res. 1472 (XIV), at 1 (Dec. 12, 1959).

<sup>9</sup> See G.A. Res. 1962 (XVIII) (Dec. 13, 1963).

(Outer Space Treaty).<sup>10</sup> The Outer Space Treaty led to four subsequent agreements:

- (1) the 1968 Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space;<sup>11</sup>
- (2) the 1975 Convention on the Registration of Objects Launched into Outer Space;<sup>12</sup>
- (3) the 1972 Convention on International Liability for Damage Caused by Space Objects;<sup>13</sup> and
- (4) the 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Moon Agreement).<sup>14</sup>

The pertinent agreements dealing with property rights are the Outer Space Treaty<sup>15</sup> and the Moon Agreement.<sup>16</sup> Although the COPUOS remains in existence, there is still no method in place for countries or individuals to gain property rights to the Moon or Mars.<sup>17</sup> Instead, property on the Moon is regarded as a “common heritage” for all mankind.<sup>18</sup>

The Outer Space Treaty set the foundation for subsequent treaties.<sup>19</sup> In connection with property interests, Articles I and II state that “the [M]oon and other celestial bodies . . . shall be the province of all mankind,”<sup>20</sup> and that “[o]uter space, including the [M]oon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occu-

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<sup>10</sup> G.A. Res. 2222 (XXI) (Dec. 19, 1966) [hereinafter Outer Space Treaty].

<sup>11</sup> Apr. 22, 1968, 19 U.S.T. 7570, 672 U.N.T.S. 119.

<sup>12</sup> Jan. 14, 1975, 28 U.S.T. 695, 1023 U.N.T.S. 15.

<sup>13</sup> Mar. 29, 1972, 24 U.S.T. 2389, 961 U.N.T.S. 187.

<sup>14</sup> Dec. 18, 1979, 1363 U.N.T.S. 3 [hereinafter Moon Agreement].

<sup>15</sup> Outer Space Treaty, *supra* note 10, art. I–XI.

<sup>16</sup> See generally Moon Agreement, *supra* note 14. The Moon Agreement has been ratified by Austria, Australia, Chile, the Netherlands, Pakistan, the Philippines, Uruguay, France, Guatemala, India, Morocco, Peru, and Romania. The Moon Agreement has not been ratified by Canada, France, Germany, Japan, Russia, the United Kingdom, or the United States.

<sup>17</sup> Kurt Anderson Baca, *Property Rights in Outer Space*, 58 J AIR L. & COM. 1041, 1069 (1993).

<sup>18</sup> *Id.* at 1060–69; see also Moon Agreement, *supra* note 14; Outer Space Treaty, *supra* note 10.

<sup>19</sup> Scott F. Cooper, *The 1979 Agreement Governing the Activities on the Moon and Other Celestial Bodies: Does it Create a Moratorium on the Commercial Exploitation of the Moon's Natural Resources?*, 5 J.L. & TECH. 63, 64 (1990).

<sup>20</sup> Outer Space Treaty, *supra* note 10, art. I. It further states that parties to the Outer Space Treaty are prohibited from placing weapons of mass destruction in orbit or on celestial bodies. *Id.* art. IV.

pation, or by any other means.”<sup>21</sup> This effectively bars national appropriation of property on the Moon and Mars, allowing free access of any country to those resources subject to international law and the U.N. Charter. Although the United States signed the Outer Space Treaty, they have not signed any of the subsequent treaties that have extended and reinforced limits on countries’ ability to appropriate or claim property on the Moon and Mars.<sup>22</sup> In fact, limitations on countries’ ability to appropriate property on the Moon was one of the main reasons that the United States, as well as Japan, Russia, and most major developed states, have not ratified the Moon Agreement.<sup>23</sup>

