States in Space?: Extra-terrestrial Exercise of Jurisdiction and Its Future Scenarios

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Abstract

International space law, as part of the larger body of public international law, has always hinged upon the legal concept of the 'State' as the main relevant actor and carrier of direct rights and obligations. That concept has always been understood and defined with reference to States *on Earth*, which have been habitually defined in turn with reference to the sovereign control over territory *on Earth* as the most fundamental element of Statehood.

More recently, however, first a few major projects bent on exploitation of celestial bodies' natural resources, and then various plans to establish more broadly long-term human habitats on the Moon (and later on perhaps also Mars) arose. In such a context, the age-old definition of a 'State' and 'Statehood' comes under pressure, and the question arises whether the concept of States should be adapted to a future reality of human habitation of non-terrestrial areas.

1. Introduction – Space Law and 'the State'

Space law has always been perceived as a branch of law of a fundamentally international public character.[1] This made all the more sense given that outer space, the realm principally addressed by space law, was clearly of an international nature, often referred to as a *terra communis* or 'global commmons', and – at least initially – States were the only actors interested in developing the technology, spending the money and taking the risks involved in undertaking activities in outer space.[2]

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1 See further *e.g.* F.G. von der Dunk, International space law, in *Handbook of Space Law* (Eds. F.G. von der Dunk & F. Tronchetti) (2015), 29-32.

2 See further on this *e.g.* P. Jankowitsch, The background and history of space law, in *Handbook of Space Law* (Eds. F.G. von der Dunk & F. Tronchetti) (2015), 1-28.

Thus, the Outer Space Treaty,[3] the most fundamental legal document when it comes to the legal ramifications of space activities and ratified by all major spacefaring nations,[4] almost exclusively refers to the rights and obligations of States. They are, for instance, the entities entitled to benefit from the baseline freedom of space activities and free access to celestial bodies, while conversely they are also the ones being required to abstain from stationing or orbiting weapons of mass-destruction and militarization of celestial bodies.[5] They are, moreover, the ones responsible under Article VI for compliance of relevant categories of space activities with the Outer Space Treaty, and by proxy therefore with all of space law, as well as liable under Article VII for damage caused by such space activities as later elaborated by the Liability Convention.[6]

While international (intergovernmental) organizations at least have been mentioned twice by the Outer Space Treaty, Article VI still ultimately subsumes their activities under the international responsibilities of the States members of such organizations, whereas also Article XIII clearly envisages such organizations as vehicles for inter-State cooperation rather than as independent actors from a legal perspective. The concept of 'private (commercial) entities' is formally missing from the text altogether, although it is effectively subsumed under the term 'non-governmental entities' of Article VI – for the space activities of which again relevant *States* are then held internationally responsible! This almost exclusive focus on State rights and obligations also spilled over into the few widely ratified treaties following (and elaborating elements of) the Outer Space Treaty: the Rescue Agreement,[7] the aforementioned Liability Convention and the Registration Convention.[8]

All this did not raise profound fundamental issues in the legal realm either: States could use their universally accepted powers of territorial jurisdiction over all space activities conducted from national territory to legally control

3 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (hereafter Outer Space Treaty), London/Moscow/Washington, done 27 January 1967, entered into force 10 October 1967.

4 See A/AC.105/C.2/2023/CRP.3, of 20 March 2023, 5-12.

5 See, esp., Arts. I, II, IV, Outer Space Treaty (*supra* n. 3).

6 Convention on International Liability for Damage Caused by Space Objects (hereafter Liability Convention), London/Moscow/Washington, done 29 March 1972, entered into force 1 September 1972.

7 Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (hereafter Rescue Agreement), London/Moscow/Washington, done 22 April 1968, entered into force 3 December 1968.

8 Convention on Registration of Objects Launched into Outer Space (hereafter Registration Convention), New York, done 14 January 1975, entered into force 15 September 1976.

those, and in addition/alternatively could use their equally universally accepted powers of personal jurisdiction over all space activities conducted by national citizens and legal entities to legally control those, including as relevant those conducted by humans present in the extra-territorial realm of outer space itself.[9] Article VIII of the Outer Space Treaty in conjunction with the Registration Convention finally allowed States to extend their jurisdiction on a quasi-territorial basis to space objects registered with them, and even to 'any personnel thereof' who temporarily might find themselves physically outside of the space object at issue.

