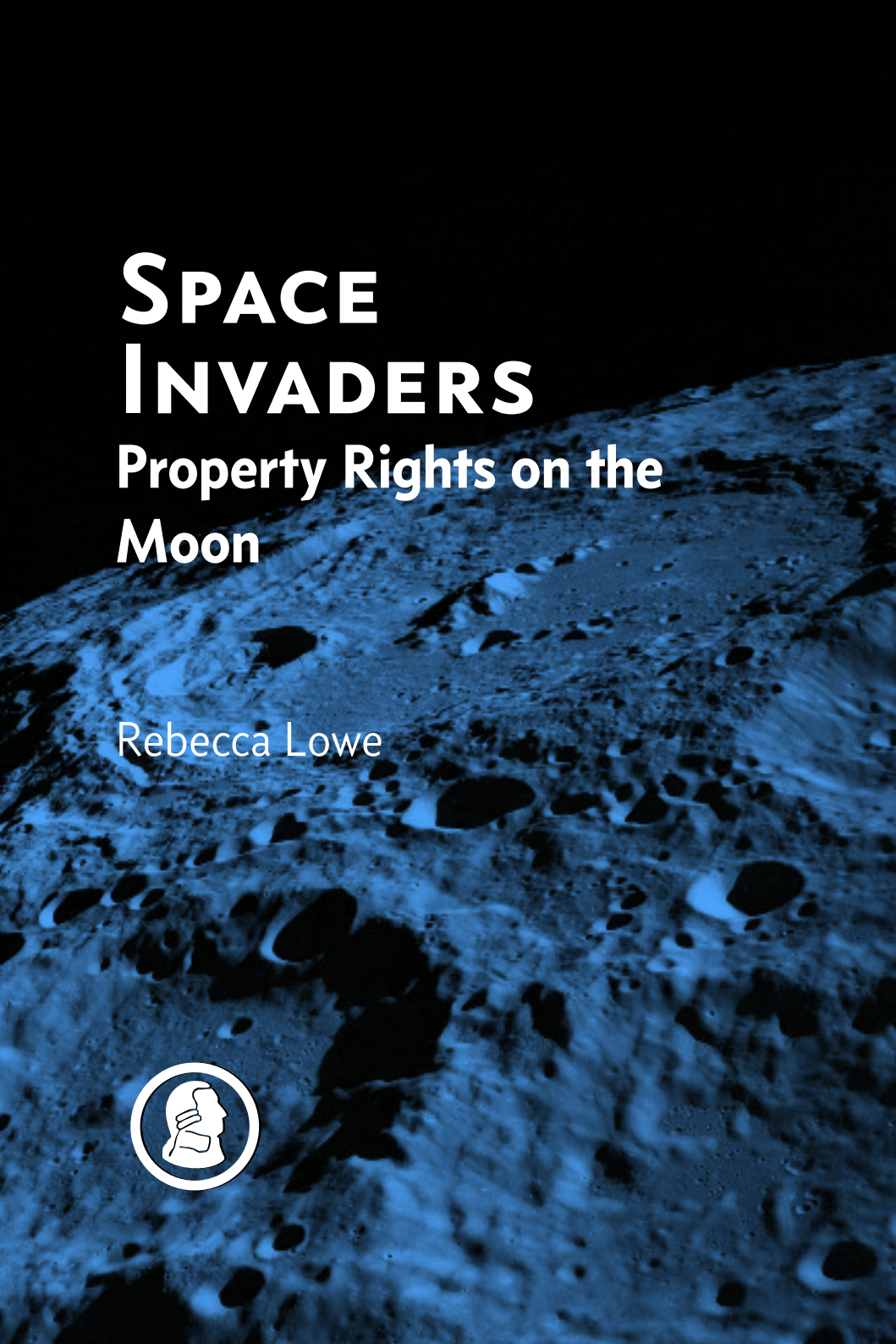

Space Invaders

Property Rights on the Moon

Rebecca Lowe

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CONTENTS

EXECUTIVE SUMMARY

- Sixty years since Yuri Gagarin became the first human being to orbit our planet and John F. Kennedy spoke of the need to institute the rule of law to 'man's new domain', property rights in space remain up for debate. But recent developments suggest this can't and won't remain a debate for long.
- The 'national appropriation' of space — or at least of its 'physical domain' — is outlawed by long-standing international treaty. Yet problems stemming from the idealism of the international approach, alongside various nations' unilateral shifts of attitude and practice, as well as growing demands from firms and individuals to shift away from a national focus, leave this framework unfit for purpose, at least in practical terms.
- Beyond this, a clear, morally-justified, and efficient system for assigning and governing property rights in space — in land, in other resources, in the vacuum itself, and in anything else that might be found — would present vast benefits. These include not only serious financial rewards for those who would become owners under such a system, and for the other direct and indirect beneficiaries of space ownerships. They also relate to the provision of valuable incentives for the responsible stewardship of space, as well as opportunities for new scientific discovery, democratised space exploration, and much more.
- This paper primarily addresses the question of what a Lockean-

type classical liberal rights-based approach to economic justice demands in terms of adjudicating problems of the individual ownership of land in space. But an implicit underlying question is what the answers to these problems offer to help us to assess the adequacy of ongoing approaches to property on Earth.

- In the final section of the paper, a framework is set out to enable individuals to attain morally-justified property rights in space, with a particular focus on plots of moon land. The general aim of this framework is to enable individual human beings to acquire and hold space land in such a way (i.e. in an exclusive and exclusionary manner, at least regarding its use) that will be to their benefit, and the general benefit of humankind, without effectively precluding other individual human beings, who hold an equal potential right to this land, from being able to do so themselves. Indeed, the system works in such a way as to increase the number of individuals who will be able to compete to actualise this equally-held potential right.

ABOUT THE AUTHOR

Rebecca Lowe works on political and economic research issues as a consultant, including an ongoing engagement as research director at a patient-capital investment company. Her main interests are within political philosophy and political economy, and she has just finished writing a doctoral thesis on moral property rights, at KCL. She was the inaugural director of FREER, a think tank advancing economically and socially liberal ideas, housed at the Institute of Economic Affairs, where she was also a research fellow. She has worked for various other research organisations, including Policy Exchange, where she was State and Society Fellow and convenor of the Research Group on Political Thought. She also co-founded Radical, a civil-rights campaign for freedom and truth on matters of sex and 'gender'. She has published on topics ranging from income and wealth distribution, to the value of democracy, and her analysis and commentary have often featured in the national print and broadcast media. Recent publications include a chapter on the democratic state's obligation of transparency, for an edited volume on pandemic philosophy.

The author would like to thank, in particular, Matthew Lesh, Daniel Pryor, Gabriel Elefteriu, John Tasioulas, and Susan Lowe for their helpful comments on a late draft of this paper.

INTRODUCTION

THE QUESTIONS

Everyday space tourism is just around the corner. There's talk of a 'glass dome' colony on Mars.[1] Actors are competing to make the first film on the ISS.[2] You can check out the fluctuating valuations of the asteroid-mining market.[3] Month after month, new technologies enable out-of-this-world advances that were, until recently, the preserve of science fiction. But with these advances come challenges as well as opportunities. On the surface are new practical problems that have been on the horizon for decades: archetypically modern problems related to the ways that space policy and progress intersect with earthly matters of politics, law, and economics. Who are the arbiters of space disputes? Who's responsible for space junk?

Then, there are the big moral questions lying underneath: questions

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1 Anthony Cuthbertson, "Elon Musk says first Mars colony settlers will live in 'glass domes' before terraforming planet", Independent, November 21, 2020, https://www.independent.co.uk/life-style/gadgets-and-tech/elon-musk-mars-colony-spacex-starship-b1759074.html.

2 Ben Quinn, "Shooting stars: Russians beating US in race for first film set in space", Guardian, October 5, 2021,https://www.theguardian.com/science/2021/oct/05/shooting-stars-russians-beating-hollywood-in-race-for-first-space-film.

3 "Market value of asteroid mining in 2017 and 2025", statista, accessed December 30, 2021, https://www.statista.com/statistics/1023115/market-value-asteroid-mining/.

human beings have puzzled over for millennia. Questions about what it is to be human, and how we should relate to each other and the other animals and things in our world. The freshness of space, barely explored, never mind significantly inhabited or altered by us, offers an unrivalled opportunity to revisit some of these big questions. Space is a real-world thought experiment; an infinite canvas on which we have the chance to rethink the lines we should draw.

One topic in urgent need of such treatment is property rights. Alongside growing debate about past and future property-related concerns here on Earth, questions about the possibility and governance of space ownership are becoming ever more pressing. How should it be, for instance, that individuals, groups, firms, and nations make claims to space land? What kinds of claims are morally justifiable? If you want a piece of the moon — to experiment on, build on, have fun on, or as an investment — what should you need to do to acquire it? And what should you have to do to keep hold of it? Do these claims require backing up in law? Who should determine the content of such law? Who should enforce it? What is the most local or individualistic level these matters can be delegated to? These questions are familiar from the long history of human beings dealing formally with matters of ownership. With regard to space land, we still have the chance, however — absent any unknown extra-terrestrial claimants! — to start pretty much from scratch.

WHY NOW?

Sixty years since cosmonaut Yuri Gagarin became the first human being to orbit our planet, and US President John F. Kennedy spoke of

the need to institute the rule of law to 'man's new domain',[4] property rights in space remain up for debate. But recent developments suggest this can't and won't remain a debate for long. The 'national appropriation' of space — or at least of its 'physical domain' — is outlawed by long-standing international treaty.[5] Yet problems stemming from the idealism of the international approach, alongside various nations' unilateral shifts of attitude and practice,[6] as well as growing demands from firms and individuals to shift away from a national focus, leave this framework unfit for purpose, at least in practical terms.

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4 "Address before the General Assembly of the United Nations, September 25, 1961", John F. Kennedy Presidential Library and Museum, accessed December 30, 2021, https://www.jfklibrary.org/archives/other-resources/john-f-kennedy-speeches/united-nations-19610925.

5 See discussion below about the Outer Space Treaty — 18 U.S.T. 2410 610 U.N.T.S. 205, 61 I.L.M. 386 (1967) — including Herzfeld et al's interpretation, on which only the appropriation of 'void space' and 'celestial bodies' is outlawed: Hertzfeld, Henry R., Brian Weeden, and Christopher D. Johnson, "How simple terms mislead us: the pitfalls of thinking about outer space as a commons", Moon 18 (1979), https://swfound.org/media/205390/how-simple-terms-mislead-us-hertzfeld-johnson-weeden-iac-2015.pdf.

6 See discussion below from 1.1-1.3, but debate continues not only about the interpretation of the enduring legal situation, but also its limits. This paper's focus is on space land, but the question of space junk is a notable example. As Martha Mejía-Kaiser emphasises, when the relevant treaties were drawn up, 'nobody foresaw' the problem of 'hazardous space debris': Mejía-Kaiser, Martha, "Space Law and Hazardous Space Debris," Oxford Research Encyclopedia of Planetary Science, 2020, https://oxfordre.com/planetaryscience/view/10.1093/acrefore/9780190647926.001.0001/acrefore-9780190647926-e-70. The lack of clarity, therefore, has led to what is often described as a tragedy of the commons, with just last month, the ISS having to 'pass through a freshly created cloud of orbital debris that posed a significant risk to the seven space travellers on board': Nadia Drake, "Russia just blew up a satellite — here's why that spells trouble for space flight", National Geographic, November 16, 2021, https://www.nationalgeographic.com/science/article/russia-just-blew-up-a-satellite-heres-why-that-spells-trouble-for-spaceflight.

Beyond this, a clear, morally-justified, and efficient system for assigning and governing property rights in space — in land, in other resources, in the vacuum itself, and in anything else that might be found — would present vast benefits. These include not only serious financial rewards for those who would become owners under such a system, and for the other direct and indirect beneficiaries of space ownerships. They also relate to the provision of valuable incentives for the responsible stewardship of space, as well as opportunities for new scientific discovery, democratised space exploration, and much more.

