

**‘Space is the Only Way to Go’:  
The Evolution of the Extractivist Imaginary of International Law**

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*‘Devoted to breaking the limits placed by humanity on the surface of this planet,  
astrofuturism forecasts an escape from terrestrial history.’*

De Witt Douglas Kilgore, 2003.<sup>1</sup>

In May 2019, Amazon billionaire Jeff Bezos stood on a darkened stage and delivered a televangelical monologue to a rapt crowd. His hour-long soliloquy was entitled ‘Going to Space to Benefit Earth’. Timed to coincide with the fiftieth anniversary of the moon landing, Bezos began by positioning himself as keeper of the faith that had animated NASA’s Apollo 11 manned mission to the moon in 1969. Having invoked a hallowed US nationalist mythology, Bezos then invoked his own. He flashed an image of his 1970s high school yearbook quote to prove his lifelong ambition of becoming a ‘space entrepreneur’. The teenaged Bezos, schooled in 1970s science fiction, had distilled the scripture of the commercial space industry: *‘the earth is finite, and if the world economy and population is to keep growing, space is the only way to go!’*. Bezos – now the richest person alive – has long insisted that his motivation in accumulating his staggering private wealth via the online platform giant Amazon has been to fund this vision of space colonisation. Having established his prophetic credentials, Bezos then proceeded to step through the articles of faith upon which the burgeoning commercial space industry is being constructed. He declared a linear teleology of human progress, in which population growth and economic growth are the cardinal virtues. That growth necessarily correlates with exponential growth in energy consumption. That energy consumption is by

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<sup>1</sup> De Witt Douglas Kilgore, *Astrofuturism: Science, Race, and Visions of Utopia in Space* (Philadelphia:

association virtuous. As such, if the human species stays on Earth, the inevitable rationing of energy consumption would reverse this linear teleology of human development. And that, Bezos spelt out, would be a 'bad way to go'. The only alternative was therefore to 'move out into the solar system': to 'colonise space', a domain of 'unlimited resources'. Bezos arrived at his ideological *coup de grace* with the subtlety of a hammer: 'do we want stasis and rationing? Or do we want dynamism and growth?'

In his speech, Bezos replayed the spatial and temporal dimensions of what Kilgore has described as astrofuturism.<sup>2</sup> For Kilgore, astrofuturism is a utopian amalgam of European imperialism and liberalism that developed in the post-war United States. It is marked by a spatial fantasy of unlimited geographic expansion, 'extend(ing) the nineteenth-century notion that conquest and empire are the logical *modus operandi* of any progressive civilization'.<sup>3</sup> Temporally, astrofuturism is marked by a rejection of the conditions of the present: 'all astrofuturists are unreconciled to the moment of their production, the world as it exists now'.<sup>4</sup> Bezos' justification of his obscene personal wealth as a global good commenced the launch of the new lunar landing program of his private aerospace company, Blue Origin. The Blue Moon lunar lander has been designed for launch under the umbrella of NASA's Commercial Lunar Payload Services program, a lunar resources testing and exploitation program due to commence in 2020. Aerospace companies – including Blue Origin, Elon Musk's SpaceX, the International Space Alliance, and more recently, the Google-affiliated Planetary Resources, and Moon Express – have since the early 2000s been progressively picking apart at Boeing and Lockheed Martin's half-century duopoly control over NASA contracts, established during the Cold War. As NASA funding was redirected toward the US Department of Defense following the September 2001 attacks on the World Trade Centre in New York, billionaire entrepreneurs including Bezos and Musk began to wage highly-leveraged campaigns to reconfigure the Cold War-era space sector in their favour.<sup>5</sup>

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<sup>2</sup> Ibid.

<sup>3</sup> Ibid, 11.

<sup>4</sup> Kilgore, *Astrofuturism*, 4.

<sup>5</sup> Christian Davenport, *The Space Barons: Elon Musk, Jeff Bezos and the Quest to Colonize the Cosmos* (New York: Hachette Book Group, 2018).

Outside the United States and aerospace industry circles, the prospect of mining near-earth bodies in space is apt to invoke incredulity, for its invocation of arch science fiction themes at a time of extreme wealth inequality, climate crisis and far-right resurgence.<sup>6</sup> Space mining has been a standard science fiction trope since the late nineteenth century, and is all too readily dismissed as little more than that. However, the intensity of current industry activity around the technological, commercial and legal questions raised by the prospect of space resource extraction gives pause for thought. Internet platform giants including Google, Amazon and PayPal have been shifting capital into space research and development for over a decade. Resulting advancements in rocketry and applied robotics have rendered the prospect of space mining at least technically feasible.<sup>7</sup> According to Planetary Resources, the speculative value of mining near-earth bodies is now in the quadrillions.<sup>8</sup> This figure recalls the fervour of the dot.com boom and bust of the early 2000s. It is clearly fantastical, or at least difficult to square with the immense technological and logistical challenges presented in realising it. Nevertheless, it is a clear indication of the high-profile venture capital the field has attracted over the last two decades.