The Moon Agreement was intended to supplement the Outer Space Treaty, and, thus, the Moon Agreement controls when it contains more specific provisions than the Outer Space Treaty.<sup>24</sup> The Moon Agreement was open for signatures in the late 1970s and became effective in 1984.<sup>25</sup> It then further codified the rights of individual countries concerning the Moon through treaty.<sup>26</sup> The Moon Agreement reiterated the propositions expressed in the Outer Space Treaty by stating that “[t]he moon is not subject to national appropriation by any claim of sovereignty, by means of use or occupation, or by any other means.”<sup>27</sup> It also states that “[t]he moon and its natural resources are the common heritage of mankind.”<sup>28</sup> Not only does the Moon Agreement prohibit national appropriation, it also requires “equitable sharing” of benefits derived from the Moon or space by all states that are a party to the agreement.<sup>29</sup> Equitable sharing accounts for “the interests and needs of developing countries, as well as the efforts of those countries which have contributed either directly or indirectly to the exploration of the Moon.”<sup>30</sup> To date, the United States, Russia, and other advanced nations have not become parties to the Moon Agreement, in large part because of the disagreement over the common heritage concept in

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<sup>21</sup> *Id.* art. XI.

<sup>22</sup> See Moon Agreement, *supra* note 14.

<sup>23</sup> Sara Bruhns & Jacob Haqq-Misra, *A Pragmatic Approach to Sovereignty on Mars*, 38 SPACE POL’Y 57, 59 (2016).

<sup>24</sup> H.A. Wassenbergh, *Speculations on the Law Governing Space Resources*, 5 ANNALS AIR & SPACE L. 617 (1980).

<sup>25</sup> Cooper, *supra* note 19, at 77; Moon Agreement, *supra* note 14.

<sup>26</sup> Cooper, *supra* note 19, at 64.

<sup>27</sup> Moon Agreement, *supra* note 14, art. 11(2).

<sup>28</sup> *Id.* art. 11(1).

<sup>29</sup> *Id.* art. 11(7)(d).

<sup>30</sup> *Id.*

Article 11.<sup>31</sup> In addition to countries, the Moon Agreement also prohibits private companies from laying claim to property on the Moon.<sup>32</sup> It is the first treaty to recognize that not only governments, but also private companies may soon have the ability and incentive to explore the Moon.<sup>33</sup>

## II. INHERENT PROBLEMS WITH THE CURRENT TREATIES AND LAWS

People have mistakenly argued that the Moon should be governed by *res communis*, or a common ownership to all mankind.<sup>34</sup> This legal doctrine has been used in the past for other resources, “like airspace, the deep sea-bed, solar energy, and radio spectra.”<sup>35</sup> The fallacy of broad application of this principle to the Moon, Mars, and other celestial bodies is that the principle of *res communis* generally applies to resources that are either necessary for survival (like fishing) or are of such a nature as to make private ownership impossible.<sup>36</sup> A classic example of the impossibility of private ownership is an area in the middle of a lake. In that situation, it is not feasible to establish property lines extending into the middle of a lake. Furthermore, holding land available for all mankind eliminates any incentive for governments or private individuals to improve the land. Aristotle once stated, “[w]hat is common to many is taken least care of, for all men have greater regard for what is their own than for what they possess in common with others.”<sup>37</sup>

By saying everyone in a community owns something, one may indirectly infer that no one truly has ownership of it, and therefore, no one in the community has any interest in maximizing its potential. Property rights have traditionally been analogized

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<sup>31</sup> KEMAL BASLAR, THE CONCEPT OF THE COMMON HERITAGE OF MANKIND IN INTERNATIONAL LAW 4, 166–75 (1998). Common heritage of mankind is a “legal principle of international law” which states that certain territory is held in a trust for future generations, and is not to be exploited or appropriated for individual nations. *Id.* at 4.

<sup>32</sup> See Moon Agreement, *supra* note 14, art. 11.

<sup>33</sup> See *id.*

<sup>34</sup> See G.A. Res. 1348 (XIII) (Dec. 13, 1958).

<sup>35</sup> David Tan, *Towards a New Regime for the Protection of Outer Space as the “Province for All Mankind”*, 25 YALE J. OF INT’L L. 145, 161 (2000).