Meanwhile, debate rages about the property-related injustices and unfairnesses of the past, here on Earth: about the decisions and actions of our forebears, relating to the acquisition of property rights, the distribution of access to natural resources, the colonisation of areas that already served as the livelihood and homes of indigenous peoples, and the consequent suppression of the freedom, equality, and opportunity of many individuals and groups. Debate continues about the future of Earth, too: about how we should act now if we are to conserve our planet appropriately, for its own sake, and the sake of future generations. These matters remind us of the serious costs that property-rights regimes can impose, and the importance of ensuring that legal claims to ownership are also morally justified.

As technological advancement further opens our horizons, therefore, and we are able to engage in new ways with the space beyond the confines of this planet, we have a one-time chance to get matters of property right, this time, from the off. If we care about these matters — as human beings who live not only on Earth, but also within the wider universe — then we need to think hard about them now.

1. FROM INTERNATIONAL TO INDIVIDUAL

1.1 THE INTERNATIONAL APPROACH

In April 1961, the cosmonaut Yuri Gagarin became the first human being to orbit the Earth. The following month, in a speech to the American Joint Session of Congress, US President John F. Kennedy famously declared that 'this Nation should commit itself to achieving the goal, before this decade is out, of landing a man on the Moon and returning him safely to Earth'.[7] In September of that year, Kennedy also declared — this time to the UN General Assembly — that,

> *"[a]s we extend the rule of law on earth, so must we also extend it to man's new domain — outer space. All of us salute the brave cosmonauts of the Soviet Union. The new horizons of outer space must not be driven by the old bitter concepts of imperialism and sovereign*

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7 "President Kennedy's special message to the Congress on urgent national needs, May 25, 1961", John F. Kennedy Presidential Library and Museum, accessed December 30, 2021, https://www.jfklibrary.org/archives/other-resources/john-f-kennedy-speeches/united-states-congress-special-message-19610525.

> *claims. The cold reaches of the universe must not become the new arena of an even colder war. To this end, we shall urge proposals extending the United Nations Charter to the limits of man's exploration of the universe, reserving outer space for peaceful use, prohibiting weapons of mass destruction in space or on celestial bodies, and opening the mysteries and benefits of space to every nation."*[8]

Kennedy's universalist goals are reflected throughout the 1967 UN Outer Space Treaty (OST), from the opening statement of Article 1, onwards:

> *"The exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind."*[9]

The OST orders that celestial bodies be used only for 'peaceful purposes', and that astronauts 'shall be regarded as the envoys of mankind'. It forbids 'national appropriation', the stationing of 'weapons of mass destruction', and 'harmful contamination'. Largely focused on keeping the peace, the OST remains in place as the vanguard of space regulation, with 111 countries currently party to it, including all the key spacefaring nations.[10]

Questions remain about the OST's interpretation, however, and

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8 "Address before the General Assembly of the United Nations, September 25, 1961", John F. Kennedy Presidential Library and Museum, accessed December 30, 2021, https://www.jfklibrary.org/archives/other-resources/john-f-kennedy-speeches/united-nations-19610925.

9 18 U.S.T. 2410 610 U.N.T.S. 205, 61 I.L.M. 386 (1967), https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html.

10 "Status of the treaty [OST]", United Nations Office for Disarmament Affairs, accessed January 3, 2022, https://treaties.unoda.org/t/outer_space.

its limits. With regard to matters of ownership, what does it pertain to? Whom does it affect? What exactly does it mean to act 'for the benefit and in the interests of all countries', and what is restricted by this? Some claim, for instance, that the OST's focus on nations leaves space open for individuals to claim,[11] although it is more standardly accepted that a prohibition on individual appropriation is tied into the OST's prohibition on national appropriation.[12] Beyond this, whilst some interpret the treaty as outlawing the appropriation of anything at all that is found in space,[13] others claim that the 'non-appropriation principle' pertains only to its 'physical domain' — in terms of 'void space' and 'celestial bodies'.[14] On the latter view, the treaty should not be assumed to prohibit the extraction, or even the ownership, of resources found 'on or in' celestial bod-

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11 e.g. Gorove, Stephen, "Interpreting article II of the outer space treaty", Fordham L. Rev. 37 (1968), 351-352, https://ir.lawnet.fordham.edu/cgi/viewcontent.cgi?article=1966&context=flr.

12 For a useful discussion, see Tronchetti, Fabio, "The Non-Appropriation Principle Under Attack: Using Article II of the Outer Space Treaty in Its Defence," The 68th International Astronautical Congress Symposium (2007), 2-4, https://iislweb.org/docs/Diederiks2007.pdf.

13 For instance, Su contends that '[t]he Outer Space Treaty does not prohibit expressis verbis the extraction of space resources. However, there exists a possibility that the recognition of property rights by a State, which is a party to the Outer Space Treaty, over resources extracted in outer space may conflict with its international obligations under Article II of the treaty, which proscribes the national appropriation of outer space 'by claim of sovereignty, by means of use or occupation, or by any other means': Su, Jinyuan, "Legality of unilateral exploitation of space resources under international law", International and Comparative Law Quarterly 66, no. 4 (2017), 991–1008, doi:10.1017/S0020589317000367. https://www.cambridge.org/core/services/aop-cambridge-core/content/view/EE17641F7B7C6404A79B77AEB627D5F4/S0020589317000367a.pdf/legality-of-unilateral-exploitation-of-space-resources-under-international-law.pdf.

14 Hertzfeld, Henry R., Brian Weeden, and Christopher D. Johnson, "How simple terms mislead us: the pitfalls of thinking about outer space as a commons", Moon, 18 (1979), https://swfound.org/media/205390/how-simple-terms-mislead-us-hertzfeld-johnson-weeden-iac-2015.

ies.[15] Regardless, the prohibition of the ownership of a piece of land generally has an impact on the use of that land's resources.[16] And it is notable that, from the outset, the OST clearly aims to enable the 'exploration and use' of space, albeit in a highly conditional manner — in terms of non-appropriation, but also, for instance, in its emphasis on the need for the equality of free access to 'all areas of celestial bodies'.[17]

Debate continues, therefore, regarding the legal opportunities and challenges of 'space resource utilisation', in particular. This is not least, as discussed below, in relation to recent attempts by various nations to attain or force clarity on these matters. As Jacques Graas concludes, 'most [people writing within the academic literature] seem to agree that the utilization of space resources needs a legal clarification on an international level'.[18] Nonetheless, one thing that is generally accepted is that — as Time Magazine bluntly puts it — 'no one can own the moon',[19] at least on the current legal order.

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15 ibid, 7.

16 Not least, during times at which, as Beauvois describes, 'multiple nations will be interested by the same resources (certain orbits, asteroids, or areas of the Moon and Mars certainly have special value)': Beauvois, Erwan, and Guillaume Thirion, "Partial Ownership for Outer Space Resources", Advances in Astronautics Science and Technology 3, no. 1 (2020), 29-36. https://link.springer.com/article/10.1007/s42423-019-00042-0.

17 18 U.S.T. 2410 610 U.N.T.S. 205, 61 I.L.M. 386 (1967), https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html.

18 Jacques Graas, "Luxembourg Space Resources Act: Paving the legal road to space", Allen & Overy, September 18, 2017, https://www.allenovery.com/en-gb/global/news-and-insights/publications/luxembourg-space-resources-act-paving-the-legal-road-to-space.

19 Merrill Fabry, "This is why no one can own the moon", Time, January 27, 2016, https://time.com/4193801/outer-space-treaty-moon/.

1.2 CALLS FOR CHANGE

Sixty years on from Kennedy's space speeches, calls are once again emerging from America for a focus on the governance of space. In particular, demand is growing for an update on the matter of appropriation. Indeed, the USA has already pushed ahead on this unilaterally, through the introduction of national legislation in 2015 aimed at enabling individuals and firms to 'engage in the commercial exploration and exploitation of space resources'.[20] And, in 2020, through President Donald Trump's executive order emphasising that American citizens 'should have the right to engage in commercial exploration, recovery, and use of resources in outer space, consistent with applicable law'.[21]

It's not just Americans who are pushing for change. Interest is growing worldwide in the new economic opportunities of space, particularly owing to increased capacity for the mining of space resources — something that foreign policy expert Dean Cheng emphasises was 'largely a moot point for much of the Space Age'.[22] This year, China sent its first of many astronauts to the Chinese space station, Tiangong — but the authoritarian regime's hope of maintaining a continuous space presence is but a small part of its comprehensive space goals, key amongst which is a strategic focus on mining.[23]

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20 Congress.gov, "Text - H.R.2262 - 114th Congress (2015-2016): U.S. Commercial Space Launch Competitiveness Act", November 25, 2015, https://www.congress.gov/bill/114th-congress/house-bill/2262/text.

21 Executive Order No.13914, 3 C.F.R. 20381-20382 (2020): https://trumpwhitehouse.archives.gov/presidential-actions/executive-order-encouraging-international-support-recovery-use-space-resources/.

22 Dean Cheng, "Outer space and private property", The Heritage Foundation, September 16, 2020, https://www.heritage.org/space-policy/commentary/outer-space-and-private-property.

And Russia has recently updated its Licensing Regulations, as a 'first step' in enabling the development of a private space sector.[24]

Yet space is no longer monopolised by the familiar 'Space Race' super-states. Luxembourg passed its Law on the Exploration and Use of Space Resources, in 2017.[25] In 2020, India instituted the Indian National Space Promotion and Authorisation Centre, to bring together state and private space activities.[26] Last September, the UK published its first national space strategy, focused on 'ensuring' that 'innovative space businesses can access private finance', and on becoming a world leader in 'modern' space regulation.[27] And the European Space Policy Institute describes the way in which, over the past decade, 'more than 20 countries have established a national space agency' — highlighting the UAE, Australia, Argentina, and South Korea as the most important 'emerging' spacefaring nations.[28]

1.3 DISSENSUS REMAINS

Little international movement has been made on the ownership question, however. Several days after the Trump order was issued, NASA

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24 Roman Buzko, "Regulation of space activities in Russia", February 2, 2021, https://www.buzko.legal/content-eng/legal-regulation-of-space-activities-in-russia.

25 Loi du 10 août 1915 concernant les sociétés commerciales, (Mémorial A n° 90 de 1915), https://legilux.public.lu/eli/etat/leg/loi/2017/07/20/a674/jo.

26 "About ISRO", Department of Space, Indian Space Research Organisation, accessed December 30, 2021, https://www.isro.gov.in/indian-national-space-promotion-and-authorization-center-space.

27 "National Space Strategy", UK Government, September 2021, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1034313/national-space-strategy.pdf.

28 "Emerging Spacefaring Nations", European Space Policy Institute, June 2021, https://espi.or.at/news/new-espi-report-emerging-spacefaring-nations.

announced the Artemis Accords — a set of non-binding governance principles, aimed at ensuring 'good practise' in the exploration and use of space.[29] These principles are purportedly 'grounded in' the OST.[30] However, NASA has been criticised by some, particularly in competitor countries, for seemingly using the Accords to push a norm in favour of American interests (or, at least, the interests of players with strong current access to the moon), particularly with regards the matter of ownership.[31] To this end, the Accords not only explicitly address the space resource question, 'affirming' that extraction 'does not inherently constitute national appropriation',[32] they also implicitly address the question of land appropriation. As Jessy Kate Schingler observes, the Accords' commitment to 'safety zones' — defined by the Hague International Space Resources Government Working Group as a protection for areas 'identified for a space resource activity as necessary to assure safety and to avoid any harmful interference with that space resource activity'[33] — has 'raised eyebrows in policy circles because of concerns that they may, whether overtly or inadvertently, erode the prohibition on national

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29 "The Artemis Accords", NASA, October 2021, https://www.nasa.gov/specials/artemis-accords/img/Artemis-Accords-signed-13Oct2020.pdf.

30 ibid.

31 Deplano, Rossana. "The Artemis Accords: Evolution or Revolution in International Space Law?." International & Comparative Law Quarterly (2021), 1-21, https://www.cambridge.org/core/journals/international-and-comparative-law-quarterly/article/artemis-accords-evolution-or-revolution-in-international-space-law/DC08E6D42F7D5A971067E6A1BA442DF1.

32 "The Artemis Accords", NASA, October 2021, https://www.nasa.gov/specials/artemis-accords/img/Artemis-Accords-signed-13Oct2020.pdf.