As such, it is short sighted to regard space mining as a mere distraction from the daunting global challenges of the day. As multilateral climate change agreements falter and international collaboration itself is increasingly discredited, space resource extraction – along with seabed and polar resource extraction – is better understood as part of a systemic counter-response to those challenges. That counter-response places its faith not in international agreements but in market solutions to crisis. The new astrofuturist narratives around space mining are directly linked to the material dependency of information technology and renewable energy infrastructure – and in particular, battery storage – on rare earth metals. A clean energy future on earth, so the rhetoric goes, will necessitate off-earth resource extraction. Corporate proponents of seabed mining make

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<sup>6</sup> Robert R. Heinlein, *The Rolling Stones* (New York: Baen Publishing, 2009 ed., first published 1952). Bezos was a student of Cornell University physicist Gerard K. O'Neil, whose speculative tract on space colonisation, *The High Frontier: Human Colonies in Space* (Burlington, Ontario: Collector's Guide Publishing, 2000, 3rd ed., first published 1976), is frequently cited by space entrepreneurs.

<sup>7</sup> Andreas M. Hein, Robert Matheson and Dan Fries, "A Techno-Economic Analysis of Asteroid Mining," *Acta Astronautica* 168 (March 2020): 104 – 15.

<sup>8</sup> Asterank, accessed March 22, 2020, [www.asterank.com](http://www.asterank.com).

similar claims.<sup>9</sup> This avant-garde of entrepreneurial activity has been shadowed by a sharp increase in exploratory activity on the moon and on near earth asteroids by sovereign states, including China, India, Japan, and the Russian Federation, and multilateral institutions like the European Space Agency. Japan's JAXA Agency landed its Hyabusa II robotic probe on the Ryugu asteroid in February 2019 on a mineral sample return mission. NASA's Osiris Rex probe mission claims it will do the same on the Bennu asteroid in 2020. The China National Space Administration landed its Chang'e-4 rover on the far side of the moon in 2019, and is conducting mineralogical tests of the lunar surface.<sup>10</sup>

As Bezos' Blue Origin performance illustrated, this new generation of space entrepreneurs actively perpetuate astrofuturist fantasies of escape – not just from the natural limits of earth but from the contingent histories of terrestrial jurisdiction. These include, at turns, the fantasy of escape from sovereign regulatory oversight; from taxation; from operating in fiat currency; and from reliance on established forums of dispute resolution.<sup>11</sup> However, the purpose of this chapter is to observe the way in which such public-facing fantasies of escape misdirect attention away from the extent to which the commercial viability of any future extractive industry in space is precisely a question of law. Without legal certainty, particularly with respect to legal protections of private rights, the speculative value of space mining – and of the entire commercial space industry – cannot be realised. New scholarship in international history and international law is increasingly making the point even more strongly than that: it is law itself that will

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<sup>9</sup> "Sustainable Supply of Minerals and Metals Key to a Low-Carbon Energy Future", Deep Green Metals Inc., accessed March 22, 2020,

<https://deep.green/sustainable-supply-of-minerals-and-metals-key-to-a-low-carbon-energy-future/>. Isabel Feichtner, "Mining for Humanity in the Deep Sea and Outer Space: The Role of Small States and International Law in the Extraterritorial Expansion of Extraction," *Leiden Journal of International Law* 32, no. 2 (2019): 255–74.

<sup>10</sup> On Osiris Rex, see "New Detailed Bennu Mosaic," Osiris Rex, Asteroid Sample Return Mission, accessed March 22, 2020, <https://www.asteroidmission.org/>. On Chang'e-4, see "China's Rover Finds Layers of Surprise Under Moon's Far Side," *New York Times*, February 26, 2020, <https://www.nytimes.com/2020/02/26/science/china-moon-far-side.html>. On Hyabusa-2, see Leah Crane, "Japan's Hayabusa 2 May Finally Kick-Start the Asteroid Mining Era," *New Scientist*, February 20, 2019, <https://www.newscientist.com/article/mg24132182-500-japans-hayabusa-2-may-finally-kick-start-the-asteroid-mining-era/#ixzz6GEI9gvns>.

<sup>11</sup> See for example Alexander William Salter, "Ordering the Cosmos: Private Law and Celestial Property Rights," *Journal of Air Law & Commerce* 82, no. 2, (2017): 311–32.

construct the value 'new' domains of resource extraction are coming to represent.<sup>12</sup> The constitutive role of law in producing space and value is not lost on astrofuturists like Bezos and Musk. As they have spruiked escapist tropes on stage, behind the scenes space entrepreneurs have invested heavily in standard corporate techniques of legislative lobbying, strategic anti-trust litigation, and public relations campaigning. The new astrofuturists are not simply seeking to clarify the legal framework that will govern the commercial space industry. They are seeking to write it.