In other words: there was no profound need to question the continued applicability of the famous clause of Article II of the Outer Space Treaty, prohibiting any 'national appropriation by claim of sovereignty, by means of use or occupation, or by any other means' for the sake of allowing States to legally control relevant activities in outer space. They had other legal tools at their disposal to ensure some measure of justice and stability in outer space also when it came to the increasing private involvement of the private sector.

Exactly that premise, however, is currently coming under pressure by the multiple plans to go back to the Moon and on to Mars, presumably to stay for at least extended periods, and involving a number of States as well as some leading-edge private companies. Which is why it is time to reconsider to what extent this current paradigm of almost exclusively State-oriented law and the underlying concept of the 'State' as based on terrestrial territory, would still be appropriate, workable and/or necessary to guarantee that some sense of legal order and justice would prevail in outer space – given that Article II so far continues to disallow application of the legal concept of 'territory' to outer space.

2. The Concept of 'the State' in General Public International Law

In general literature on public international law, the concept of the State at least under the 'objective' theory[10] hinged on three indispensable and cumulative criteria: (1) a more or less delineated territory,[11] (2) a more or less

9 *Cf.* also § 2, Recommendations on national legislation relevant to the peaceful exploration and use of outer space, UNGA Res. 68/74, of 16 December 2013; which actually urges States to do so.

10 See *e.g.* M.N. Shaw, *International Law* (4th ed.)(1997), 139-a42; J. Crawford, *Brownlie's Principles of Public International Law* (8th ed.)(2012), 128-129; C. Warwick, States and Recognition in International Law, in *International Law* (Ed. M.D. Evans)(2003), 248-250.

11 Noting that legally speaking internal waters and the territorial seas, plus the airspaces above those, would also be included in that notion; *cf. e.g.* Art. 2, United Nations Convention on the Law of the Sea, Montego Bay, done 10 December 1982, entered into force 16 November 1994; resp. Arts. 1, 2, Convention on International Civil Aviation, Chicago, done 7 December 1944, entered into force 4 April 1947.

permanent population living on that territory; and (3) a more or less effective system of government over both. *'More or less'*, since border disputes (read disputes on the sovereignty over certain border areas), the temporary absence of population, or a temporary situation of domestic unrest or even civil war should not (automatically) disqualify an entity from being legally considered a State (although in the latter case it might question which government was formally entitled to represent that State).

A competing, 'constitutive' theory[12] argued that in addition a fourth criterion should be complied with before any entity should be considered a 'State' under public international law: a capacity to enter into international relations usually expressed by way of formal recognition by other States. This theory however runs into many practical problems of application. In today's world, for political reasons entities otherwise clearly qualifying as 'States' since complying with the other three objective criteria may not be formally recognized by many other States. Yet, how many States would then be required for formal recognition to amount to compliance with this fourth criterion? Conversely, for political reasons Palestine was to be treated as a State through a majority vote in the UN General Assembly a number of years ago, even if UN membership itself turned out not to be feasible, and was recognized by over 130 other States,[13] despite a clear lack of any level of effective governmental system of that 'State' until today over whatever territory and population were considered to be part thereof, as a result of the general political situation in the region. Furthermore, bringing this fourth criterion into the discussion also brings in the complicated discussion as to the legal differences between recognition of a *government* and recognition of a *State*.

It makes much more sense to leave the determination of what constitutes a 'State' to the three objective criteria, realizing at the same time that this only *allows* such a State to benefit from the usual prerogatives which come with being a State, such as membership of the United Nations, the right to become a party to international treaties and to establish diplomatic relations with all that entails, and sovereign immunities in judicial proceedings – but does not *guarantee* their actual enjoyment. The latter still depends upon policies and politics: being accepted as a UN member for instance requires a two-thirds majority of incumbent member States' votes in favour.[14]

12 *Cf. e.g.* Shaw (*supra* n. 10), 142-147; Crawford (*supra* n. 10), 143 ff.; Warwick (*supra* n. 10), 229-231, 236-250.