33 "Building Blocks for the development of an international framework on space resource activities", The Hague International Space Resources Governance Working Group, November 2019,https://www.universiteitleiden.nl/binaries/content/assets/rechtsgeleerdheid/instituut-voor-publiekrecht/lucht--en-ruimterecht/space-resources/bb-thissrwg--cover.pdf.

appropriation'.[34] The Accords' signatories now include Australia, Brazil, Canada, Italy, Japan, Luxembourg, New Zealand, Poland, the Republic of Korea, Ukraine, the UAE, and the UK, as well as the USA.[35]

That this list does not include Russia or China — never mind many of the smaller growing space players — is nothing new. International consensus, particularly on highly contentious matters, is rarely easy to reach. The Trump order emphasises that the USA is not bound by the UN's 1979 'Moon Agreement' — a follow-on treaty to the OST, focused particularly on the use of lunar resources.[36] But the Moon Agreement's short list of 18 parties and 11 signatories has never included any of the major space states.[37] And now its early signatory India is making serious space progress, there have been calls from Indian space experts to exit the treaty, on the grounds that India will be disadvantaged by having to 'share the fruits of its efforts'.[38] There is, therefore, a particular history of dissensus about these matters.

Beyond ongoing legal uncertainty for the law-abiding, however, a key

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34 Jessy Kate Schingler, "Imagining Safety Zones: Implications and open questions", The Space Review, June 8, 2020, https://www.thespacereview.com/article/3962/1.

35 Mexico announced in December 2021 that it would be signing the Accords, and France has expressed recent interest: Jeff Foust, "Mexico joins Artemis Accords", SpaceNews, December 10, 2021, https://spacenews.com/mexico-joins-artemis-accords/.

36 1363 U.N.T.S. 22, 18 I.L.M. 1434 (1979), https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/moon-agreement.html.

37 "Status as at [... Moon Agreement]", United Nations Treaty Collection, accessed January 3, 2022, https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXIV-2&chapter=24&clang=_en.

38 M Ramesh, "Why India should exit the Moon Agreement", The Hindu Business Line, May 20, 2020, https://www.thehindubusinessline.com/news/science/why-india-should-exit-the-moon-agreement/article31634373.ece.

concern arising here is a free-rider problem. In the way that domestic legislation is only applicable to the members of the polity in question, international treaties restrain only those countries that are bound by them. And whether the aim of such a treaty is to ensure that no particular nation benefits from space resources without sharing those benefits fairly with the rest of humankind, or whether it is to enable individual nations to push ahead of other nations as long as doing so remains morally justified, then the nations that hold to the treaty's constraints will be undercut by the nations that do not. Perhaps, in an ideal world, all nations would agree to be bound by every treaty that would benefit humankind, irrespective of how those benefits were shared, and any resultant costs were shouldered, or anything else. But the designers of international agreements must take reality into account.

To this end, it must be acknowledged that the governments of China and Russia, in particular, neither respect the human rights of their citizens, nor provide them with the equal legal protection of property rights. It is hard to imagine, therefore, that these two key space players would be at the forefront of any international agreement premised on ensuring a morally-justified approach to the matter of space ownership. It is also the case — at least on the rights-based classical liberal account advanced below — that the decision-making of such regimes, including their involvement in international affairs, is fundamentally illegitimate, because it lacks necessary citizen participation.

1.4 NATION-FOCUSED OPTIONS

Nonetheless, if the appropriation of space, including the justified ownership of space land — with its financial and scientific rewards, incentives for responsible stewardship, and opportunities for democ-

ratised space exploration — is to be a matter for nations, governed at the international level, then there are three standard ways to proceed:

1. Persuade all countries to agree to an update to the OST, clarifying and enabling justified forms of national appropriation, including the appropriation of land;
2. Write a new treaty to supersede the OST, enabling justified forms of national appropriation, including the appropriation of land, to which all countries agree; or
3. Develop a *jus cogens* norm — also referred to as a peremptory norm of international law — enabling justified forms of national appropriation, including the appropriation of land, which is adhered to by all countries, without need for a new or updated treaty.

Unsurprisingly, there are serious problems with all three options. The first two face the same problem as the Moon Agreement: since countries can refuse to sign up, consensus is essential. And whilst there are strong incentives for all countries to abide by *jus cogens* norms — in order to avoid public criticism, sanctions, and even being made subject to advisory rulings from the International Court of Justice — there are high bars to be met. According to the UN, for a norm to count as *jus cogens*, it must be

> *"accepted and recognized by the international community of States as a whole as a norm from which no derogation is permitted and which can be modified only by a subsequent norm of general international law having the same character."*[39]

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39 "Report of the International Law Commission", General Assembly, United Nations, Seventy-first session (29 April–7 June and 8 July–9 August 2019), 24, https://legal.un.org/ilc/reports/2019/english/chp5.pdf.

Now, this approach, which is reserved for norms that 'reflect and protect fundamental values of the international community' seems appropriate for a matter as morally weighty and complex as space ownership.[40] But it by no means represents a simple policy prescription.

1.5 AN INDIVIDUALISTIC APPROACH

Perhaps it is time, therefore, to consider a different approach. Problems regarding the reaching of international consensus are not the only flaws in a nation-focused approach, after all. It is also the case that such an approach can leave little opportunity for the individual, particularly in nations where particular groups of individuals are oppressed. In other words, it would hopefully be the case that democracies would find ways to share fairly amongst their citizens the opportunities of the national appropriation of space, when such appropriation was made legal — through tenders, shareholder schemes, other market mechanisms, lotteries, or various types of state-determined allocation.

Under such approaches, for instance, if democratic Country A was newly allowed to appropriate a certain amount of space land, then separable parts of this amount could, for instance, be made up for grabs amongst competing citizens, on fair terms. But the same could not be expected from authoritarian regimes. There is an egalitarian argument, therefore, that the arbitrary oppression of opportunity that some individuals already face simply by being born in, or otherwise inhabiting, particular countries should not be further entrenched by a nation-focused approach to the governance of space opportunities.

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40 ibid.

Beyond this, it is also worth noting standard desert-based arguments[41] calling for the updating of space governance to acknowledge that individuals and their private companies are increasingly involved — and bearing serious amounts of crucial risk — in space activities.[42] It is clear that the private sector now drives certain space capacities.[43] And private space companies have had many notable recent successes, including high-profile partnerships with national and international space missions.[44] Nonetheless, it remains the case that these companies are typically highly dependent on taxpayer support: even the most successful private space companies often depend, directly or indirectly, on state grants or preferment, and have the powerful incentive of aiming to win big government contracts.[45] Even so, the situation has clearly changed. Space is no longer the preserve of the

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41 'Desert' in the sense of being focused on the value of someone deserving something. For an overview, see, e.g. Feldman, Fred and Brad Skow, "Desert", The Stanford Encyclopedia of Philosophy (Winter 2020 Edition), Edward N. Zalta (ed.), URL = <https://plato.stanford.edu/archives/win2020/entries/desert/>.

42 For an overview, see, e.g.: Matt Weinzierl and Mehak Sarang, "The Commercial Space Age is Here", Harvard Business Review, February 12, 2021: https://hbr.org/2021/02/the-commercial-space-age-is-here.

43 See, for instance, Britain's specialism in satellite technology: Gabriel Elefteriu, "Britain's industry-led space policy 'model' has been a resounding success. But can it survive the fierce competition of the new space race?", Policy Exchange, May 30, 2018: https://policyexchange.org.uk/britains-industry-led-space-policy-model-has-been-a-resounding-success-but-can-it-survive-the-fierce-competition-of-the-new-space-race/.

44 See, e.g. Danielle Sempsrott, "NASA announces date for SpaceX's 24th cargo resupply mission", NASA Blogs, November 24, 2021: https://blogs.nasa.gov/spacex/2021/11/24/nasa-announces-date-for-spacexs-24th-cargo-resupply-mission/.

45 See, e.g. "Commercial Crew Program", NASA, accessed December 30, 2021, https://www.nasa.gov/content/commercial-crew-program-the-essentials. For a more general overview of the ongoing relationship between public and private, see, e.g. "Space: Investing in the Final Frontier", Morgan Stanley, July 24, 2021, https://www.morganstanley.com/ideas/investing-in-space.

state; space development is more dependent on the private sector than ever.

It seems likely, therefore, that private companies will continue to increase investment in space exploration, leading to greater competition between a growing number of players. And this will likely have the benefit of driving up standards and reducing costs, decreasing firms' dependency on inflexible direct state support, and enabling taxpayer money to be spent elsewhere. Regardless of such predictions, however, there is a strong argument that firms and individuals deserve to be able to gain some 'skin in the game' in the form of space ownership opportunities, as they are bearing an increasingly significant portion of the serious financial and reputational risk of space progress.

Relatedly, private property rights generally vastly increase the efficiency of resource use. I shall discuss below in more detail the benefits and costs of private-property regimes,[46] but note for now that a strong moral case for individual private property rights in space can be made by appealing singly, or in combination, to various important basic moral values, including, as above, equality, fairness, desert, and efficiency.

1.6 GOVERNANCE

A truly individualistic model of space appropriation would be much

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46 Here and throughout, assume a definition of 'private property regime' along the lines of that set out by Jeremy Waldon, on which, 'the rules governing access to and control of material resources are organised around the idea that resources are on the whole separate objects each assigned and therefore belonging to some particular individual': Jeremy Waldron, The Right to Private Property, (New York: Oxford University Press, 1989), 38.

harder to institute and govern than a nation-based model, however — largely owing to the practical need for the legal protection of moral property rights. This is because, as discussed below, moral property rights are rights that simply reflect truths about morality, and which do not depend on positive law. If you believe that your ownership of the little toy dog that you made for yourself out of wood from your garden should be respected by other people, regardless of whether that ownership is formally protected by the law of the country you happen to live in, then you believe in moral property rights. If you believe that individual cavemen and cavewomen had some kind of 'right' to the particular bits of land they lived or worked on, in the sense of having justified exclusive and exclusionary claims over those bits of land, then you believe in moral property rights.

Whereas, in the modern world, legal property rights — that is, rights to property conferred by positive law — are also generally required, in order to ensure the protection of moral property rights. And it is hard to see how the positive law in question (i.e. regarding an individualistic approach to space appropriation, which enabled people from all nations to acquire) could be anything but international law. After all, if this were done at the national level, then we would face an even more serious version of the dissensus problem: why would we expect Nation A to respect the claims of Nation B's citizens simply because Nation B decreed that should be the case? What about everyday rivalry, nevermind enmity, between nations? Admittedly, there is some recognition for the 'legal personality' of the individual under international law,[47] and international private law depends on recognition of the value of comity or mutual recognition. Nonetheless, it seems utopian to think that any useful system of space private property rights, with the individual as the primary claimant, could come

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47 See e.g. Astrid Kjeldgaard-Pedersen, The international legal personality of the individual (Oxford: Oxford University Press, 2018).

into existence with ease.[48]

But we should assume that the most likely way in which the individual will, in the near future, gain the ability to attain morally-justified and legally-protected property rights in space, will be through an updated nation-based approach. On such an approach, nations would effectively be the primary acquirer of space property rights, likely each being afforded the right to (acquire) a certain proportion of, say, moon land. These rights could then be transferred to individuals, in various ways. Of course, such an approach would suffer from many of the 'nation-focused' flaws discussed above — or, at least, until the time that all nations respect the political rights of all of their citizens. Nonetheless, the aim of the final section of this paper is to set out a framework that could serve to provide some principles for ensuring that the 'transfer' stage takes place in a morally-justified manner.

Beyond this, if you believe that the property rights that some particular person legitimately holds in some particular country on Earth should be respected by everyone else in all other countries on Earth, then you should not forsake the idea of applying a truly individualistic approach to space appropriation. And the forthcoming framework could also be put to such a use, at such a time it became practically relevant. For now, however, let us set aside the complex issues of law and enforcement, and begin to consider the shape of a morally-justified individually-held property right in space land, and how someone should go about acquiring such a thing.

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48 Beyond this, Beauvois and Thirion emphasise that 'given the current state of space law, [private] companies are not considered as separate entities but as representatives of their parent nation', Beauvois, Erwan, and Guillaume Thirion, "Partial Ownership for Outer Space Resources", Advances in Astronautics Science and Technology 3, no. 1 (2020), 29-36, https://link.springer.com/article/10.1007/s42423-019-00042-0.