<sup>36</sup> Compare GYULA GAL, SPACE LAW 189–90 (1969), with G.A. Res. 2749 (XXV) (Dec. 12, 1970).

<sup>37</sup> James D. Gwartney & Richard L. Stroup, *Communal vs. Private Property Rights*, FOUND. FOR ECON. EDUC. (Feb. 1, 1988) (quoting Aristotle).

to a bundle of sticks.<sup>38</sup> The bundle of sticks analogy generally denotes five specific rights available to property holders:

- (1) Access: The right to enter a defined physical area and enjoy nonsubtractive benefits (for example, hike, canoe, or sit in the sun);
- (2) Withdrawal: The right to obtain resource units or products of a resource system (for example, catch fish or divert water);
- (3) Management: The right to regulate internal use patterns and transform the resource by making improvements;
- (4) Exclusion: The right to determine who will have access rights and withdrawal rights, and how those rights may be transferred; and
- (5) Alienation: The right to sell or lease management and exclusion rights.<sup>39</sup>

By leaving only a right of access to the Moon and Mars, the United Nations has stripped away the most important rights, thereby ensuring that the celestial bodies will not be exploited and their resources will be preserved and protected. In essence, the treaties recognize that the current generation must be prevented from exploiting or depleting celestial bodies in hopes of protecting them for future generations. The countries unable to properly claim and maintain property claims on celestial bodies have effectively restricted the ability of any country to use the Moon's resources. However, similar to other issues before the United Nations, treaties concerning the Moon and Mars face a collective action problem. Due to the amount of competing views and interests between the different countries, nothing substantial will ever be agreed upon in regard to exploring and using the resources that are there.<sup>40</sup>

The majority of states seeking to impose restrictions on countries with space programs have no means of utilizing these resources themselves. These treaties have therefore allowed states that lack the means to develop the resources the ability to restrict states that possess this ability.

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<sup>38</sup> *Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419, 433 (1982).

<sup>39</sup> ELINOR OSTROM & CHARLOTTE HESS, PRIVATE AND COMMON PROPERTY RIGHTS 11 (2007); see *Seawall Assoc. v. City of New York*, 74 N.Y.2d 92, 104 (1989) (holding that the right to develop property is an important "stick" in the property rights bundle); *Kaiser Aetna v. United States*, 444 U.S. 164, 176 (1979); *Loretto*, 458 U.S. at 433.

<sup>40</sup> See MANCUR OLSON, THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS AND THE THEORY OF GROUPS 2 (1965).

Furthermore, the states that do not possess the means of appropriating property on the Moon or Mars are not losing property rights; a state cannot lose land that it never held title to.

### III. WHAT THE LAW SHOULD LOOK LIKE TO PROMOTE FUTURE EXPLORATION

Throughout the years, a number of property theories have been proposed to explain the rights on celestial bodies, apart from the inherent flaw that everyone owns them collectively.<sup>41</sup> One of the first theories regarding property rights in outer space is an extension of the doctrine of *cuius est solum ejus est usque ad coelum* (“he who owns the land, owns it to the skies”).<sup>42</sup> The obvious problem with this idea when extended to celestial bodies is that Earth moves. However, some smaller countries have used this theory to contest that smaller countries should have the same rights as larger, more developed countries. They argue that as one projects property rights upward into infinite space, like a cone above the earth, eventually all countries will have the same claims over everything in outer space.<sup>43</sup> Others have recognized the problem with this theory and simply declare that the doctrine of *ad coelum* “has no place in the modern world.”<sup>44</sup> Some have tried to harmonize the idea of *ad coelum* by establishing altitudinal boundaries that would establish countries’ ownership over their airspace within Earth’s atmosphere while allowing another set of laws to govern outer space.<sup>45</sup> Within this theory, the question then becomes how to determine where Earth’s atmosphere ends and outer space begins.<sup>46</sup> Some have suggested arbitrary limits expanding a couple of miles outward from each country’s borders,<sup>47</sup> akin to countries’

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<sup>41</sup> See Moon Agreement, *supra* note 14, art. 11.