13 *Cf. e.g.* A.F. Kassim, Palestine Liberation Organization (PLO), in *The Max Planck Encyclopedia of Public International Law* (Ed. R. Wolfrum), Vol. VIII (2012), 29-31.

14 See Art. 18(2), Charter of the United Nations, San Francisco, done 26 June 1945, entered into force 24 October 1945.

With regard to the current issue, as it were it now turns out to be crucial that the concept of territory was so self-evidently referring to territory *on Earth* that it was not even considered necessary for this to be spelled out. Article II in any event confirmed that legally speaking the notion of 'territory' has no place in outer space, and the absence of humans on celestial bodies as such, let alone of semi-permanent habitation, conspired to relegating this issue to the realm of theory.

Now that this is rapidly changing however, up to the extent that some circles especially in the United States have started to call for a revision or deletion of Article II's ban on territorial appropriation of (parts of) outer space and otherwise for withdrawal from the Outer Space Treaty,[15] the question is whether this underlying, seemingly self-evident assumption would still hold true and if so, to what extent it should be presumed to be 'written in stone'.

After all, the (quasi-)permanent habitation of the Moon, scheduled to start within the next few years, *would* raise the fundamental question of whether any orderly development of such endeavours would not indeed require the traditional powers of a State over its territory, where the nationality of the humans involved in those settlement efforts and the quasi-territorial control over the spacecraft bringing them to the Moon might no longer suffice for such purposes.

It is therefore time to start imagining how likely it is for human settlement of the Moon to lead to situations where such a question – of whether to jointly recognize such a new type of State – would require answers. This paper will undertake such an initial analysis by looking at a few likely scenarios in this regard.

3. The Simple Scenario

The first scenario is the simplest one imaginable from an international-law perspective, in that basically only a single State is involved. The spacecraft delivering component parts of the habitat as well as the humans to initially populate the settlement are launched from and operated by the same State (or its private companies, still triggering that State's international responsibilities and liabilities pursuant to Articles VI and VII of the Outer Space Treaty and the Liability Convention) which thus will have to register both such spacecraft and the component parts used to start building the habitat, while the humans populating the settlement again are national citizens of that same State.

In this scenario, the nationality of the citizens continues to offer the State concerned the possibility to impose law and order upon the settlement through its time-honoured and universally accepted sovereign powers of

15 See Art. XVI, Outer Space Treaty (*supra* n. 3).

legislation, adjudication and enforcement[16] over its nationals, whereas the possibility to exercise such powers on a quasi-territorial basis over registered space objects and 'any personnel thereof' pursuant to Article VIII of the Outer Space Treaty and the Registration Convention in this scenario accrues to that same State.

In other words: the legal regime trying to establish and maintain justice and predictability with regard to any human activities in a lunar settlement emanates from a single State, and addresses the activities of humans culturally, socially and legally accustomed to, even having largely internalized, whatever particular versions of justice and predictability normally have dictated the details of that legal regime.

Initially, therefore, likely there will be little conflict with respect to such a legal regime emanating from the 'home State' of all humans and efforts concerned. No need to, somehow, apply territorial jurisdiction to such habitats therefore. Only over time, when truly permanent habitation is achieved, the ties of the settlers with the terrestrial home State start to loosen, and with the option of ever returning to Earth receding into the distance or at best becoming an exception and ultimately perhaps new humans being conceived and born on the Moon, this might change.