2. INDIVIDUAL MORAL PROPERTY RIGHTS

2.1 THE VALUE OF PRIVATE PROPERTY

It is hard to conceive of a human society without property. Most people see property as a basic human need, the focus of a natural human practice, and an inevitable part of life. But formal property regimes of all kinds bring controversy, not least the standard modern systems based on the practice of individual or private ownership. Of course, most, if not all, people alive today benefit in many ways — directly and indirectly — from property rights, although the aim of this paper is not to prove this standard claim.

Private property improves not only the standards of human wel-

fare, but also the condition of many objects of ownership.[49] Because it also plays an important role in facilitating free trade and open commerce,[50] it enables global access to almost endless goods and services, the quality of which is improved through competition, alongside enhanced educational opportunities, healthcare outcomes, and more.[51] Private property is about more than meeting wants and needs in an efficient manner, however. There is also the intrinsic value of individual ownership. This is reflected in the way in which owning something can bring a sense of achievement, and in the feelings of security and belonging that can derive particularly from home and land ownership, not least within a community. Ownership of various kinds enables human beings to exercise their basic capabilities, and live in accordance with human dignity.

Standard classical liberal theories combine the instrumental and intrinsic value of private property, positing that private property is important enough to form the focus of individually-held moral rights. Beyond this, in political societies, these individual moral property rights are, as above, typically reflected and supplemented by legal rights, promoting and protecting individual ownership through the force of positive law.

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49 For instance, for an empirical study on the effect that property-rights institutions have on economic growth and other economic goods, see Acemoglu, Daron, and Simon Johnson, "Unbundling institutions", Journal of Political Economy 113, no. 5 (2005), 949-995.

50 For an overview of the place that property rights have been afforded in economic theory over time, and particularly with regards their impact on development, see Besley, Timothy, and Maitreesh Ghatak, "Property rights and economic development", Handbook of development economics, vol. 5, 4525-4595, Elsevier, 2010.

51 See, e.g. Max Roser, "Economic Growth", OurWorldInData.org, 2013, 'https://ourworldindata.org/economic-growth'.

2.2 THE IMPORTANCE OF JUSTIFICATION

Most of us who are interested in free-market economics find ourselves almost automatically in favour of economic systems that enable and preference individual ownership. But acceptance of the existence of the vast benefits of private property does not obviate the need to think hard about its moral grounding — that is, how private property is morally justified; why it is that individuals should be seen to hold property rights. This is not only because to focus solely on benefits is to ignore any costs, but also because, at least on the rights-based classical liberal account advanced below, good consequences can never bear sufficient moral justificatory weight for anything. Rather, thinking hard about the moral grounding of private property seems crucial for classical liberals of all variants, for at least two reasons.

First, doing so is crucial to convincing opponents about the strength of our arguments. And second, it is also crucial to ensure that the particular systems we favour aren't at risk of incompatibility with any of our most fundamental liberal commitments, including those to personal autonomy and equal basic respect for all. Some people claim to hold private property as priorly important even to those commitments. But aside from theoretical concerns with such a position, there is a serious danger that any society that prioritises economic freedoms and rights over basic civil and political freedoms and rights could tip into illiberalism.

This is not to downplay the strong arguments emphasising the vast benefits of private property systems. Indeed, as above, most classical liberals posit that owning property is such an important thing — or that the things that owning property typically brings about are so important — that the ownership of private property should be reflected in the content of a moral right: a moral property right. There is much debate about the kind of right this is. This debate

pertains not least to whether it is a general moral right, held by all, equally, to hold some private property. Or whether it is an acquired moral right, held only by those who qualify, to hold the property that they have legitimately acquired.[52] One crucial difference between these two approaches relates to the extensiveness of these two rights' correlative obligations. If everyone has the right to some private property, then redistribution and its sizeable consequent burdens will form a key feature of any just society. Whereas, if it is only that everyone has the right to acquire some private property — a *potential* right to private property, we might call this — then other reasons will be required to make an argument in favour of redistribution.

This paper shall focus on the second approach. But, regardless of the exact shape of the moral right to private property, the conclusions of this paper depend on this author's contention that this right must be held equally by all, at least with regards to the ownership of natural resources. This is because, as argued on the Lockean approach described below, humankind either naturally owns all natural resources 'in common', or none of us has any particular natural claim to any of those resources. Either way, the right to acquire that each of us holds, as individuals, is the same that all other individuals hold.

2.3 THE COSTS OF PRIVATE PROPERTY

Regardless of the value of private property — to owners, wider society, humankind in general, and with regard to the conservation of objects of ownership — property rights also impose serious costs on people outside of the particular relation between the owner and the thing that is owned. That's not referring particularly to the aggregate

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52 See a useful discussion of this distinction in Jeremy Waldron, The Right to Private Property, (New York: Oxford University Press, 1989), Introduction.

costs often claimed to stem from private-property regimes, relating to the disvalue that many people outside of a classical liberal framework believe is found in economic systems that do not ensure a tight distribution of holdings. We can address those claims where necessary. Rather, it is referring largely to the costs that individual property rights impose directly on individuals outside of each ownership relation, in terms of serious correlative obligations.

If I own that hill over there, then you have obligations stemming from this — and the obligations that rights impose are always serious ones. On a standard classical liberal rights-theory approach, the content of individual moral property rights consists in correlative perfect obligations for other people. My ownership of the hill, therefore, means that there are certain things, if I so wish, that only I — exclusively — can do in relation to the hill, to the exclusion of others. And what's more, at least some of these excluded things are things that, if the hill were not owned by me, then you and others would have (at least potentially) been able to do in relation to it. These excluded things might include, for instance, being able to walk over the hill freely without fear of doing wrong by doing so — as well as other things relating to the use and control of the hill. Indeed, whilst there are important debates about what the 'excluded things' should be seen to be to include in such a situation, nonetheless, my owning the hill will certainly limit your opportunity to walk over it, at least on most classical liberal accounts.

Whether my owning the hill also means, for instance, that I am justified in painting it red, damaging it, or giving it to you for your own exclusive and exclusionary purposes, are further questions — and there are many such questions. But whatever the set of excluded things consists in, and whether or not the set's content differs dependent on the subjects and objects of ownership, it is the case that I, and only I, have the exclusive right to do these things, if I so wish,

whilst I am the owner of the thing. And this reduces what you can do, in various ways relating to your exclusion. Baked into all this, therefore, is not only what you have lost in terms of opportunity, but also the change in our relative standing, as reflecting the exclusivity of my ownership status, and your exclusion as deriving from this.

Yet these ideas of exclusivity and exclusion, which are so central to individual ownership,[53] also seem inherently in tension with the core classical liberal commitment to equally-held societal freedom, and some of the other standard fundamental commitments of classical liberalism, too. An owner may of course choose to share 'their' thing, or, in other ways, to forsake the exclusive and exclusionary nature of the relationship they have with it. But what seems certain is that private ownership generates the possibility for an individual to have a rights-protected exclusive and exclusionary relationship with an external thing. And, typically, this includes the kinds of things that can be classed as scarce natural resources — including those resources that are required to meet urgent human needs.

Therefore, regardless of the vast benefits of private property ownership, we must have good answers to fundamental questions about how exclusion and exclusivity can be justified within a politico-philosophical framework that claims to be deeply committed to freedom,

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53 Exclusion and exclusivity are unsurprisingly common concepts in discussions of property. For a useful example of a focus on exclusion, see Schmidtz, David, "The institution of property", Social Philosophy and Policy 11, no. 2 (1994), 42-62. Whereas Mossoff argues that too much focus has been on exclusion, and insufficient on exclusivity, with regards patent law: Mossoff, Adam, "Exclusion and exclusive use in patent law", Harv. JL & Tech. 22 (2008), 321-378. As a further example, Katz presents her 'exclusivity' model as a contrast to the 'boundary approach' that she sees as representing a more general focus on the right to exclusion with regards the character of ownership: Katz, Larissa, "Exclusion and exclusivity in property law", University of Toronto Law Journal 58, no. 3 (2008), 275-315.

and also to certain foundational conceptions of equality. This is not to deny that few classical liberals are committed to egalitarianism in the sense of believing that an equal distribution of holdings is required as a matter of justice. But such a position neither precludes non-egalitarian concerns about the distribution of holdings — regarding concerns about the meeting of urgent need, for instance — nor other kinds of egalitarian commitments, such as a commitment to the basic equality of fundamental status of all human beings.

2.4 LIMITS AND CONDITIONS

A relevant question relates to the matter of particularity, therefore: why it is that some particular person should be taken to have so much of a stronger individual claim over some particular external thing than anyone else, that they should be seen to have an eternally-fixed exclusive and exclusionary relationship with that thing — no matter what they or anyone else does, after that claim has initially been established. This is not least because anyone holding such a position, and also claiming to be a liberal, must take into account the serious restrictions of freedom this position entails for everyone except the owner. Many people will claim that this is a strawman position: that nobody thinks that all property rights are unconditional and unlimited. But this author has met quite a few people who do hold that view and who also claim a hardcore interest in individual freedom.

When thinking about private ownership, therefore, it is crucial to think about limits and conditions. Are there any objects that are morally unownable? What conditions must be met for someone to count as the owner of some thing? Are there any conditions that owners must meet in order to continue to go on owning their objects of ownership? We must bear in mind here that this cannot be a 'one-size-fits-all' kind of topic: not only are there different kinds of owners

(including, as above, individuals, groups, firms, and nations), there are also different kinds of objects of ownership. And the particular kind of thing with which one wants to develop an ownership relation is highly relevant to the kind of relationship that can and should be. Some things are living, some things are scarce, some things have been created by human beings, some things are deemed fungible, and so on. So, even if the private ownership of some things does seem to demand an absolute and unconditional shape — such as the ownership of your own mind, for instance — this does not mean that the ownership of all other things must also work in this way. Yet one reason there are so many seemingly intractable debates about property matters is owing to the mistake that has often been made of lumping together all different kinds of objects of ownership.

2.5 A FOCUS ON LAND

Land is something of an exception, however; it has often been set aside for special consideration and treatment. Those in the Georgist tradition, for instance, are well known for advancing the idea that, whilst individuals should be able to accrue economic value from what they produce, that 'the benefits of nature [should] be equally [...] shared'.[54] The concept of economic rent, which is often thought of as 'unearned income',[55] plays a crucial part in the Georgist approach. Henry George defines it as follows:

> *"Rent, in short, is the share in the wealth produced which the exclusive right to the use of natural capabilities gives to the owner.*

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54 Foldvary F.E, "Georgism", Chatterjee D.K. (eds) Encyclopedia of Global Justice, Springer, Dordrecht, 2011, https://doi.org/10.1007/978-1-4020-9160-5_679.

55 see, e.g. Adam Hayes, "Economic Rent", Investopedia, November 18, 2021: https://www.investopedia.com/terms/e/economicrent.asp.

Wherever land has an exchange value there is rent in the economic meaning of the term."[56]

George's particular focus on land underlies Georgist support for the idea of a land value tax (LVT), which is a levy focused on the 'unimproved'[57] base value of each piece of land that is owned, rather than on the value of anything that has been built or housed on that piece of land. Arguments in favour of land value taxation can be found across the political spectrum. Milton Friedman, for instance, famously described the LVT as the 'least-bad tax',[58] whilst the much more interventionist New Economics Foundation recently set out proposals for replacing business rates with an LVT, in order to address a shortfall they calculated in local government funding.[59]

Standard arguments for land value taxation depend on claims not only about its economic efficiency, but also the extent of its fair and egalitarian nature. George himself held that '[t]he tax upon land values is [...] the most just and equal of all taxes'. To this end, proponents advance the idea that the ownership of land should be treated as a special kind of ownership, owing to the general nature of land itself as an important natural resource: that land is a central part of our shared planet's ecosystem, that its supply is fixed, and that it

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56 Henry George, Progress and Poverty: An Inquiry into the Cause of Industrial Depressions and of Increase of Want with Increase of Wealth, The Remedy (Garden City, NY: Doubleday, 1912), Book III, Chapter 2, accessed via https://oll.libertyfund.org/title/george-progress-and-poverty.

57 You can watch Milton Friedman refer to it in this way: https://www.youtube.com/watch?v=yS7Jb58hcsc.

58 ibid.