<sup>42</sup> Joe C. Savage, *Legal Control of Outer Space*, 52 Ky. L.J. 404, 409 (1964).

<sup>43</sup> Franco Fiorio, *Space Law—Point of View of a Small Country*, in International Astronautical Federation, *Proceedings of the Fourth Colloquium on the Law of Outer Space* 111 (1963).

<sup>44</sup> *United States v. Causby*, 328 U.S. 256, 261 (1946).

<sup>45</sup> Hal H. Bookout, *Conflicting Sovereignty Interests in Outer Space: Proposed Solutions Remain in Orbit!*, 7 MIL. L. REV. 23, 35 (1960).

<sup>46</sup> ARTHUR C. CLARKE, *THE MAKING OF A MOON* 51 (rev. ed. 1958) (observing that it is no more possible to establish “where the atmosphere ends than one can define the moment when a musical note ceases”).

<sup>47</sup> Limits ranging from 30 to 50,000 miles have been proposed. See, e.g., Richard T. Murphy, Jr., *Air Sovereignty Considerations in Terms of Outer Space*, 19 ALA. LAW. 11, 33 (Jan. 1958) (proposing 30 miles); C.L. Sulzberger, *Brush-Fire Peace—V: An Attainable Goal*, N.Y. TIMES, Nov. 19, 1960, at 20 (proposing fifty miles); Charles Herzfeld, *For U.S. Control of Outer Space*, NEW LEADER 9 (1957) (proposing

ownership of the oceans just off their coasts.<sup>48</sup> Others have proposed, with varying degrees of success, more technical limits like the “point of nullity of the field of gravity,”<sup>49</sup> or the maximum altitude at which aerodynamic lift is available.<sup>50</sup> A different theory, the law of conquest, has been advanced with very limited application. The law of conquest was extremely influential in shaping the United States during the expansion period of 1845 to 1860.<sup>51</sup> However, it has diminished in value since the creation of the United Nations in 1945.<sup>52</sup> Conquest is “the taking of possession of territory of an enemy by force, and a transfer of sovereignty occurs only if the conquered territory is effectively reduced to possession and annexed by the conquering state.”<sup>53</sup> This form of property acquisition has been repeatedly affirmed by the U.S. courts.<sup>54</sup> That being said, applying this theory to the acquisition of lunar property rights presupposes that someone controlled that property to begin with, which is problematic. Therefore, unless the National Aeronautics and Space Administration (NASA) has not yet released some very important information about the Moon to the public, this theory would not allow the United States to assert ownership of lunar property rights.

However, the doctrine of *res nullius* could apply. *Res nullius*, or *terra nullius*, is an international law principle used to describe land or territory that has not yet been subject to the sovereignty of any state or for which a prior sovereignty has relinquished sovereignty over the area.<sup>55</sup> Australia was claimed by the British settlement in *Cooper v. Stuart*<sup>56</sup> under the doctrine of *terra nullius*. Other areas claimed under *terra nullius* include the Western Sa-

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100 miles); *National Sovereignty of Outer Space*, 74 HARV. L. REV. 1154, 1172 (1961) (proposing 50,000 miles).

<sup>48</sup> G.A. Res. 48/263, at 1 (July 28, 1994).

<sup>49</sup> ALVARO BAUZA ARAUJO, *HACIA UN DERECHO ASTRONAUTICO* 125 (1957).

<sup>50</sup> ANDREW G. HALEY, *SURVEY OF LEGAL OPINION ON EXTRATERRESTRIAL JURISDICTION* 26, 37, 40 (1960).

<sup>51</sup> PATRICIA NELSON LIMERICK, *THE LEGACY OF CONQUEST: THE UNBROKEN PAST OF THE AMERICAN WEST* 27–28 (1st ed. 1987).