This, more or less at the same time when arguably the foundational rule of Article II of the Outer Space Treaty that, whatever you do on the Moon, it cannot amount to 'national appropriation' of any part thereof, would start to fundamentally question the legal appropriateness of such a long-term occupation of a particular spot on the Moon. Likewise more or less at the same time, the extension of space-object-registration-based jurisdiction over 'personnel thereof'[17] may well lose its inherent logic of application, since it no longer concerns short-duration EVAs such as Moon walks or space walks.[18]

In a broad sense similar to what happened for instance with British settlers on the Atlantic coasts of North America in the course of the 18th century, at some point further into the future there may be increasing calls for independence. This would be where the question arises in full force: would settlements on an extra-terrestrial part of the universe be able to secede (hopefully without a military conflict, with the motherland readily and peacefully agreeing to relinquish both legal controls and legal responsibilities

16 Noting of course that actual adjudication and enforcement normally require the human targets of the exercise of such sovereign jurisdictional prerogatives to be on the territory, or at least within the control, of the State concerned; otherwise, the traditional international legal mechanism of 'extradition' has to be used for such purposes.

17 Art. VIII, Outer Space Treaty (*supra* n. 3).

18 See further *infra*, § 4.

and liabilities) and establish its own governance construct along the same lines as the United States arose from the seceding colonies of Britain? Would it be recognized more broadly as such as well?

It would be hard to envision such developments to lead to anything other than a new entity which can provide a major level of order and justice for at least the overwhelming part of the population concerned, with certain powers based on a form of 'social contract' to make sure order and justice are actually maintained and protected against both inside and outside interference and threats, and a more or less clear delineation as to whom and where those powers can be exercised. In other words, a State – whether you would formally call it that or not. No private corporation, no matter how large, rich, powerful or comprehensive in its activities, can come even close to doing that job.

It bears noting again, that given the cultural, social, historical and linguistic uniformity of the population making up the seceding settlements, the legal order of such an extra-terrestrial governance entity initially will tend to largely copy that of the motherland and only tinker immediately with those aspects specific to living on the Moon as being behind the dissatisfaction giving rise to the secession in the first place. Just like, for instance, the United States became a common law society very much growing out of the British common law societies.

Following from this, finally, it may be assumed that most likely, once the motherland would accept such a secession as well as the legal status of being a 'State' for such a seceding settlement, other States would not have much of a problem in accepting such a status as well – except if they are not willing to accept that the same might then also happen to 'their own' extra-terrestrial settlements. Conversely, however, the innate need – given the increasing likelihood that a number of lunar settlements originating from different terrestrial motherlands might come to be developed on different but potentially neighbouring areas on the Moon – to 'cordon off' at some point the area where such a 'State' would be entitled to exercise relevant powers of a jurisdictional nature, would clearly call for delineating a particular piece of 'lunar territory' legally speaking.

4. The More Complicated Scenario

A more complicated scenario would have one State involved in the activities of launching spacecraft with component parts of the habitats to be built and the humans to live there, but with such humans at the same time being citizens from different States. In particular private companies would normally seek to transport anyone regardless of nationality as long as paying for the ride, and thus easily give rise to multi-national and multi-cultural settlements on the Moon or elsewhere.

Certainly initially, the first State mentioned would continue to exercise legal control. Its exclusive involvement in the launch activities would make it the only State internationally responsible for compliance thereof with applicable law and required to authorize and continuously supervise,[19] as well as internationally liable for damage caused by the spacecraft concerned.[20] Being the only relevant launching State in this scenario, moreover, that State would also be required to register such spacecraft,[21] and by that token can use quasi-territorial jurisdiction not only over the spacecraft itself – including to the extent becoming part of the settlement's structures and facilities – but also over any personnel thereof, likely including any humans on board with nationalities of other States.

Note that 'personnel of a space object' has so far usually been equated with 'astronauts', where it may be questionable whether that epithet should apply also to humans on board not involved as such in operating the spacecraft, hence not normally considered 'personnel' in any meaningful sense of the word.[22] This raises the issue of whether such travelers on future emigration missions to the Moon would indeed be automatically covered by the jurisdictional clause of Article VIII of the Outer Space Treaty.

Apart from a theoretical intertemporal interpretation of the phrase, however, it should be noted that in allowing an otherwise 'national' spaceflight operation to include foreigners, the State concerned would likely impose some conditions which either *de jure* or *de facto* amount to acceptance of that State's jurisdiction, at least for the duration of the journey and as long as the sojourn on the Moon would still require regular visits to the spacecraft at issue. Thus, for instance, the United States already requires from 'spaceflight participants', in order to allow private operators to carry them into outer space, the signature of an informed consent clause,[23] which should be viewed as a proper recognition by the spaceflight participant at issue of the entitlement of the US authorities to exercise legal control over them at least to that extent.