59 Sarah Arnold, Lukasz Krebel, Alfie Stirling, "Funding Local Government with a Land Value Tax", New Economics Foundation, November 13, 2019, https://neweconomics.org/2019/11/funding-local-government-with-a-land-value-tax.

plays a crucial role in meeting human need. But they also contend that the full societally-deemed value of any particular piece of land depends on matters outside its owner's particular sphere of influence, and that this value is generally retained regardless of the way in which its particular owner uses it.

In other words, imagine that I own a building on a piece of land that is in demand owing to the quality of its soil, its relative shelter from bad weather, its closeness to a thriving economic hub, and its excellent proximal public-good provision. Now, even if I squander this opportunity and my building becomes less valuable in itself than the neighbouring buildings — whose owners have treated them well, and even improved them — the underlying land generally becomes no less valuable, relatively. On the Georgist account, therefore, I should be taxed for it no less than my neighbours are, all other things being equal.

Unsurprisingly, such approaches have proved popular to those in favour of anchoring taxation in relation to both egalitarian and desert-based concerns — since the LVT is focused on the benefits of owning a scarce natural good, rather than on effectively penalising the productive use of it — as well as to those who appreciate its related relative efficiency.[60] Adam Smith concluded that:

> *"[t]he annual produce of the land and labour of the society, the real wealth and revenue of the great body of the people, might be the same after such a tax as before. Ground-rents and the ordinary rent of land are, therefore, perhaps, the species of revenue which can best*

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60 See, for instance, the 'Theoretical Benefits' section of "Land Focus: Land Value Tax Briefing Paper", Scottish Land Commission, 2018, https://www.landcommission.gov.scot/downloads/5dd69d3b1fba6_LAND-FOCUS_Land-Value-Tax-October-2018.pdf.

bear to have a peculiar tax imposed upon them."[61]

2.6 SCARCITY

Returning to the special nature of land itself, this section will end by emphasising briefly two features touched upon above. The first is a point about the scarcity of land. Now, it seems relatively uncontroversial to suggest that special justification is needed for the ownership of a desirable natural resource — particularly when that ownership will not only preclude others from owning that particular thing, but will also play a part in precluding them from owning any instance at all of such a thing. And that this seems especially the case when such a thing is essential to the meeting of human needs. If there are only ten family-sized plots of land available, and 100 families urgently need land for sustenance and shelter, then it is not just the family who acquires the tenth plot whose actions have served to disadvantage many others.

To this end, let's compare land and apples. It's true that you can't possibly lay any claim to my apple once I have eaten it, and moreover, that whilst my apple is hidden away in my fridge crisper-drawer, you likely won't be able to access it. Nonetheless, it is hard to see my relationship with that particular apple as being the overriding factor determining the fact that you don't have an apple of your own. You can always find apples, and I'm not stopping you! Bar the arrival of some new apple-tree-killing disease, my owning an apple isn't really, per se, getting in the way of you acquiring an apple that's pretty much like mine. Indeed, generally, the more of us who want apples,

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61 Adam Smith, An Inquiry Into the Nature and Causes of the Wealth of Nations, ed. Andrew Skinner, (Penguin: London, 1999), Book V, Chapter II, Article 1.

the more likely it is that people will want to produce them for us to acquire. Things are very different with land, however. It's much harder for the owner of a piece of land to destroy it, or to devalue it, than it is for me to eat my apple. And, as will be discussed below, it also seems true that one person's ownership of a piece of land can benefit many of the other people who consequently do not own it — not least those who want to eat the apples that its owner chooses to grow and sell there! But land is essentially scarce in a way that apples are not.

This is not to deny the existence of man-made islands, or, more relevantly for current purposes, to deny that land in space is most likely non-finite. But rather to acknowledge that, until human beings learn how to travel as far as we want in practically no time at all, then even space land — and particularly the space land that is generally most desirable in relation to its use value — is effectively scarce. Therefore, when the space-land-ownership framework is set out below, moon land shall be focused on as an exemplar issue, in awareness of the current constraints of scarcity. This will entail taking into account, as above, the way in which one person's ownership of such land helps to preclude other people's ownership of it, when addressing the question of its justified acquisition and holding. It will also entail considering the relevance of the distinction between the potential value to be obtained from using such land productively, and its underlying general value as a scarce natural resource.

Note that whilst, as per the Georgists, much of the underlying societal value of any particular piece of land depends on matters that are outside the sphere of influence of those who use it, this is not to suggest that that the potential use value of a piece of land is irrelevant to matters of the justification of ownership. As above, individual ownership can be beneficial even to those outside of any particular ownership relation (i.e. the relationship between an owner and an owned

thing). An example of this is the counterfactual point John Locke makes about the way in which the more productively a piece of land is used, the more this serves to benefit others. This can be seen here in his claim that the productive use of one piece of land means that a greater amount of other land is potentially freed up for other users:

> *"he, that incloses Land, and has a greater plenty of the conveniencys of life from ten acres, than he could have from a hundred left to Nature, may truly be said, to give ninety acres to Mankind."*[62]

2.7 STEWARDSHIP

Beyond concerns relating to land's value to human beings, however, what about concerns pertaining to the land itself? Do we not have obligations regarding the land around us, beyond those relating to its instrumental value to individuals, societies, or even the whole of humankind? Are owners of land not obliged to look after it in certain ways? Are they not obliged to conserve it? These are familiar questions. For current purposes, however, let us assume that land conservation is something that we should be interested in for various good reasons — that the matter is over-determined — and that forms of land ownership that enable better conservation are importantly valuable, not only for owners, but more widely.[63]

This is the kind of thinking that, in part, has sometimes helped to underpin the approach to land governance and distribution referred to as 'homesteading'. This is when the state gives an individual, or

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62 John Locke, Second Treatise, ed, Peter Laslett (Cambridge: Cambridge University Press, 1960), 312 (Chapter V, §27).

63 However, there are important debates about 'space contamination' to consider, as per reference above to 'space junk'.

a group, privileged access to a plot of uncultivated land — and, typically, eventually, private ownership of the plot — on the condition that it is cultivated satisfactorily. Homesteading has been promoted as a policy prescription in many countries for various reasons,[64] including in order to enable an increased number of individuals and groups to benefit from the value of land ownership, and to provide them and others with work and sustenance. But such an approach can also be supported on the grounds that it can help to ensure the good upkeep of the land, for the land's own sake.

There are many questions to answer about the justification of particular instances of homesteading policy, not least relating to when — if ever — it should be the state's decision to distribute land in this way, and especially in cases of land that is already meeting the needs of particular people. Nonetheless, it seems crucial to acknowledge the way in which the ownership of things can improve the likelihood of their protection and conservation, and to consider the extent to which this is relevant to matters of the justification of the ownership of natural resources like land.

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64 See, for instance, "The Homestead Act of 1862", National Archives, accessed January 3, 2022, https://www.archives.gov/education/lessons/homestead-act#background.

3. A LOCKEAN APPROACH

3.1 TWO TRADITIONS

Broadly, classical liberal approaches towards economic justice can be divided into two traditions: one focused on rights, the other on consequences. And whilst many modern classical liberal economic thinkers adhere to the latter tradition, this paper, for reasons below, is on the side of the former. This distinction between rights and consequences is also relevant to wider matters of justice (and, more pertinently, wider matters of morality); contemporary utilitarian Peter Singer describes how, 'for centuries', theoretical considerations of justice have been able to be reduced to 'two lines of thought'.[65] First, utilitarianism, on which, he states, 'principles of justice are rules that work for the greater good of all'. And second,

> *"the alternative view of justice associated with John Locke and Immanuel Kant [which] starts with individual rights and prohibits the use of one person as a means to another's end. The incorporation of Lockean rights into the Declaration of Independence and the Con-*

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65 Peter Singer, "The Right to be Rich or Poor", The New York Review, March 6, 1975, https://www.nybooks.com/articles/1975/03/06/the-right-to-be-rich-or-poor/.

> *stitution of the United States ensured the dominance of this tradition in the political rhetoric and in the moral, legal, and political thinking of [America].”*

The utilitarian approach will be discounted for the purposes of this paper. A key reason for this is that it offers us little obvious help in terms of thinking hard about property rights, both theoretically and practically. This is firstly because for all that utilitarianism is often lauded for its simplicity, attempting to set out the working details of any consequentialist system (of which utilitarianism is the best known variant) is deeply complex, not least regarding consequentialism’s dependence, for practical matters, on prediction. And secondly because this author contends that utilitarians, like all consequentialists, do not take moral rights seriously enough. This is not to suggest that all consequentialists follow Jeremy Bentham in eschewing such rights as ‘nonsense on stilts’.[66] But rather that, whilst some, such as John Stuart Mill and Amartya Sen, have managed to incorporate moral rights into their frameworks,[67] these ‘rights’ are doomed to instrumentalisation by the consequentialist process, which is committed only to the searching out of moral truth by the tracking of some particular underlying goal — such as utility, in the case of utilitarianism. This is the case even on a ‘utilitarianism of rights’ variant of consequentialism, on which it is the situation representing the maximisation of rights protections (or the minimisation of rights violations) that is searched out.[68] And such an approach means that, in

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66 Jeremy Bentham, The Collected Works of Jeremy Bentham: An introduction to the principles of morals and legislation, (Oxford: Clarendon Press, 1996), Chapter 4, “Anarchical fallacies”, 56.

67 See, for instance, Brink’s discussion of Mill’s approach to rights: Brink, David O., “Mill’s Ambivalence About Rights”, BUL Rev. 90 (2010), 1669; and Sen, Amartya, “Rights and agency”, Philosophy & Public Affairs, (1982), 3-39.

68 See, for instance, discussion of this in Nozick, Anarchy, State, and Utopia, (New York: Basic Books, 1974), 28-30.

certain situations, the right thing to do, on a utilitarianism of rights, is to violate someone's rights.[69]

However, it is also crucial to acknowledge that consequentialists do not have a monopoly on affording consequences importance. John Locke's rights-based approach to justifying private property, for instance, as discussed below, emphasises the beneficial economic consequences of private-property regimes — particularly in terms of increasing societal prosperity. But this does not make his approach inherently consequentialist.[70] Rather, one of the features of Locke's general approach is what modern Lockean John Simmons presents as a deep pluralism: Locke not only typically offers a wide range of overlapping and standalone arguments for any particular position he advances, but his approach is also open to a wide variety of fair interpretations.[71]

Beyond all this, however, any conclusions reached using a non-consequentialist approach can always be slotted into a consequentialist approach, as above. So, if you're keen to remain committed to that approach, then you can read the following as setting out a theory that

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69 More generally on this, see, for instance, Foot arguing against the way in which, she contends, on all forms of consequentialism, justice includes being permitted to do anything at all, no matter how horrific, to a 'perfectly innocent' person — indeed, that doing so will be right thing, 'if that is the only way of preventing another agent from doing more things of the same kind': Foot, Philippa, "Utilitarianism and the Virtues," Mind 94, no. 374 (1985), 274. See also Raz's 'ice cream' example: Raz, Joseph, The Morality of Freedom, (Oxford: Clarendon Press, 1986), 276.

70 It has been convincingly argued that Locke (and other Lockeans, such as Nozick) does at times slip into consequentialist reasoning. But whilst this brings those parts of his work into question, this does not necessarily make him a consequentialist: consequentialism is a totalising moral theory; you cannot slip in and out of it. See discussion below re Locke's property theory.

71 A. John Simmons, The Lockean Theory of Rights, (Princeton: Princeton University Press, 1992), 45-46.

you can then interpolate into a consequentialist model — good times!

3.2 WHY LOCKE IN PARTICULAR?

Within the rights-based tradition, Locke seems an obvious and valuable classical liberal starting point for thinking about private property, and particularly its interrelation with freedom, equality, and other standard liberal commitments. Locke's moral and political philosophical arguments have been crucial to the rise of liberalism and democracy, and to modern commitments to rights and rights theories.[72] In practical terms alone, he has arguably had a greater impact on constitutional affairs and other political matters, than any other of the unarguably great philosophers.[73] And one specific area of Locke's work that remains of great interest is his theory of property, which has strongly influenced both theorists and legal systems.[74]

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72 This is the orthodox position, but for a contrasting view, see, e.g., discussion in Bell, Duncan, "What is Liberalism?", Political Theory 2014, Vol. 42(6), 682-715 — not least for focus on the way in which the contextualist school 'has repeatedly questioned Locke's elevated status as a (or the) foundational liberal' (688), and the claim that '[n]ineteenth-century philosophers had very rarely seen Locke as a liberal or written positively about his political theory' (696).