<sup>52</sup> STANLEY MESLER, *UNITED NATIONS: THE FIRST FIFTY YEARS* (1st ed. 1995).

<sup>53</sup> ERIC C. SURETTE, 48 C.J.S. *INTERNATIONAL LAW* § 17 (2017).

<sup>54</sup> *See, e.g.*, *United States v. Huckabee*, 83 U.S. 414, 434 (1872); *United States v. Fullard-Leo*, 133 F.2d 743, 746 (9th Cir. 1943); *Republic Av. Corp. v. Lowe*, 69 F. Supp. 472, 478 (S.D.N.Y. 1946), *aff'g*, 164 F.2d 18 (2d Cir. 1947).

<sup>55</sup> MICHAEL CONNOR, *THE INVENTION OF TERRA NULLIUS: HISTORICAL AND LEGAL FICTIONS ON THE FOUNDATION OF AUSTRALIA* (2005).

<sup>56</sup> 14 App. Cas. 286 (1889).

hara,<sup>57</sup> Svalbard,<sup>58</sup> Greenland,<sup>59</sup> Antarctica,<sup>60</sup> Scarborough Shoal,<sup>61</sup> New Zealand,<sup>62</sup> and Guano Islands.<sup>63</sup>

The doctrine of discovery is another theory implicated regarding property rights on celestial bodies and *terra nullis*. The doctrine of discovery is an international law principle under which European countries, colonists, and settlers made legal claims against the lands of indigenous peoples all over the world from the fifteenth through the twentieth century.<sup>64</sup> Even today, the doctrine of discovery is applied in New Zealand,<sup>65</sup> Canada,<sup>66</sup> and Australia.<sup>67</sup> Examples also include China, which invoked this doctrine in 2010 when it planted its flag to claim sovereignty

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<sup>57</sup> Western Sahara, Advisory Opinion, 1975 I.C.J. Rep. 14 (Oct. 16).

<sup>58</sup> RUPERT W. ANDERSON, *THE COSMIC COMPENDIUM: SPACE LAW* 65 (2015) (“Svalbard was considered to be a *terra nullius* until Norway was given sovereignty over the islands in the Svalbard Treaty of 9 February 1920.”).

<sup>59</sup> *Id.* at 66 (“Norway occupied and claimed parts of (then uninhabited) Eastern Greenland in the 1920s, claiming that it constituted *terra nullius*. The matter was decided by the Permanent Court of International Justice against Norway.”).

<sup>60</sup> *Id.* (Antarctica “was not sighted by humans until . . . 1820.”).

<sup>61</sup> *Id.* (“The Philippines and the People’s Republic of China both claim the Scarborough Shoal or Panatag Shoal or Huangyan Island (黃岩島), nearest to the island of Luzon, located in the South China Sea. The Philippines claims it under the principles of *terra nullius* and EEZ (Exclusive Economic Zone). China’s claim refers to its discovery in the 13th century by Chinese fishermen.”).

<sup>62</sup> *Id.* (“In 1840, Lieutenant William Hobson, following instructions of the British government, pronounced the southern island of New Zealand to be uninhabited by civilized peoples, which qualified the land to be ‘*terra nullius*,’ and therefore fit for the Crown’s political occupation.”).

<sup>63</sup> *Id.* (“The Guano Islands Act from August 18, 1856, enabled citizens of the U.S. to take possession of islands containing guano deposits. The islands can be located anywhere, so long as they are not occupied and not within the jurisdiction of other governments. It also empowers the President of the United States to use the military to protect such interests, and establishes the criminal jurisdiction of the United States.”).