In practice, then, this resurgent astrofuturism has accompanied not a flight from law, but an intense engagement with lawmaking processes at all levels. The United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS), long focused on monitoring military prohibitions, civilian satellite operations and space debris, has over recent years identified the need to revive an international diplomatic debate that ran hot in the 1960s and 1970s but was largely abandoned by the 1980s: the international legal framework that should apply to the commodification and exploitation of extraterrestrial minerals and metals as 'resources'. The post-2001 chapter in the development of the commercial space industry is part of the global reinvigoration of debate over the regulation of extractive activity in geophysical domains outside sovereign territory, including the international seabed, the polar regions, and near-earth space. Whilst this chapter focuses on current developments in the international law governing space resource extraction, the development of space law should therefore be held in counterpoint to the differential regimes that have developed to regulate resource extraction in the international seabed, the Antarctic, and the Arctic.<sup>13</sup>

As counterintuitive as it may seem at a time of weakening international co-operation and compounding environmental and economic crises, the regulation of space mining is therefore not only a proper subject of critical analysis for international lawyers – it is an

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<sup>12</sup> See for example Isabel Feichtner, "Sharing the Riches of the Sea: The Redistributive and Fiscal Dimension of Deep Seabed Exploitation," *European Journal of International Law* 30, no. 2 (2019): 601–33. See also Katharina Pistor, *The Code of Capital: How the Law Creates Wealth and Inequality* (Princeton: Princeton University Press, 2019).

<sup>13</sup> On the international seabed, see Surabhi Ranganathan, "The Law of the Sea and Natural Resources" in *Community Interests Across International Law*, eds. Eyal Benvenisti and Georg Nolte (Oxford: Oxford University Press, 2018), 121–35. On Antarctica, see Tim Stephens, "The Antarctic Treaty System and the Anthropocene," *The Polar Journal* 8, no. 1 (2018): 29–43.

urgent one. Much extant literature on space resource extraction is industry-captured, and presumes the astrofuturist premise: that expansion of the geophysical domain of natural resource commodification is not only inevitable, but a desirable, capital-driven solution to both resource conflict and planetary limits.<sup>14</sup> This utopian framing of the prospect, however, should not be permitted to distract from the fact that understanding the reinvigoration of a twenty-first century project of extraterritorial extractivism, laced with an unabashed colonial imaginary, requires clear-eyed engagement with the history of international law. This chapter argues that the advent of a commercial space resource industry signals neither an escape from terrestrial jurisdiction, nor a failure of international law, but a predictable evolution of its extractivist logic. As such, the contemporary jostling over the legal regime that will govern space mining is not – or not just – a gaudy sideshow to the main event of compounding environmental and economic crisis. It is part of a systemic counter-response to that crisis which seeks to perpetuate the extractivist logic that produced it.<sup>15</sup>

This chapter first gives an overview of the Cold War-era space law regime, and of contemporary developments in space resources law. It then considers the analytical frameworks that might productively be brought to bear on these developments, with a focus on Marxian accounts of the spatial fix and of the neo-extractivist turn in global capitalism. The chapter then argues that these concepts will need supplementation with scholarship in the history of international law, if the significance of current negotiations over the legal framework that will apply to space resource extraction is to be fully grasped. That scholarship not only offers a means of understanding the evolution of the legal framework governing space resources. It offers a means of diagnosing the real stakes of the intensive commercial, political and legal activity currently underway.

## **2. Space resources law: the Outer Space Treaties and domestic legislation**

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<sup>14</sup> See Ram S. Jakhu and Joseph N. Pelton, eds., *Global Space Governance: An International Study* (Gewerbetrasse: Springer, 2017); Ricky Lee, *Law and Regulation of Commercial Mining of Minerals in Outer Space* (Dordrecht: Springer, 2012); and Priyank D. Doshi, "Regulating the Final Frontier: Asteroid Mining and The Need for a New Regulatory Regime," *Notre Dame Journal of International and Comparative Law* 6, no. 1 (2016): 189–212.

<sup>15</sup> Isabel Feichtner and Surabhi Ranganathan, "International Law and Economic Exploitation in the Global Commons: Introduction," *European Journal of International Law* 30, no. 2 (2019): 541–6.

As the commercial space industry booms, the skeletal treaty framework laid down between the 1950s and 1970s to regulate extractive activity in outer space is slowly returning to prominence. Although the space treaties have been enlivened more regularly around issues of militarisation, satellite operations and space debris, the regulation of extractive activity was an integral concern in international space law negotiations from the 1950s. This concern to regulate – and thereby facilitate – future resource exploitation was fundamental to the establishment of the treaty regime. From the outset, the United Nations General Assembly and the Ad Hoc Committee on the Peaceful Uses of Outer Space agreed that any future regime of resource exploitation be organised around the two principles that came to ground the space treaty framework: a prohibition on sovereign appropriation, and an assertion of common benefit.<sup>16</sup> As frequently noted, the conceptual basis of the space treaty framework was explicitly analogised from the Grotian principle of *mare liberum* held to ground the law of the sea.<sup>17</sup> The notion of 'common possession of all mankind' had been asserted in relation to the polar regions from the early twentieth century, in contestation of British claims to the Graham Land region of West Antarctica.<sup>18</sup>