73 For a relatively conservative take on Locke's political impact, see, for instance, Uzgalis, William, "John Locke", The Stanford Encyclopedia of Philosophy (Spring 2019 Edition), Edward N. Zalta (ed.), URL = <https://plato.stanford.edu/archives/spr2019/entries/locke/>.

74 See, for instance, 'Locke's theory is widely regarded as the most interesting of the canonical discussions of property', in Waldron, Jeremy, "Property and Ownership", The Stanford Encyclopedia of Philosophy (Winter 2016 Edition), Edward N. Zalta (ed.), URL = https://plato.stanford.edu/archives/win2016/entries/property/; and, 'Before Olmstead, Fourth Amendment rights were tied closely to a broad definition of property articulated by John Locke in the seventeenth century', in Cloud, M, Property is Privacy: Locke and Brandeis in the Twenty-First Century, American Criminal Law Review, 55 (1), 2018.

The key question for the rest of this paper, therefore, relates to what a Lockean-type rights-based approach to economic justice demands in terms of adjudicating problems of the individual ownership of land in space. But an implicit underlying question is what the answers to these problems offer to help us to assess the adequacy of ongoing approaches to property on Earth.

3.3 KEY POINTS OF LOCKE'S APPROACH

Whilst Locke's approach remains highly influential, it also remains highly controversial: many people disagree about his theory of property, both in terms of its contents and its value. But before focusing on a couple of particularly relevant problems arising from Locke's theory, it is first worth setting out this author's understanding of it, in a way that engages with discussion above regarding the exclusive and exclusionary nature of moral property rights:

- Locke acknowledges that there are external things of many kinds in the world that human beings need and want. These include things that human beings require in order to survive, and also desirable things that seem necessary to societal progress, not least in terms of increased prosperity. On Locke's account, the enabling of individual survival and societal progress works to justify individual human beings entering into exclusive and exclusionary relationships with particular things.[75]
- In pre-political situations — what Locke calls 'the state of nature' — the things of the Earth are not individually held by any particular person.[76] Some Lockeans, including Locke, present these

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75 See particularly, Chapter V of John Locke, Second Treatise, ed. Peter Laslett, (Cambridge: Cambridge University Press, 1960), 303-320.

76 See, particularly, Chapter II of Locke, Second Treatise, 287-296.

things as 'commonly-owned' by everyone. Others, including Nozick, present these things as unowned, or 'unheld'.[77] Either way, however, for individuals to be able to access, use, and control the particular things that they need and want in exclusive and exclusionary ways, they must acquire those things, for themselves, in a morally justified manner.

- What is morally justified in pre-political situations is, on Locke's account, governed by the 'Law of Nature', which is non-humanly-posited moral law.[78] This 'natural' moral law reflects truths about the human good, and sets out basic objective standards of right and wrong from which human rights and obligations can be derived. Locke holds that human beings have the natural capacity to be able to search out the contents of this moral law for themselves, and that we are all equally subject to it.
- In Lockean political society, however, members are subject not only to natural law, but also to societal laws posited by members, collectively.[79] Positive law should reflect natural law, but can vary significantly between societies, depending on the morally-justified decision-making of a society's members. On a Lockean account, for this kind of decision-making to be legitimate, it must be democratic, in the minimal sense of requiring respect

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77 Robert Nozick, Anarchy, State, and Utopia, (New York: Basic Books, 1974), 150-153. See useful discussion of this distinction in O'Neill, O., "Nozick's Entitlements", Reading Nozick, ed. Paul, J. (Oxford, Basil Blackwell, 1981).

78 See, particularly, Chapter II of Locke, Second Treatise, 287-296.

79 See particularly sections 87-89 of Chapter VII, and sections 95-99 of Chapter VIII, of Locke, Second Treatise, 341-343 and 348-351. See also useful discussion of the structure of Lockean political society in Waldron, J., "Locke's legislature (and Rawls's)', in The Dignity of Legislation, (Cambridge: Cambridge University Press, 1999).

for equally-held political rights to deliberative participation,[80] realised on some kind of representative model, and underpinned by the basic preconditions of democracy, including respect for the rule of law, and certain basic rights. As is well-known, Locke posits that the establishment of a legitimate political society is dependent on its members having consented to join, but the ongoing legitimacy of such a society is also dependent on its members consent, as represented by their ongoing involvement in this kind of deliberative decision-making.

- In the 'state of nature' at least, the standard method for generating individual property rights over external things involves individuals behaving towards such things in particular ways, typically involving labour.[81] It seems reasonable to assume however, that, on Locke's account, a political society could legitimately institute other methods for generating property rights, beyond labour. Regardless of the method of generating such rights, however, when an individual has justly acquired an external thing, they gain certain kinds of rights in it, including the right to transfer these rights to others, in certain ways. Property rights, on a Lockean account, therefore, are acquired rights.
- However, these Lockean property rights are limited and conditional in various ways. Such rights cannot be acquired in every kind of thing: human beings cannot acquire property rights in other human beings, for instance.[82] Moreover, property rights are

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80 As per 3.5 below, I am interested here in the most charitable reading of Locke's work, and in the way in which that reading helps us to uncover moral truths about relevant matters, including those that Locke did not uncover himself. I am not contending that Locke himself was a democrat in the full sense of the term.

81 See particularly, Chapter V of Locke, Second Treatise, 303-320.

82 There is no space here to enter into debates about Locke's own views on slavery, but it is clearly, at best, incoherent for a Lockean-type liberal to support slavery of any kind.

dependent both on the ongoing situation of the right-holder, and on the ongoing situation of other people.

- The concerns of other people are reflected in Locke's 'enough and as good' proviso, which tells us that a potential owner can acquire things, as long as they leave 'enough and as good' for others.[83] And this is reinforced by Locke's 'charity proviso', which tells us that people in urgent need can have rights to other people's surplus.[84]
- Locke's 'spoilage proviso', however, focuses on the situation of the property right-holder, rather than on the situation of other people: it tells us that an owner cannot acquire more than they can 'use to any advantage of life before it spoils'[85] — although it is worth noting that Locke argues that the introduction of money serves to make the spoilage proviso effectively redundant.[86] The spoilage proviso can also be interpreted, however, as pertaining to the obligations that owners hold towards their objects of ownership, since it tells us that an individual's treatment of the things they own is relevant to the ongoing legitimacy of their ownership of those things.
- The provisos help us to understand that, on a Lockean account, the urgent needs of an individual can suffice to justify their ownership of certain things, at least temporarily, in order to meet their urgent need. But the provisos also help us to understand that an individual's needs can invalidate another individual's ownership of surplus things.
- Beyond need is the matter of preference, however, and the vast opportunity for human good that Locke clearly believes can

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83 Locke, Chapter V, Second Treatise, 305-306 (§27).

84 John Locke, First Treatise, ed. Peter Laslett, (Cambridge: Cambridge University Press, 1960), 188 (§42).

85 Locke, Chapter V, Second Treatise, 308-309 (§31).

86 Locke, Chapter V, Second Treatise, 320 (§50).

> derive from the existence of private property rights regimes that are much more extensive than those grounded simply in a needs-based approach. To this end, there are strong common-good-based Lockean arguments that societies should institute extensive (albeit still limited and conditional) democratically deliberated private property rights regimes — indeed, that doing so is to recognise certain shared obligations members hold in consensual society.[87]

3.4 SUMMARY OF LOCKE'S APPROACH

In summary, therefore, Locke sets out a theory of private property on which limited and conditional individual ownerships are not only permissible but also serve the good. On Locke's approach, regardless of societal context, individuals can acquire and hold the non-human external things of the world, as long as they meet various ongoing conditions, relating primarily to their own urgent need and the urgent need of others, but relating also to the matter of spoilage. In developed societies at least, however, private ownership is not limited to the goods that individuals urgently need. Individuals can also acquire certain things that they want but do not need, in accordance both with the general moral conditions that Locke sets out (where these conditions remain relevant), and also any further conditions that are determined legitimately by societal members and set out in positive law. It seems clear that Locke holds that an extensive regime of private ownership is essential to a society that fulfils its potential at least in prosperity terms.

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87 See my discussion below at 4.6.

3.5 SOME PROBLEMS

There are many criticisms that have been levelled at Locke's theory of property. These include: criticisms about the fundamental justifications it offers to ground individual moral property rights;[88] criticisms about the technical workings of Locke's approach to the justified acquisition of private property;[89] criticisms regarding uncertainty about the extent of the range of powers that can be exercised by the holder of a Lockean property right;[90] criticisms that Locke's theory of appropriation necessarily leads to injustice or unfairness in holdings, on distributional grounds;[91] criticisms about the (seeming) natural societal consequences of Lockean property theory, par-

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88 See, for instance, ongoing debate about the role that theological premises play in Locke's theory, as represented by the opposing positions of Dunn (who sees such premises as essential to Lockean property theory) and Simmons (who sees Lockean property theory as deeply pluralistic, in this way and others): Dunn, The Political Thought of John Locke: An historical account of the argument of the 'Two Treatises of Government', (Cambridge: Cambridge University Press, 1982), Part Three; Simmons, A.J., The Lockean Theory of Rights (Princeton: Princeton University Press, 1992), 45-46.

89 See, for instance, Nozick's 'tomato-juice' objection in Robert Nozick, Anarchy, State, and Utopia, (New York, Basic Books, 1974) 174-5.

90 See, for instance, Sreenivasan's contention that Lockean property rights should only be conceived as use-rights, 'subject to a multitude of limitations': Gopal Sreenivasan, The Limits of Lockean Rights in Property, (Oxford: Oxford University Press, 1995), 148.

91 Many such criticisms have been levelled at Nozick's Lockean approach to property, in particular. See, for instance, Hart's conclusion that, on Nozick's Lockean approach, as long as the historical entitlement condition is satisfied, then 'how people fare under the resulting patterns of distribution, whether grossly inegalitarian or egalitarian, is of no moral significance'. Hart, Herbert L.A., "Between Utility and Rights", Columbia Law Review, Jun., 1979, Vol. 79, No. 5, 833-834.

ticularly regarding the 'excesses' of capitalism;[92] and criticisms that Locke's particular approach to justifying acquisition, and to property matters in general, was overly influenced by his own financial and political interests, at the expense of important societal concerns.[93]

For now, let's set aside most of these problems, and take the most charitable reading of Locke's theory that we can. If, for instance, you're concerned that his approach might depend on theological premises, then remember Simmons' point above about pluralism and interpretation. And if you're annoyed that it hasn't been pointed out that Locke typically uses the term 'man' instead of 'human being', then move away from what he actually wrote, and focus on the objective moral truths his thought might help us to uncover. To this end, let's assume we're simply committed to searching out the best possible Lockean-type theory of property rights in space, in order to enable the justified acquisition of particular external things — namely, bits of space land — that individual human beings need or want, but which are naturally owned by nobody in particular.

To this end, this paper is now going to focus on three problems that bring together various of the types of criticisms that are standardly levelled at a Lockean approach, in order to determine the pitfalls that should be avoided in a space-land-ownership framework.

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92 See, for instance, the 'possessive individualism' objections of Macpherson: Macpherson, C. B., The Political Theory of Possessive Individualism: Hobbes to Locke, (Oxford: Clarendon Press, 1962).

93 See, for instance, those advanced by Arneil relating to Locke's involvement in colonial policy-making: Arneil, Barbara, "The Wild Indian's Venison: Locke's theory of property and English colonialism in America," Political Studies 44, no. 1 (1996), 60-74.

3.6 COMMON-OWNERSHIP

The first of these problems is a well-known one that shall be largely discounted for current purposes. It is a problem that derives from Locke's reference, as above, to the things of the Earth being held, naturally, in 'common-ownership': i.e. the idea that, before some existing thing becomes individually acquired, it is owned 'in common' by all of humankind. Now, this idea seems baked into Locke's theory, but it is also the case that Locke seemingly argues that individuals do not need the consent of others in order to acquire things that are commonly-owned. And this seems problematic to anyone taking the idea of consent seriously — something that Lockean-type liberals, including Locke himself, typically tend to do. There are various ways of addressing this problem, however.