<sup>64</sup> ROBERT J. MILLER ET AL., *DISCOVERING INDIGENOUS LANDS: THE DOCTRINE OF DISCOVERY IN THE ENGLISH COLONIES* 2 (2010); see ROBERT J. MILLER, *NATIVE AMERICA, DISCOVERED AND CONQUERED: THOMAS JEFFERSON, LEWIS & CLARK, AND MANIFEST DESTINY* 9 (2006); Robert J. Miller & Jacinta Ruru, *An Indigenous Lens into Comparative Law: The Doctrine of Discovery in the United States and New Zealand*, 111 W. VA. L. REV. 849, 852–56 (2009); Robert J. Miller, *The Doctrine of Discovery in American Indian Law*, 42 IDAHO L. REV. 1, 8–21 (2005).

<sup>65</sup> *Ngati Apa v. Attorney-General* [2003] NZCA 117, [2003] 3 NZLR 643 (CA); *Te Runanganui O Te Ika Whenua Inc. Soc’y. v. Attorney-General* [1993] NZCA 218, [1994] 2 NZLR 20 (CA).

<sup>66</sup> *Delgamuukw v. British Columbia*, [1997] 3 S.C.R. 1010 (Can.); *Guerin v. The Queen*, [1984] 2 S.C.R. 335 (Can.).

<sup>67</sup> *Mabo v. Queensland* [No. 2] (1992) 175 CLR 1 (Austl.).

over the bed of the South China Sea.<sup>68</sup> In 2007, Russia also used this doctrine when it laid claim to the Arctic Ocean seabed.<sup>69</sup> Similarly, Canada and Denmark each claimed sovereignty over an island off the west coast of Greenland in 2005.<sup>70</sup> In fact, the Supreme Court of the United States of America cited the doctrine of discovery as a basis for property ownership as recently as 2005.<sup>71</sup> Traditionally, discovery created an:

inchoate title to a territory that must be perfected by its effective occupation. . . . To turn a first discovery into a complete title, a European country had to actually occupy and possess the newly found lands. This was usually done by building forts or settlements. This physical possession had to be accomplished within a reasonable amount of time after the first discovery to create a complete title.<sup>72</sup>

For an interesting case study, the Scarborough Shoal was claimed by China under the principles of discovery in the thirteenth century, whereas the Philippines claimed the Shoal under the theory of *terra nullius*.<sup>73</sup>

Furthermore, the international doctrine of discovery is consistent with John Locke's labor theory of property. Locke's theory famously posits that before government existed, all men had common access to Earth's resources as given by God.<sup>74</sup> In order to survive, individuals had to appropriate resources for themselves.<sup>75</sup> Through their own labor and effort, men were able to gain private property rights if they did not waste the resources they claimed.<sup>76</sup>

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<sup>68</sup> William J. Broad, *China Explores a Rich Frontier Two Miles Deep*, N.Y. TIMES (Sept. 11, 2010), <http://www.nytimes.com/2010/09/12/science/12deepsea.html> [https://perma.cc/NRJ2-4QSQ].

<sup>69</sup> Robert J. Miller, *Finders Keepers in the Arctic?*, L.A. TIMES (Aug. 6, 2007), <http://articles.latimes.com/2007/aug/06/news/OE-MILLER6> [https://perma.cc/KR9H-FW5M].

<sup>70</sup> *Canada Island Visit Angers Danes*, BBC NEWS, July 25, 2005, <http://news.bbc.co.uk/2/hi/europe/4715245.stm> [https://perma.cc/2UVW-MJ5D].

<sup>71</sup> *City of Sherrill v. Oneida Indian Nation of N.Y.*, 544 U.S. 197, 203 n. 1 (2005); *see also* *Johnson v. M'Intosh*, 21 U.S. 543, 570 (1823).

<sup>72</sup> Robert J. Miller et al., *The International Law of Discovery, Indigenous Peoples, and Chile*, 89 NEB. L. REV. 819, 821–25 (2010); *see also* JOHN DUGARD, *INTERNATIONAL LAW: A SOUTH AFRICAN PERSPECTIVE* 132 (3d ed. 2005); IAN BROWNLIE, *PRINCIPLES OF PUBLIC INTERNATIONAL LAW* 139–40 (6th ed. 2003).

<sup>73</sup> ANDERSON, *supra* note 59.