Beyond this basic restatement of norms against sovereign appropriation and for common benefit in relation to geophysical domains beyond sovereign territorial jurisdiction, the space regime negotiated over the 1960s and 1970s is skeletal in comparison to the comprehensive UN Convention on the Law of the Sea (UNCLOS), negotiated during the 1970s and early 1980s. The UN General Assembly repeatedly cited the need to avoid limiting scientific and technological advancement, as the reason for adopting a minimalist treaty framework that would allow 'adaptive' development of space law. Yet the impossibility of fixing stable distinctions between scientific exploration, military use and commercial exploitation in space was not only presumed from the outset of negotiations in the UN General Assembly in the late 1950s – it was expressed as the principal justification for adopting a concept of common benefit as the foundational principle of

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<sup>16</sup> See UN General Assembly Ad Hoc Committee on the Peaceful Uses of Outer Space, *Report of the Legal Committee*, UN Doc. A/AC.98/2, June 12, 1959.

<sup>17</sup> Ranganathan, "The Law of the Sea and Natural Resources".

<sup>18</sup> Thomas Willing Balch, "The Arctic and Antarctic Regions and the Law of Nations" *American Journal of International Law* 4, no. 2 (1910): 275.

international space law.<sup>19</sup> As Craven has recently argued, the Outer Space Treaty's silences were therefore less gaps in the space regime than deeply constitutive of it.<sup>20</sup> On Craven's account, a surface reading of the development of international space law tells a story of a regime grounded in 'peaceful use'. An Althusserian 'symptomatic reading' of the treaty regime's constitutive silences, however, reveals that the supposed collective suppression of the risk of space becoming a site of warfare on the one hand, and of primitive accumulation on the other, produced a regime constructed around the twin rationalities of militarisation and commodification.

The 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (the Outer Space Treaty), only peripherally addressed resource extraction. The Treaty declared the exploration and use of outer space as the 'province of all mankind', and freedom of exploration, use and scientific investigation for 'all States'. Article II prohibited sovereign appropriation 'by means of use or occupation, or by any other means', rejecting the application of the laws of territorial acquisition to outer space, and by implication, any presumption of *res nullius*.<sup>21</sup> Given the extreme inequalities in spacefaring capacity during the Cold War, the assertion of common benefit was capable of sustaining irreconcilable interpretations. On the one hand, it served as a justification for commercial extractive activity structured in accordance with neoliberal ideals of global market competition.<sup>22</sup> On the other, it served as an argument for redistribution of profit generated by that extractive activity towards states without the capacity to participate in a competitive market. The 1967 Treaty avoided altogether the question of what jurisdictional form was being invoked to ground a space extraction regime. The prospect of international territorial jurisdiction over near-earth space presented not only a functional impossibility in the UN General Assembly of the 1960s, but also a diplomatic

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<sup>19</sup> UN General Assembly Ad Hoc Committee, *Report*.

<sup>20</sup> Matthew Craven, "Other Spaces: Constructing the Legal Architecture of a Cold War Commons and the Scientific Imaginary of Outer Space," *European Journal of International Law* 30, no. 2 (2019), 547–72.

<sup>21</sup> For a restatement of the international law of territorial acquisition during the decolonisation movements, see Robert Yewdall Jennings, *Acquisition of Territory in International Law* (Manchester: Manchester University Press, 1963).

<sup>22</sup> Quinn Slobodian, *The Globalists: The End of Empire and the Birth of Neoliberalism* (Cambridge: Harvard University Press, 2018).



one, as the mandate and trusteeship models of 'international' administration that had been applied to confiscated German and Ottoman territories after World War I came into increasing disrepute.<sup>23</sup>

As such, the Outer Space Treaty left the door open for unilateral proprietary claims recognisable in domestic law. This permissive silence on the question of private ownership and control over minerals and metals refigured space as a 'new' frontier for resource extraction. Moreover, it did so for both decolonising and colonial states, at precisely the same time as the status of property rights in natural resources derived from colonial law came to dominate the anti-colonial agenda.<sup>24</sup> For former imperial states, space represented a new field of resource extraction free from the risk of post-independence nationalisation. For decolonising states, the possibility of extraterritorial resource rights in space represented an opportunity for post-independence economic development. Perhaps predictably, subsequent attempts within the UN to address the jurisdictional lacuna left by the Outer Space Treaty with respect to space resource extraction ended in diplomatic failure. The 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, commonly known as the Moon Agreement, sought to remedy the jurisdictional gap that had been left by the 1967 Treaty. It committed to the establishment of 'an international regime, including appropriate procedures, to govern the exploitation' of those resources, including a requirement that States Parties make public any relevant discovery.<sup>25</sup> Although the United States and the Soviet Union – then the only states with spacefaring capacity – took part in negotiations, neither signed the treaty. The Moon Agreement remains one of the least subscribed UN agreements. It has been ratified by eighteen states, and signed by an additional four.