Modern Lockean-type left-libertarians, for instance, such as Hillel Steiner and Michael Otsuka, largely manage to evade this problem by contending that — whilst things that have been 'transformed' by human beings can be privately owned — natural resources are 'owned by all in some egalitarian manner'.[94] But their approach is not satisfactory for current purposes. This is not only because the category of 'natural resources' seems too wide if we want to distinguish, say, between the ownership of moon land and moon rocks, but also because the aim of this paper is to set out a justified framework for the individual ownership of at least some such things. To this end, fewer consent-based problems arise if we simply follow Nozick's Lockean approach as above, rather than Locke's own,[95] and think of

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94 Vallentyne, Peter, Hillel Steiner, and Michael Otsuka, "Why Left-Libertarianism is Not Incoherent, Indeterminate, or Irrelevant: A reply to Fried", Philosophy & Public Affairs 33, no. 2 (2005), 202-203.

95 That said, Mack argues that Locke himself implies a Nozickian approach: Eric Mack, "John Locke on Property," Online Library of Liberty, 2013, https://oll.libertyfund.org/page/liberty-matters-eric-mack-john-locke-property.

non-individually-owned land — including space land — as 'unheld', rather than 'commonly-owned'.

3.7 JUSTIFIED ACQUISITION

The second key Lockean problem relates to the justified individual acquisition of property, and particularly the question of how any ongoing holding can be justified if its initial acquisition — or any previous holding of it — was not justified. In other words, it seems unlikely that you'd accept someone's ownership of a field to be truly legitimate if that person had stolen it from its previous owner. Or if that previous owner had stolen it from someone else, or if the first person who had claimed it had no right to do so. And again, this seems to be the case *a fortiori* regarding things that are scarce, and particularly scarce natural resources that are required to meet urgent human need. Nonetheless, because this theoretical problem becomes immensely more complicated in the real world — since we do not have a reliable documented history of everything that has ever been claimed as property, or even a minority of these things — it is sometimes simply set aside.

This seems understandable, as even the ground at the bottom of the deepest sea will have been claimed by someone at some point. And most existing things will have been recognised, at least at some point, as having had some kind of legitimate claim made over them, even if those are not claims that we should recognise as legitimate. Regardless of such claims' actual legitimacy, however, perhaps it is indeed the case that — unless we can find sufficient information about the ownership of all these things, or unless we can legitimately institute a radical property amnesty, in which all unjustified or uncertainly-held holdings are returned to the status of being 'unheld' — then we must accept the illegitimate ownership of at

least some earthly things. This seems unsatisfactory, of course. But even if it were the case, it would not mean that we have no second chance. Whatever answers we land upon regarding such problems, space gives us an opportunity to start afresh, and apply what we have learnt. This paper shall aim to set out, therefore, in the framework below, what an approach to individual ownership would look like if these concerns had been taken into account.

3.8 EQUALITY

The third key, related, Lockean property problem relates to equality. There are many different conceptions of equality — that is, of what it is to be equal, and what it is for people to be treated equally. But at the heart of the rights-based classical liberal approach to morality, as exemplified by Lockean thought, is a commitment to recognising the fundamental equal status of all people, as a matter of moral fact. This is the familiar idea that no human being is naturally subservient to any other human being.[96] And, beyond the rights and obligations that derive directly from this fact, it is standardly held that there are further related obligations that come with the equal membership of a shared political society — and that this is particularly the case, when, as on Locke's account, that membership is dependent on consent.

However, being an egalitarian in this kind of sense need not entail believing that all human beings, or even all members of a particular political society, are entitled to an equal amount of property. Moreover, most liberals recognise that such an approach is neither feasible, nor desirable, not least regarding its inimicality with funda-

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96 See, e.g. John Locke, Second Treatise, ed. Peter Laslett, (Cambridge: Cambridge University Press, 1960), 287 (§4).

mental liberal commitments including those to freedom of choice.[97] Nonetheless, there do seem to be legitimate concerns relating to equality that stem from any 'first come, first served' approach to property acquisition — beyond concerns, as above, about whether such an approach is just in itself. These equality-based concerns, on a Lockean account, relate not to the actual outcomes of such an approach, which (questions of just acquisition, aside) can largely be bypassed by those holding no interest per se in the equal distribution of holdings, but rather, for instance, to what such an approach means for the stemming of equally-held potential opportunity.

If property ownership comes with the right to exclude others, and (at least some of) the objects of property ownership are things that naturally we would all have had equal claim to, then this seems particularly problematic, not least because Lockean-type liberals believe that all human beings are naturally equally free and equal in status. Now, there are various standard mechanisms for dealing with the inequality that derives from existing private-ownership systems, including mechanisms involving compensation and taxation. But, again, rather than considering how to fix these matters on Earth, let's focus on the chance to start afresh in space. What would an approach to individual ownership look like if it took these concerns into account?

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97 See, e.g. Nozick's famous 'Wilt Chamberlain' thought experiment: Robert Nozick, Anarchy, State, and Utopia, (New York: Basic Books, 1974), 160-164.

4. A FRAMEWORK FOR SPACE PROPERTY RIGHTS

4.1 PLOTS OF LAND ON THE MOON

The space property rights framework set out here will focus on space land. It will not pertain to wider resource ownership — such as the ownership of objects found in space, or the ownership of parts of the space vacuum itself — although it could have some relevant wider application value. Moreover, it shall focus on land in the sense of the pre-existing organic matter that forms the solid surface of celestial bodies.[98] New questions will continue to arise about the things that are sent into, and built in, space, including man-made things that might fit within some definitions of 'space land' — whether these are man-made satellites, or terraformed areas. But, for now, those ques-

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98 This focus on the 'solid surface' is a standard way of considering land: e.g., "Land", Merriam-Webster, accessed 30 December, 2021, https://www.merriam-webster.com/dictionary/land.

tions shall remain unaddressed.

Rather, the particular example of space land on which the framework shall focus is plots of land on the moon. As above, a key reason for focusing on moon land is the moon's relative proximity to Earth. The value of proximity will likely decrease as new technologies serve to make distance less relevant, but currently there are clear advantages to owning proximal land, and fewer barriers to opening up access to such land to a wide range of potential human owners. The focus shall be on the ownership of these moon plots in the narrow sense of the individual acquisition and holding of exclusive and exclusionary moral usage rights over these plots: i.e. an individual gaining the right to build on such a plot, or mine it, or otherwise use it for their own morally-justified purposes, in an exclusive and exclusionary manner. Of course, there are many other ways to think about ownership, and many other matters to consider, but this should suffice as a basic starting point.

4.2 REQUIREMENTS

On the Lockean-inspired rights-based classical liberal viewpoint of this paper, there are many legitimate variants of an effective and morally-justified space property rights system — even of the narrow type described above. This kind of pluralism is inherent in classical liberalism, at least in the Lockean variant, but should not be mistaken for relativistic thinking. Holding that there are multiple moral values in need of service, and also that there are many good ways to order a legitimate society, and to be a good member of such a society, does not equate to holding that there are no right and wrong answers.

One purpose of a basic framework of this kind, therefore, is to set out some red lines, both in terms of what is required, and what is permis-

sible. Following discussion above, the framework needs to take the following into account:

- The value of individual ownership, but also its costs;
- That property rights are acquired rights, and that they are conditional, both at their point of acquisition, and regarding the legitimacy of ongoing holdings;
- That details of the limits and conditionality of property rights depend both on the recognition of basic moral truths — relating particularly to the meeting of urgent human need, but also to concerns relating to the objects of ownership — and also on the context and content of legitimate societal decision-making;

Beyond this, the framework will need to provide:

- A solution to the justified acquisition problem;
- A solution to the equality problem.

4.3 CONDITIONALITY

On the Lockean model, the legitimacy of acquisition and holdings is dependent on the meeting of certain conditions. These conditions derive primarily from fundamental moral concerns about both human beings and the objects of ownership. These concerns pertain not only to the actual subjects and objects of ownership, but also to potential subjects and objects, and particularly to those whose obligations derive from ownership relations to which they are external. These concerns are packaged by Locke in terms of the various provisos he describes, relating particularly to spoilage and need:

- An individual's treatment of the things they own is relevant to their ongoing ownership of those things: the ownership of

objects that are, or are intended to be, left to spoil, can become invalidated;
- The urgent needs of an individual can help to justify their ownership of needed things;
- The urgent needs of an individual can invalidate another individual's ownership of surplus things.

4.4 SPOILAGE

The principles of the spoilage requirement have clear application in the case of space land: the proviso calls for an approach to land use that is both respectful of the land, and that is beneficial for the user. Beyond this, however, it also seems important on a Lockean account that the use of the land is generally productive, beyond being beneficial to the user. To this end, it is contended below that the ongoing productiveness of one's use of a piece of moon land should be seen as a feature in favour of gaining the continuation of exclusive and exclusionary usage rights to it.

4.5 NEED

Unlike spoilage, it seems unlikely — at least at present — that Locke's condition regarding the meeting of urgent need will be directly relevant to a framework enabling the exclusive and exclusionary individual usage of plots of land on the moon. This is because it seems clear that the early users of such a framework will not be individuals in urgent need of land to provide them with basic sustenance or shelter: such individuals have no current practical opportunity to access space land. Nonetheless, it is reasonable to assume that there will come a time when the human race will need to seriously consider the option of inhabiting other celestial bodies, en masse. And even

if it is the case that plots of land on the moon do not present viable options for meeting urgent human need, at present — e.g. as providing an alternative for subsistence farmers, whose land has been damaged by climate change — the future possibility of such an option should not be ignored on a basic framework like this.

Therefore, whilst it is assumed that the early users of such a framework will not be individuals in urgent need of land, baked into the approach is the idea that an individual's ownership of moon land is conditional on that land not being required to meet the urgent needs of others. This shall be done in two ways. Firstly, if it becomes the case that someone in urgent need has the capability to access a piece of moon land that will serve to meet their needs, then their claim over that piece of land will defeat the claim of someone who is not in urgent need, for as long as the person in urgent need remains in that state of need. Secondly, the 'rent' mechanism to be advanced below — for owners of moon land to pay for their usage of such land — will take into account the ongoing urgent needs of people on Earth who do not have the option of accessing space land for the meeting of such needs.

4.6 THE COMMON GOOD

Beyond this, the framework will be premised on the Lockean idea that it is not only permissible, but that it is also good, for societies to institute, via legitimate decision-making, private-property regimes that are more extensive than those grounded simply on urgent need. As above, on a Lockean approach, such decision-making should be minimally democratic — in the sense of requiring respect for equally-held political rights to deliberative participation, realised on some kind of representative model, and underpinned by the basic preconditions of democracy, including respect for the rule of law and

certain basic rights.[99]

This kind of decision-making process is a key part of the Lockean common good. On the Lockean approach, the common good provides legitimate ends for shared action,[100] dependent on objective preconditions relating to objective forms of the human good. Contrary to common misconception, this approach is not only compatible with a strong commitment to individual rights, but on such an approach rights are partly constitutive of the common good. This is not to suggest, however, that the common good is purely a summation of individual rights or other goods — such an interpretation overlooks what is distinctively important about the common good, and risks falling into a consequentialist approach.[101]

Now, it may seem problematic that there is no current international decision-making process that could formally determine the full details of a common-good space property rights framework, in such a way that would meet the standards of a minimally democratic account. But this does not mean that we cannot determine some of the basic ground rules of such a framework, in line with consideration of what is objectively good for the group in question: i.e. the common good of humanity. To this end, on Locke's account at least, the institution of relatively expansive private-property regimes (i.e.

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99 Again, I am not contending that Locke himself was a democrat in the full sense of the term.

100 See, for instance, the way in which he states that the 'force of the community' is to be 'directed to the peace, safety, and public good of the people, and to nothing else': John Locke, Second Treatise, ed. Peter Laslett, (Cambridge: Cambridge University Press, 1960), (§131).