On the other hand, those foreigners would not likely escape any effort of their respective home States to (continue to) exercise personal jurisdiction merely by accepting such quasi-territorial jurisdiction of another State. This may give rise to such persons being subject to potentially incompatible or conflicting legal regimes at least in theory, noting that extradition might again be required before such home-State jurisdiction could then effectively be applied.

19 As per Art. VI, Outer Space Treaty (*supra* n. 3).

20 As per Art. VII, Outer Space Treaty (*supra* n. 3), *juncto* esp. Arts. II, III, Liability Convention (*supra* n. 6).

21 As per Art. VIII, Outer Space Treaty (*supra* n. 3), *juncto* esp. Art. II, Registration Convention (*supra* n. 8).

22 See further on this *e.g.* F.G. von der Dunk, Legal aspects of private manned spaceflight, in *Handbook of Space Law* (Eds. F.G. von der Dunk & F. Tronchetti) (2015), 708-712.

23 *Cf.* 51 U.S.C., § 50905(b)(5).

More profoundly when it comes to long-term habitation projects such as currently being envisioned, certainly if visits to the original spacecraft are no longer necessary or desirable the original willingness of such foreigners to subject them to the registration State's jurisdiction, laws and regulations, may soon evaporate – alongside the willingness to abide by their home State's personal jurisdiction, being so far away from that original home State.
It should be pointed out in this respect that the quasi-territorial jurisdiction under Article VIII of the Outer Space Treaty and Article II(2) of the Registration Convention only applies to 'object[s] launched into outer space', although when it comes to ownership, the same Article does provide for inclusion of 'objects (…) constructed on a celestial body', presumably or at least arguably including those constructed from *in situ* resources.
Once in a certain lunar settlement the *communis opinio* would start to move towards the denial of relevance and applicability of terrestrial State regimes as discussed earlier, whether that of the original State of registration or of the other States of nationality involved, however, the situation remains more complex under this scenario.
Ideally speaking such a new governance entity would develop as a peaceful compromise of the various legal orders of the original motherlands back on Earth. Unfortunately, judging from historical experience on that same Earth, in view of the involvement of citizens from different terrestrial backgrounds and their terrestrial States possibly having different views about, and interests in the context of the establishment of a new extra-terrestrial governance entity, that is certainly not a given.
This, however, in turn does not take away from the fact that ultimately such a new governance entity on the Moon would, if it would have any particular role to play in minimizing threats to justice and stability, have to look suspiciously similar to a State. And given that the ultimate interests of possibly competing States in terms of having (former) citizens with their cultural, social and political DNA involved, may lie in at least seeing that no *other* State's culture, social system and political philosophy would become utterly dominant, allowing for the new entity to achieve full independence might well become an acceptable compromise. The (initially) multi-cultural nature of such a settlement consequently in turn also might require a clearly delineated 'territory', virtually, mentally and almost visibly overriding any lingering cultural, social and political loyalties to terrestrial nationalities.

5. The Really Complicated Scenario

Taking the hypothetical analysis one step further still, a really complicated scenario would involve a number of States not only in the sense of having their nationals traveling to the Moon to settle there, but also in having their spacecraft (or those of their private operators, for which they remain in principle responsible and liable under Articles VI and VII of the Outer Space

Treaty and the Liability Convention) involved in transporting these terrestrials there as well as in developing parts of the lunar settlement both with component parts similarly transported from Earth and with parts using from *in situ* resources.

This scenario would clearly raise the spectre of a number of States immediately competing for exercising legal control given the fundamental involvement of their space objects and the right to exercise quasi-territorial jurisdiction going with it, with no more or less clearly delineated 'leadership position' for one or the other, as further aggravated by the added involvement in this scenario of economic interests of the various motherlands back on Earth in the resources being (potentially) mined there.