As the Cold War formally receded and the agendas of international institutions turned over the 1990s toward trade liberalisation, sustainable development, and international humanitarian law, the concerns that had animated the establishment of the space treaty

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<sup>23</sup> On mandate and trusteeship, see Cait Storr, *International Status in the Shadow of Empire: Nauru and the Histories of International Law* (Cambridge: Cambridge University Press, forthcoming 2020).

<sup>24</sup> Subhash C. Jain, "Permanent Sovereignty over Natural Resources and Nationalization in International Law," *Journal of the Indian Law Institute* 19, no.3 (1977): 241–56.

<sup>25</sup> UN General Assembly, *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, UN Doc.RES 34/68, December 5, 1979. ('Moon Agreement').

regime as it pertained to resource extraction seemed ever more remote. Within international law, the principle of common benefit has since been refracted largely through the UNCLOS principle of the common heritage of mankind as it applies to the international seabed. In counterpoint to parallel debates in political theory, where treatments of the concept of the commons have broadened out significantly since the 1990s, treatments of the common benefit principle within international law have been whittled down to focus on the function and institutional design of the International Seabed Authority.<sup>26</sup> With the escalation of private investment in the space industry from the mid-2000s, international space resource law has seen a dramatic resurgence, and the questions left unanswered at the end of the Cold War era of international treaty-making are once more being raised. With notable exceptions, however, scholarly literature on the meaning of common benefit in respect of space resources has been dominated by corporate and state interests. The sub-discipline of international space law is at present largely comprised of corporate practitioners engaged by the entrepreneurial space industry, and more recently, by international lawyers revisiting the stale treaty framework at the behest of governments seeking to regain a handle on the decades-old status quo.<sup>27</sup>

The most significant recent developments in space resource law have been the legislative moves of the United States and Luxembourg to recognise proprietary rights in space resources at national level. These moves have been almost entirely responsive to the private space industry, yet have pursued slightly different objectives. In 2015, the United States Congress passed the Commercial Space Launch Competitiveness Act, championed by the Obama administration.<sup>28</sup> Part IV of the Act, the Space Resource Exploration and Utilization Act of 2015, commits the US executive to 'facilitate the commercial exploration and utilization of space resources to meet national needs', and to 'promote the right of United States commercial entities to explore outer space and utilize space

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<sup>26</sup> Feichtner, "Sharing the Riches of the Sea". For treatments of the commons in political theory, see for example Camille Barbagallo, Nicholas Beuret and David Harvie (eds.), *Commoning with George Caffentzis and Silvia Federici* (London: Pluto Press, 2019).

<sup>27</sup> Notable exceptions include Haris Durrani, "Interpreting 'Space Resources Obtained': Historical and Postcolonial Interventions in the Law of Commercial Space Mining," *Columbia Journal of Transnational Law* 54, no. 2 (2019): 403–60; and Feichtner, "Mining for Humanity in the Deep Sea and Outer Space."

<sup>28</sup> Commercial Space Launch Competitiveness Act of 2015, Public Law no. 114–90, 25 November 2015 (USA).

resources'.<sup>29</sup> The relevant section on space resource rights provides *inter alia* that a 'US citizen engaged in commercial recovery' shall be 'entitled to' any space resource obtained, 'including to possess, own, transport, use, and sell', 'in accordance with applicable law, including the international obligations of the US'.<sup>30</sup> The Act refrains from using the direct language of property included in the Bill, and includes an explicit disclaimer that the enactment constitutes a declaration of extraterritorial sovereignty. Yet in substance, the Act marks yet another imperial deployment of the formal distinction between private proprietary and sovereign territorial claims, a legal technique that has characterised US empire since the nineteenth century.<sup>31</sup>

The Duchy of Luxembourg subsequently passed a national law recognising private property in space resources in 2017.<sup>32</sup> An established tax haven itself formerly dependent on mining, Luxembourg has in recent years sought to rebrand itself as a jurisdictional launchpad for asteroid mining.<sup>33</sup> The Luxembourg Space Agency's marketing positions Luxembourg as 'the first European country and the second worldwide after the United States, to offer a legal framework on the exploration and use of space resources, ensuring that private operators can be confident about their rights on resources they extract in space'.<sup>34</sup> In contrast to the United States' old nationalist ambition to dominate space in both military and economic capacities, Luxembourg's aim is to extract resource rents from commercial space industries developing in other states. Under the new national law, in order to receive rights protection companies must be registered in Luxembourg, and any space activity must be authorised by the Luxembourg government, for a fee of between '5,000 to 500,000 euros', determined by the relevant Minister. To foster industry development, Luxembourg has invested directly in Planetary Resources, and established

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<sup>29</sup> Space Resource Exploration and Utilization Act of 2015, in *ibid*.

<sup>30</sup> *Ibid*, section 51303.

<sup>31</sup> See for example Christina Duffy Burnett, "The Edges of Empire and the Limits of Sovereignty: American Guano Islands," *American Quarterly* 57, no. 3 (2005), 779–803; and Durrani, "Interpreting 'Space Resources Obtained,'" 437–42.