101 For useful discussion on these matters, see, e.g.: Raz, Joseph, "Rights and Individual Wellbeing," Ratio Juris 5, no. 2 (1992), 127-142; and, Finnis, John, "What Is the Common Good, and Why Does It Concern the Client's Lawyer," S. Tex. L. Rev. 40 (1999).

beyond those catering only to matters of urgent need) is in the general interests of the common good of groups of human beings, not least because such regimes enable vastly increased societal prosperity. However, this author contends that, on a Lockean account, the instituting of such regimes is not only in the interests of groups of human beings, it is also the case that, at least in some groups — such as the group of members of a democratic society — members have moral obligations to each other to set in place such regimes.

In terms of practicalities, however, it shall be assumed for now, as above, that the only way in which an individualistic framework like this one could be developed and applied in real life, at the moment, would be through an international process. And it seems likely, as above, that such a process would involve the acquisition of sets of plots of moon land by (or the allocation of sets of plots to) different nations. But this author shall leave gaps in the framework, representing the need for humanity to determine together the details of matters such as legitimate methods for acquiring space property rights, or for the members of different political societies to determine these details independently, as appropriate.

As above, this framework could be applied in different ways, for different purposes. Its main aim is simply to address the question of how it is that individuals could attain morally-justified property rights in space land. Further questions relating to matters such as how those rights should be protected in law is beyond the remit of this paper.

4.7 GENERAL APPROACH

The general approach proposed here reflects the principles of the Georgist land value tax model discussed above. This approach takes into account the way in which that model acknowledges the spe-

cial nature of land. This particularly relates to the limits of its supply, which remains a constraint regarding plots of land on the moon. But also the way in which a piece of land's societal value is typically dependent on matters outside the sphere of influence of its owner or user. The kinds of consideration that would usually arise in relation to this latter point — such as the quality of public-good provision, or proximity to economic hubs — may seem superficially irrelevant to moon land, but they are not. This is not least because, as above, even the most successful private space companies are typically still dependent on various kinds of state support, and whilst that particular dependence will likely reduce, other dependencies will continue, not least regarding the need for the legal protection of moral property rights.

4.8 USERS

In this framework, which enables the individual acquisition and holding of moon land plots, the status of the property-right-holder amounts more to the status of a renter than the status of a full owner. These 'renters' can acquire exclusive and exclusionary usage rights over their plots of moon land, but not the 'full ownership' of these plots in the sense of unconditional permanency of status (indeed, tenure is essentially temporary in the framework), or the ability to control and use land without condition or limits.

4.9 'RENT'

The first obvious question that arises in response to such an approach relates to whom it is that the renters of moon land plots would pay their rent. Normally, rent is paid to whomever it is who owns the rentable thing, but, as above, legally at least, nobody owns

the moon.[102] And it is not clear who it is — if anyone — who owns the moon in a moral sense. Following on from discussion above, however, there seem two promising options. Firstly, the moral 'owners' of the moon could be taken to be the whole of humankind (in that we currently lack any information regarding potential extra-terrestrial owners). This seems in line with the Lockean approach of 'common ownership'. But again, this comes with the problem of seemingly requiring the consent of all of these common-owners, in order for individuals to acquire and hold — even just in the sense of 'using', in an exclusive and exclusionary manner — any piece of this commonly-owned property.

Alternatively, the moon could be taken, on a Nozickian Lockean interpretation, to be 'unheld'. Now, as above, this option obviates the consent problem, but still leaves us unsure as to whom it should be who receives the rent. At this point, an obvious answer would be that no rent is due: that individuals should simply be able to acquire and hold at will. This, however, returns us to the problems of the 'first come first served' approach, on which the individuals who are

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102 Space land is typically referred to as 'res communis', owing to the wording of the 1967 Outer Space Treaty, although there is debate about the most appropriate term. Herzfeld et al claim that 'res communis' is inaccurate, and that Article 2 of the OST 'prohibits the conception of space as a res nullius or terra nullius', because, on Herzfeld et al's definition, those terms pertain to things that are 'not under the jurisdiction of a state' but are 'subject to appropriation', and the OST outlaws the 'potential' for the latter: Hertzfeld, Henry R., Brian Weeden, and Christopher D. Johnson, "How simple terms mislead us: the pitfalls of thinking about outer space as a commons," Moon 18 (1979). https://swfound.org/media/205390/how-simple-terms-mislead-us-hertzfeld-johnson-weeden-iac-2015.pdf. For the purposes of this paper, however, it is not just the current legal situation that is of interest. Beyond this, Erlak criticises uses of the alternative term 'terra nullius' on the grounds that 'since terra properly refers to Earth, one can refer to such objects of property as being luna nullius, astra nullius or maybe even caelestia nullius': Erlank, Wian, "Rethinking terra nullius and property law in space," Potchefstroom Electronic Law Journal 18, no. 7 (2015), 2503-2523.

privileged on Earth today, effectively remain privileged forever, and therefore the pressing need to ensure that the acquisition approach is just and equal.

To this end, after setting out the basic features of the framework, this paper shall address the two further Lockean problems discussed above — the just acquisition problem, and the equality problem — in order to defend why it is that it is proposed, as below, that 'renters' of moon land plots should pay their 'rent' into a fund that works to enable other individuals on Earth to compete against them for these plots. Of course, this is not technically 'rent', in the standard sense, as it is not paid to an actual owner or owners. Rather, the approach is premised on the recognition that everyone has equally strong potential claims to the land. Nonetheless, it seems simplest to refer to the payment as 'rent' for current purposes.

4.10 GENERAL AIM OF THE FRAMEWORK

The general aim of this framework is to enable individual human beings to acquire and hold space land in such a way (i.e. in an exclusive and exclusionary manner, at least regarding its use) that will be to their benefit, and the general benefit of humankind, without effectively precluding other individual human beings, who hold an equal potential right to this land, from being able to do so themselves. Indeed, this system works in such a way as to increase the number of individuals who will be able to compete to actualise this equally-held potential right.

4.11 FEATURES OF THE FRAMEWORK

- Individuals compete against each other for plots of land on the

moon;

- The basic competition consists in the paying of 'rent' for these plots;
- The size of the plots, and the rate of the rent, is variable dependent on supply and demand (i.e. these matters are continually determined by the market, in order to match successful competing parties with the amount and kinds of land available);
- Renters will own in full the profit they make from the use of their rented land;
- However, various conditions apply:
  - **Condition 1: Spoilage.** Renters must not destroy or remove parts of moon land, or the natural resources that form other parts of the moon or are found on the moon. Beyond this, a portion of the rent must go to the general upkeep of land (on the moon and on Earth), unless a user's usage of their plot of moon land improves the condition of that piece of land, in which case, an appropriate partial rent rebate should be given (determined by the price system, as above);
  - **Condition 2: Need.** Urgent human need must be taken into account when plots of land are awarded to competing potential renters, and this is built into the rent system. If it becomes the case that human beings' basic urgent needs (i.e. the need for sustenance and shelter) can be met through the use of moon land (i.e. if those in such need gain easy access to the moon), then people in urgent need will be able to compete to gain usage rights over moon land based solely on their situation of need (i.e. without needing to pay rent), for as long as they remain in urgent need. This means that they will at least temporarily (i.e. until their urgent needs are met) hold defeating claims to the ongoing usage rights of the surplus of existing legitimate users (i.e. whatever is not required to meet those users' own urgent need). However, until the situation of easy access to the moon arises, a portion of users' rent must go to meeting urgent

human need on Earth, unless a user's usage of their plot of moon land already serves to provide for those in urgent need on Earth, in some way (i.e. through the direct benefits of relevant scientific discovery), in which case, an appropriate partial rent rebate should be given;

- Providing the conditions above are met, then being the current user of a piece of moon land should count favourably (i.e. against competing users), if the land is being used in ways that are respectful to the general principles of the approach: i.e. the land is being well conserved; it is being laboured on productively, etc. Again, this can work through a partial rebate system;
- The 'rent' will be paid into a fund that will generally serve to enable an increasing number of individuals to compete for plots of moon land — not least through the democratisation of space travel. But as above, this will also help to meet current urgent need, and to ensure the conservation of land. Beyond this, a portion of the rent could also be set aside for other space goals that serve the common good, such as the general exploration of space;
- The details of the institution of the rent mechanism, as with all the details of the system, should be determined through some legitimate process by all potential users of the system — i.e. humankind, or, as above, more likely, members of the particular political societies that have acquired, or have been allotted, sections of the moon for use;
- As implied above, the governance of the system, and any arbitration matters, would, at least in the first instance, depend on international agreement, perhaps following models enabling the use of the (Earthly) sea.[103] But a more decentralised approach,

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103 It is often contended that the law of the sea has (further) relevance for space matters. See, e.g. Rogers, Rachel, "The Sea of the Universe: How Maritime Law's Limitation on Liability Gets It Right, and Why Space Law Should Follow by Example", Indiana Journal of Global Legal Studies 26, no. 2 (2019), 741–60, https://doi.org/10.2979/indjglolegstu.26.2.0741.

particularly with regards to details pertaining to particular parts of moon land, is also conceivable, whether it correlates with particular societies on Earth, or, in the long run, particular societies in space. For instance, a non-market-based approach to the allocation of plots and the rate of the rent could be conceived for use by societies legitimately preferring to order their economies in other ways.

4.12 THE JUSTIFIED ACQUISITION PROBLEM

This framework is premised on the idea that any 'first come first served' approach is unjust now and in the future. But it also recognises that, as per Locke, unless individuals are able to acquire property rights in the things they need and want, then basic human needs will not be met, and valuable opportunities for human progress will be squandered alongside the opportunity for the improved conservation of the potential objects of ownership. One advantage of this author's system, therefore, is that its temporary nature entails that chains of unjustified ownership cannot develop — such as those on Earth on which someone believes that they have legitimately acquired some piece of property, but they actually have not, because the property was, at some point in its history, illegitimately acquired or transferred.

4.13 THE EQUALITY PROBLEM

As above, a further problem with a 'first come first served' approach is that it offends against the particular principle of equality that is prized by classical liberals. This framework depends on the idea that all human beings have the equal potential right to acquire space land

— and that this holds even if you believe that this right is severely limited. Therefore, the framework acknowledges the fact that, at least at present, only a very small number of individuals would be able to realise the equally-held potential right to acquire space land. To this end, the framework works to enable a more equalised opportunity to compete over space land, in recognition of the way in which it seems wrong, for various reasons, to prevent individuals from realising their right to acquire, but it also seems wrong if their doing so precludes others from ever being able to do so themselves.

CONCLUSION

A clear, morally-justified, and efficient system for assigning and governing property rights in space would present vast benefits. These benefits include serious financial rewards for those who would become owners under such a system, and for the other direct and indirect beneficiaries of space ownerships. They also relate to the provision of valuable incentives for the responsible stewardship of space, as well as opportunities for new scientific discovery, democratised space exploration, and much more. The institution of such a system is overdue; matters remain frozen amidst complex legally-focused uncertainty.

In this paper, a framework is set out to enable individuals to attain morally-justified property rights in space, with a particular focus on plots of moon land. The general aim of this framework is to enable individual human beings to acquire and hold space land in such a way (i.e. in an exclusive and exclusionary manner, at least regarding its use) that will be to their benefit, and the general benefit of humankind, without effectively precluding other individual human beings from being able to do so themselves.

The basic shape of the framework is as follows. Individuals compete against each other for plots of land on the moon (that have most likely been initially acquired by, or assigned to, particular nations). The basic competition consists in the paying of 'rent' for these plots. The size of the plots, and the rate of the rent, is variable dependent on supply and demand. Renters own in full the profit they make from

the use of their rented land, and can use the land for any (morally-justified) purpose. However, certain conditions apply, relating particularly to the concerns of spoilage and urgent need; various related partial rent rebates come into play. The rent is paid into a fund that generally serves to enable an increasing number of individuals to compete for plots of moon land — not least through the democratisation of space travel — but also helps to meet current urgent need, and to ensure the conservation of land.

The system works in such a way as to increase the number of individuals who are able to compete to actualise their equally-held potential right to space land (something that would only be possible, at present, for a tiny number of individuals). This is in recognition of the way in which it seems wrong (and a massive missed opportunity) to prevent individuals from realising their right to acquire, but it also seems wrong if their doing so precludes others from ever being able to do so themselves. In this sense, the paper provides a rights-based classical liberal alternative to a 'first come first served' approach to the acquisition of 'unheld' land.