Clearly, in this context achievement of international agreement on establishment of a new 'State' might politically speaking become much more problematic – at the same time as it might prove to be legally speaking the most effective solution of settling any competitive interests. Providing territories on Earth with an 'international status' – that is, denying any single State sovereign jurisdiction over them and by contrast having them administered by some international governance body – has largely been applied as a temporary measure[24] and even then gave rise to many complexities and conflicts of States having a stake there. For a major part, however, that was due to the facts that there had been permanent populations in those areas for centuries or even millennia, and that existing States had previously legally controlled or attempted to legally control that area for almost as long.

Certainly in the longer run, allowing a *new* State to arise rather than having existing ones continue to compete or even battle for control might actually be easier on the Moon, given the fundamental differences between living on the Moon and living on Earth, which may ultimately cause the original multi-cultural and multi-national inhabitants to draw closer together and unite to cut off any jurisdictional ties with their terrestrial motherlands.

6. Concluding Remarks

In conclusion, it seems that indeed the development of 'extra-terrestrial States' would be inevitable, or at least a preferred and logical solution in the context of long-term human settlement on the Moon and would similarly carry with an almost inevitable delineation of 'territories' over which such 'States' would exercise what would effectively equate with 'territorial sovereignty'. This brings us back to the overarching question: what about

24 See R. Wolfrum & J. Pichon, Internationalization, in *The Max Planck Encyclopedia of Public International Law* (Ed. R. Wolfrum), Vol. VI (2012), 221-226; M. Benzing, International Administration of Territories, in *The Max Planck Encyclopedia of Public International Law* (Ed. R. Wolfrum), Vol. V (2012), 316-332.

Article II of the Outer Space Treaty and its fundamental role in trying to keep celestial bodies outside of any race for colonies?

Following more theoretical discussions on concepts such as 'intertemporal law'[25] and 'fundamental change of circumstances'[26] with regard to the lack of any express limitation of the prohibition of appropriation of outer space by States to States *on Earth*, that is with their territories, populations and governments being *on Earth*, it is precisely that main purpose and focus of Article II which would allow for the establishment of a new concept in international law: of an extra-terrestrial State exclusively existing on extra-terrestrial territory with an extra-terrestrial population and an extra-terrestrial government – *since it would be ultimately conducive to avoiding conflicts over lunar 'territories' rather than incentivizing them.*

While on Earth the problem with colonial land-grabbing had been that the presence of indigenous people was largely ignored so as to legitimize control by the colonizing powers, there are no indigenous people on the Moon, while conversely precisely the establishment of permanent human settlements would now allow compliance with the second criterion of Statehood: a more or less permanent population. Would it not follow logically then that also a more or less effective form of government, the third criterion, would arise, even be called for? Which then in turn should be acknowledged as legitimately exercising the attendant competencies within a certain geographical realm, whether we call it 'territory' – the first criterion – or not.

In any event it should be clear that if ultimately the majority of spacefaring States, in particular including the leading ones, would agree on the possibility of a 'State' being largely or entirely based on 'extra-terrestrial territory', there would be no innate and unsurmountable obstacle to prevent them from recognizing any relevant new legal governance entity in outer space to constitute such a 'State', allowing it to benefit from the traditional prerogatives of that status and for instance allow it to become a member of the United Nations.

This, even if it means that Article II of the Outer Space Treaty might need to be amended[27] as to its precise wording or at least be re-interpreted as stating an obligation *only* for terrestrial States to legally colonize the Moon to avoid all further misunderstandings and misconceptions in this regard – since it was, after all, drafted primarily to avoid spacefaring nations from renewing the era of colonization of Earth and fierce, including armed competition for colonies and resources, by competing for new 'colonies' on celestial bodies.

25 *Cf. e.g.* M. Kotzur, Intertemporal law, in *The Max Planck Encyclopedia of Public International Law* (Ed. R. Wolfrum), Vol. VI (2012), 278-282.

26 *Cf.* already Art. 62, Vienna Convention on the Law of Treaties, Vienna, done 23 May 1969, entered into force 27 January 1980.

27 *Cf.* Art. XV, Outer Space Treaty (*supra* n. 3).