<sup>74</sup> LOCKE, *supra* note 3, at 283–446.

<sup>75</sup> *Id.*

<sup>76</sup> *Id.* at 305–06.

The labor of his body, and the work of his hands, we may say are properly his. Whatsoever then he removes out of the state that nature hath provided, and left it in, he hath mixed his labor with, and joyned [sic] to it something that is his own, and thereby makes it his property. It being by him removed from the common state nature placed it in, it hath by his labor something annexed to it, that excludes the common right of other men . . . at least where there is enough, and as good, left in common for others.<sup>77</sup>

The United States prides itself in and was established under the idea that “all men are created equal.”<sup>78</sup> The spirit of entrepreneurship has not only had an influence on America’s economic system but has also directly impacted every aspect of our lives.<sup>79</sup> Adam Smith declared, “[I]ittle else is requisite to carry a state to the highest degree of opulence from the lowest barbarism but peace, easy taxes and a tolerable administration of justice.”<sup>80</sup> To justify his position he went on to say:

As every individual . . . endeavours [sic] . . . to employ his capital in the support of domestic industry, and so to direct that industry that its produce may be of the greatest value, every individual necessarily labours [sic] to render the annual revenue of the society as great as he can . . . . [While] he intends only his own gain . . . he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention.<sup>81</sup>

The ability to profit through ones own work has been one of the leading contributors to economic wealth not only in the United States, but also in free trade zones such as Hong Kong.<sup>82</sup> This allows individuals to profit from the work of their own labor and to subsequently enjoy the benefits or suffer the losses from those risks.<sup>83</sup>

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<sup>77</sup> *Id.*; see also MARTIN SELIGER, *THE LIBERAL POLITICS OF JOHN LOCKE* 180–88 (1969) (contrasting Locke’s view of original ownership with that of Grotius and Pufendorf).

<sup>78</sup> THE DECLARATION OF INDEPENDENCE, pmbl. (U.S. 1776).

<sup>79</sup> See Peter Burnham, *Capitalism*, in THE CONCISE OXFORD DICTIONARY OF POLITICS (2d ed. 2003); see also Michael Mousseau, *The Social Market Roots of Democratic Peace*, 334 INT’L SECURITY 52, 53 (2009); but see Bruce Bueno de Mesquita & George W. Downs, *Development and Democracy*, N.Y. TIMES (Sept. 27, 2005); Joseph T. Siegle et al., *Why Democracies Excel*, 83 FOREIGN AFF. 57 (2004).

<sup>80</sup> ADAM SMITH, *AN INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTH OF NATIONS* 13 (1872).

<sup>81</sup> *Id.* at 354.

<sup>82</sup> GEORGE REISMAN, *CAPITALISM, A TREATISE ON ECONOMICS* (1996); see also MILTON FRIEDMAN, *CAPITALISM AND FREEDOM* (2002 ed.).

<sup>83</sup> *Id.*

One of the best examples that can be analogized to territory in space is the Homestead Act of 1862.<sup>84</sup> President Abraham Lincoln signed the bill into law, allowing individuals to acquire a freehold title in fee simple to 160 acres of land if they: (1) filed an application; (2) improved the land; and (3) filed for a deed.<sup>85</sup> This right was limited to individuals who were over twenty-one years old or the head of a family and had lived on the land for at least five years.<sup>86</sup> Nonetheless, the Homestead Act of 1862 gave individuals a chance to directly enjoy the fruits of their labor. Allowing individuals to profit or suffer from their own sweat is an exemplification John Locke's labor theory.<sup>87</sup> The Homestead Act of 1862 was also imitated, with some modification, by Canada<sup>88</sup> in 1872 and by several Australian colonies<sup>89</sup> in the 1860s.