<sup>32</sup> Duchy of Luxembourg, Law of July 20th 2017 on the Exploration and Use of Space Resources. For the English translation, see "Law of July 20th 2017 on the Exploration and Use of Space Resources," Luxembourg Space Agency, accessed March 22, [https://space-agency.public.lu/en/agency/legal-framework/law\\_space\\_resources\\_english\\_translation.html](https://space-agency.public.lu/en/agency/legal-framework/law_space_resources_english_translation.html).

<sup>33</sup> Feichtner, "Mining for Humanity in the Deep Seabed and Outer Space."

<sup>34</sup> "Space Resources," Luxembourg Space Agency, accessed March 22, 2020, <https://spaceresources.public.lu/en.html>.

a strategic relationship with China's National Space Science Center, with plans to open a Chinese Research Laboratory of Deep Space Exploration in Luxembourg. Luxembourg is not alone in making rent-driven moves on the commercial space industry. The United Arab Emirates Space Agency has announced plans to establish a similar legislative regime, with a view to generating resource rents in a post-fossil fuel energy economy.<sup>35</sup>

In response to these domestic developments, the prospect first raised in the 1979 Moon Agreement of an international regime to govern space resource exploitation was discussed in the UNCOPUOS Legal Subcommittee in April 2019.<sup>36</sup> Preliminary proposals for the establishment of a future regime are being developed by the Hague International Space Resource Governance Working Group, commissioned by the UNCOPUOS to consult on the establishment of an international framework for 'space resource activities'. The Hague Working Group published its 'Building Blocks' in November 2019, which perpetuate rather than resolve the older contest between the appropriative and redistributive interpretations of the concept of common benefit.<sup>37</sup> Alongside an assertion that 'space resource activities shall be carried out for the benefit and in the interests of all countries and humankind irrespective of their degree of economic and scientific development', core principles include: 'provid[ing] legal certainty and predictability for operators'; 'tak[ing] into particular account the contributions of pioneer operators'; and 'ensur[ing] that resource rights [...] can lawfully be acquired through domestic legislation'.<sup>38</sup>

This move to accommodate the US and Luxembourg legislation within a common benefit regime has not, however, gone uncontested. Belgium and Greece submitted a working paper to the UNCOPUOS Legal Subcommittee in 2019, citing the need for a 'solid,

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<sup>35</sup>"UAE Eyes New Frontiers with Law to Regulate Space Tourism, Mining," *Arabian Business* November 24, 2019,

<https://www.arabianbusiness.com/politics-economics/434048-uae-eyes-new-frontiers-with-law-to-regulate-space-tourism-mining>.

<sup>36</sup> UN Committee on the Peaceful Uses of Outer Space, *Report of the Legal Subcommittee on its fifty eighth session held in Vienna from 1 to 12 April 2019*, UN Doc. A/AC.105/1203, June 18, 2019, 32–6.

<sup>37</sup> Hague International Space Resources Governance Working Group, *Building Blocks for the Development of an International Framework on Space Resource Activities*, November 2019. On the contest between the redistributive and appropriative dimensions of the concept of common benefit, see Feichtner, "Sharing the Riches of the Sea."

<sup>38</sup> *Ibid.*, 2–4.

unequivocal regime' that facilitates the 'promising future' of space resource exploitation.<sup>39</sup> The concern in the working paper is firmly on reserving international jurisdiction over space resource exploitation. It insists that although 'States may authorize the space activities of their nationals', 'this personal basis for the exercise of national jurisdiction does not provide any basis for legislative jurisdiction in terms of regulating the legal status of outer space itself. It follows that the legal aspects of space resource exploitation must be regulated by international law'.<sup>40</sup> The design of an international regime is due to be discussed at the UNCOPUOS Legal Subcommittee meeting in 2020.

### 3. Space mining as a spatial fix and the 'new' extractivism

These unfolding developments in the commercial space industry, and in the national and international law on which that industry will be built, require careful attention. As with current developments in seabed mining, the space mining industry lends itself to seemingly straightforward Marxian analysis, as yet another illustration of the inherently expansionist logic of capitalism. The advent of the space mining industry conforms, at least in part, to what Harvey described as the spatial fix to capitalism's crisis tendencies – and in particular, the crisis of capital overaccumulation.<sup>41</sup> For Harvey, geographic expansion is an inevitable response to capital overaccumulation, and functions as a 'fix' in two senses: first, as a solution to the irreconcilable co-existence of surplus capital and labour; and second, as a mode of fixing or producing space, so that capital can move freely within and across it.<sup>42</sup> From this perspective, the particular appeal of space mining to internet platform entrepreneurs like Bezos, Musk and Branson – who as individuals represent some of the most extreme examples of capital overaccumulation, and who occupied determinative roles in the production of online space in the 1990s and 2000s – is clear. Where the advent of extractive activity in space signals a need for elaboration of understandings of the spatial fix is in the seeming absence of pre-existing human labour

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<sup>39</sup> UN Committee on the Peaceful Uses of Outer Space, Legal Subcommittee, *Proposal for the Establishment of a Working Group for the Development of an International Regime for the Utilization and Exploitation of Space Resources: Working Paper by Belgium and Greece*, UN Doc. A/AC.105/C.2/L.311, March 4, 2019.