Allowing people the ability to profit or loss from their own risk in working land directly allowed the settlement and cultivation of most of the land west of the Mississippi River. Between 1862 and 1938, "almost 1.5 million households were given title to 246 million acres of land."<sup>90</sup> That area is approximately the acreage of California and Texas combined.<sup>91</sup> Some have estimated that even today \$46.3 billion is generated every year directly because of the industrious pioneers.<sup>92</sup>

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<sup>84</sup> Act of May 20, 1862, ch. 75, 12 Stat. 392 (repealed 1976) [hereinafter Homestead Act of 1862].

<sup>85</sup> *The Homestead Act*, NAT'L ARCHIVES, <https://www.archives.gov/education/lessons/homestead-act> [<https://perma.cc/94Z8-KYQ3>].

<sup>86</sup> Homestead Act of 1862, *supra* note 88, §§ 2, 5.

<sup>87</sup> See LOCKE, *supra* note 3; see generally ROBERT L. BRADLEY, JR., CAPITALISM AT WORK: BUSINESS, GOVERNMENT AND ENERGY (2008).

<sup>88</sup> KIRK N. LAMBRECHT, THE ADMINISTRATION OF DOMINION LANDS, 1870–1930 (1st ed. 1991) (The Dominion Lands Act encouraged the settlement of Canada's prairie provinces.).

<sup>89</sup> STEPHEN H. ROBERTS, HISTORY OF AUSTRALIAN LAND SETTLEMENT, 1788–1920 (1924) (commonly referred to as Selection Acts).

<sup>90</sup> Trina Williams, The Homestead Act: A Major Asset-Building Policy in American History 5 (Ctr. For Social Dev., Working Paper 00-9, 2000).

<sup>91</sup> *Id.* at 6.

<sup>92</sup> Deborah Groban Olson, *Fair Exchange: Providing Citizens with Equity Managed by a Community Trust, in Return for Government Subsidies or Tax Breaks to Business*, 15 CORNELL J.L. & PUB. POL'Y 231, 251 (2006). Todd Arrington, Historian at the Homestead National Monument of America, 'Economics and the Homestead Act' (2005), bases his calculation as follows:

All the states that had homesteading at some point in American history have a modern combined gross state product of \$4.63 trillion. If we assume that just one percent of that modern total can be related to homesteading (via agriculture, manufacturing, retail sales, real estate, etc.), that means that the Homestead Act is still

Structuring property ownership laws on the Moon, Mars, and other celestial bodies after the Homestead Act of 1862 would allow companies, individuals, and even countries to claim property if they “improve[ ] the land”<sup>93</sup> in some way. This would prevent entities from claiming extraterrestrial property without having first demonstrated a proper use for it.<sup>94</sup> On top of that, entities would have an incentive to profit from their own effort. Like President Lincoln encouraging Americans to settle the West, incentivizing entities to claim extraterrestrial property on the Moon and Mars would accelerate space colonization and promote utilization of resources already available.

The desire and profit is great for entities to explore the Moon and outer space. However, the treaties that currently exist, forbidding country and private ownership, destroy any incentive to use the resources found thereon. If the laws allowed people, companies, or countries to claim ownership to what they could manage, it would create significant incentive for both private and government groups to invest the resources necessary to establish ownership and control over the property on Mars, the Moon, and other celestial bodies.<sup>95</sup> Furthermore, allowing entities to claim property rights over only what they can manage would pave the way for everyone to profit as lunar exploration and colonization become more feasible and affordable.

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responsible for the generation of \$46.3 billion *every year*. . . . Dollar figures taken from the website of the United States Census Bureau. 1998 figures are the most recent available.

*Id.* at 251 n.63.

<sup>93</sup> Homestead Act of 1862, *supra* note 88.

<sup>94</sup> Compare *id.*, with LOCKE, *supra* note 3.

<sup>95</sup> *Prime Lunar Real Estate for Sale—But Hurry*, CNN (Nov. 20, 2000), <http://www.cnn.com/2000/TECH/space/11/20/lunar.land> [<https://perma.cc/HGV6-U8Y8>] (As of 2000, more than 300,000 people had purchased “lunar deeds” through companies with no legitimate claims).