<sup>40</sup> *Ibid.*

<sup>41</sup> David Harvey, "The Spatial Fix – Hegel, Von Thunen and Marx," *Antipode* 13, no. 3 (1981), 1–12.

<sup>42</sup> David Harvey, "Globalization and the 'Spatial Fix'," *Geographische Revue* 2 (2001): 24.

power or productive capacity in the 'new' space being produced. Exploitation of space appears, misleadingly, to not enliven the same relations of human exploitation that produced the concentrations of capital that have made it possible.

It is precisely this apparent absence of a human subject of exploitation in space that has enabled the commercial industry to embrace the idiom of colonisation as readily as it has the idiom of common benefit. The risks in dismissing the revalorisation of colonialist rhetoric as empty or harmless are obvious. The first risk is a tacit exoneration of the global labour relations that have resulted in such extreme capital overaccumulation in the first place. The labour practices of Amazon, for instance, are notorious. A second risk is the unquestioned entrenchment of those global labour relations into the economy of any scaled industry of space resource extraction, and therefore into any post-fossil fuel energy market that depends on that extraction. A third risk is the renovation of a much older conservative discourse of environmental conservation, which has long accompanied European resource imperialism.<sup>43</sup> As both space and seabed entrepreneurs well demonstrate with their greenwashing advertising strategies, conservational discourses work to displace extractive activity, not prevent it. The rhetorical innovation space mining entrepreneurs make is to ramp up this spatial displacement of extractive activity to planetary scale: they are, as Bezos claims, 'colonising space to benefit earth'. As useful as the concept of the spatial fix will be in mapping the development of space mining, then, the challenge for Marxist, TWAIL, South-facing and decolonial approaches to international law will be in countering mining proponents' implied argument that the seeming disjuncture of territory and population in these 'new' spaces of resource extraction obviates the terrestrial politics of extractive industry. Those politics have long been marked across the global South by asymmetries of power between resource corporations and states, and those asymmetries are becoming increasingly pronounced in the global North.

Staying within the Marxian framework, the role of states in the commercial space industry lends itself to analysis as an extension of the logic what has been termed neo-

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<sup>43</sup> Richard H Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600 – 1860* (Cambridge: Cambridge University Press, 1996).

extractivism. The concept of neo-extractivism developed primarily within Latin America to describe the post-millennial turn of centre/left governments in Brazil, Chile, Venezuela, Bolivia, and Argentina toward 'reprimarisation' of national economies formerly dependent on resource export. That reprimarisation was undertaken in response to the failure of neoliberal restructural adjustments of the 1980s and 1990s to achieve domestic economic and political stability.<sup>44</sup> In this context, neo-extractivism refers to a new era of resource nationalism, in which developing states seek not to nationalise foreign investments in domestic natural resources as occurred in the 1950s and 1960s, but to actively invite foreign investment in extractive industry, in order to negotiate more favourable royalty and rent terms to direct toward social and environmental programs. Despite the progressive rhetoric of neo-extractivism, however, observers note there has been little evidence of successful redirection of resource rents toward social and environmental programs, nor of significant structural change in domestic natural resource sectors.<sup>45</sup> The actions of states like Luxembourg and the UAE in passing domestic legislation protecting private rights in space resources are understandable as an evolution of this neo-extractivist logic – they represent basic moves to invite foreign investment to replace dwindling or threatened flows of revenue from resource rents.

#### **4. Between old and new regimes of extraction: the history of international law**

The concepts of the spatial fix and neo-extractivism, then, have much to offer analyses of the astrofuturist turn in global extractive industry. Yet these framings will require supplementation if the role of law in this turn is to be understood. It is one thing to assert that this new phase of geographic expansion is a predictable evolution of the extractivist logic of capitalism. But whilst the evolution of the logic of capitalism might be predictable, the way in which that logic is evolving, and the role of law in that evolution, is not. What will require ongoing elaboration over the coming years is the constitutive role of law in the production of space as a field of resource extraction. It is here that

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<sup>44</sup> Gabriela Massuh, ed., *Renunciar al Bien Común: Extractivismo y (Pos)Desarrollo en América Latina* (Buenos Aires: Mardulce, 2012); James Petras and Henry Veltmeyer, "A New Model or Extractive Imperialism" in *The New Extractivism: A Post-Neoliberal Development Model or Imperialism of the Twenty-First Century?* eds. James Petras and Henry Veltmeyer, (London: Zed Books, 2014), 36–7.

<sup>45</sup> Veltmeyer and Petras, "A New Model." 39 – 40.

scholarship in the history of international law has much to offer. Straight applications of imperial and colonial critique, including but not limited to Marxian analyses of international law, run the risk of missing what is distinctive about the legal production of these 'new' spaces of extraction in the twenty-first century. Occurring after the establishment of twentieth century norms of international administration and common heritage, this phase of expanding extraterritorial jurisdiction is defined by the prohibition on sovereign territorial acquisition. This prohibition distinguishes the current era from the oft-invoked parallel of the 'scramble for Africa' in the late nineteenth century that resulted in the Berlin Conference on the Congo, often regarded as laying the groundwork for the architecture of the international law of territorial acquisition in the twentieth century. In current debates, the prohibition on sovereign territorial appropriation has sustained contradictory interpretations with respect to the validity of claims to private property in space. The entrepreneurial vanguard has tended to assert that private proprietary claims are consistent with the Outer Space Treaties; international lawyers working for smaller States Parties have tended to assert that proprietary claims supported by domestic legislation amount to sovereign claims, and are therefore inconsistent.

These conceptual debates over the property-sovereignty relation may, however, distract from rather than illuminate the legal innovations currently being driven by the commercial space industry. Recent entrepreneurial activity indicates that the absence of international consensus on the sovereignty-property relation in space is no longer operating as a disincentive to investment. Corporations are simply devising new means of securing legal protections for their assets and investments in space resource extraction. As such, concepts of sovereignty, territory and property – concepts that have featured so heavily in understandings of the legal history of European imperialism and colonialism – may not serve particularly well to describe the political and economic powers that are being juridified to enable extractive activity in space. This is not to say, of course, that real powers amounting to what in other contexts would be identifiable as sovereign territorial rights or private proprietary rights are not being configured in other ways, or that legal histories of imperialism and colonialism will not prove crucial in mapping the historical evolution of those powers. Rather, it is to say that the concepts and practices of



international administration on the one hand, and resource exploration and exploitation rights regimes on the other, are functioning together to produce these new spaces of extraction. This conjunction of internationalised administration and resource rights in the legal production of space is not unprecedented. Precursors have included forms of imperial condominium of the nineteenth century, and the mandate and trusteeship regimes of the twentieth.<sup>46</sup> Norms against sovereign territorial acquisition, and for open door trade have in most instances been fundamental to the logic of these regimes.<sup>47</sup> The development of the space resource regime, therefore offers an opportunity to observe the evolution of the largely experimental regimes of international territorial administration that defined the twentieth century.

## 5. Conclusion: space mining and this terrestrial history

*'...Utopia's deepest subject, and the source of all that is most vibrantly political about it, is precisely our inability to conceive it, our incapacity to produce it as a vision, our failure to project the other of what is, a failure that, as with fireworks dissolving back into the night sky, must once again leave us alone with this history.'*

Fredric Jameson, 1977.<sup>48</sup>

It is tempting to dismiss the prospect of space mining as a preposterous sideshow to the real event of global environmental crisis; as a gauche recycling of the tropes of twentieth-century science fiction; or simply as the vanity project of billionaire megalomaniacs, running out of terrestrial markets to dominate. All of these impressions are in some sense true. Yet without more, such a dismissal does not enable a coherent picture to emerge of the coalescing of a market-driven counter-response to climate crisis. This counter-response seeks not to dismantle the historical relations of exploitation that have produced that crisis, but to entrench them in a post-fossil fuel future. Such a dismissal also does not

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<sup>46</sup> See generally Storr, *International Status in the Shadow of Empire*.

<sup>47</sup> Exceptions include the Antarctic Treaty regime, and the C Mandates. See Cait Storr, "Re-Collecting the C Mandates: Whiteness and Economic Protectionism between Imperialism and International Law," *Third World Approaches to International Law Review* 1, forthcoming 2020...

<sup>48</sup> Fredric Jameson, "Of Islands and Trenches: Neutralization and the Production of Discourse," *Diacritics* 7, no.2 (June 1977): 21.

enable a coherent picture to emerge of the way in which law is implicated in that counter-response. The potential long-term consequences of ceding the field of space resource law to the astrofuturists are sobering. In short, Bezos' performance of astrofuturism should not be read simply as a billionaire fantasy that rejects the conditions of the present. It should be read as an attempt to reconsolidate the international order's foundational commitments to resource extraction and economic growth in the face of global inequality and environmental crisis. As Ranganathan has noted, 'capitalism's accumulative drive does not dissipate in the face of impending planetary disaster. Instead, it co-opts this disaster, extracting wealth from new commons'.<sup>49</sup> Chris Lewicki, CEO of Planetary Resources and former Google executive, has stated the point bluntly: space mining 'isn't a space project. It's a resource project'.<sup>50</sup> The history the astrofuturist utopia leaves us alone with the history of an international law that has served not to prevent staggering inequality and environmental destruction, but to perpetuate it. It is this history we must continue to revisit, if we are to resist what Harvey describes as 'the projection of the contradictions of capital onto an ever-broadening geographical terrain'.<sup>51</sup>

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<sup>49</sup> Surabhi Ranganathan, "Seasteads, Land-Grabs and International Law," *Leiden Journal of International Law* 32, no.2 (2019): 211.

<sup>50</sup> Thomas Heath, "Space-Mining May Be a Decade Away as Oil-Rich Middle East Countries Look to Diversify," *Washington Post*, April 28, 2017.

<sup>51</sup> Harvey, "Globalization and the 'Spatial Fix'," 27.

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