
‘Other Spaces’: Constructing the Legal Architecture of a Cold War Commons and the Scientific-Technical Imaginary of Outer Space

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Abstract

In this article, I seek to develop the argument that the law of outer space, as it was to be developed during the 1960s and 1970s, configured outer space as a ‘commons’ in order to displace two prevailing ‘dystopic’ socio-technical imaginaries that were to be associated with the Cold War. One of these was that outer space might become a place of warfare – and, more specifically, a warfare of annihilatory proportions between the two main protagonists of the Cold War; the other, that it might be the object of ‘primitive accumulation’. Drawing upon the work of Herbert Marcuse, I argue that, whilst the nascent code of outer space visibly sought to repress both of these possibilities, it did so by bringing into play a particular ‘technological rationality’, in which each of these aversions were to reappear as sustaining configurations – as what might be called the rational irrationalities of a Cold War commons.

1 Introduction

It is a strange feature of the contemporary world that so many of its operative configurations appear increasingly to be organized through the medium of a technology that is, almost by definition, ‘unearthly’.¹ Satellites have revolutionized life on the planet – from global communications, to navigation, to meteorology, cartography,

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¹ S. Graham, *Vertical: The City from Satellites to Bunkers* (2016), at 26.

surveillance and, ultimately, warfare.² Their effects are felt everywhere – configuring travel and trade, production and consumption, leisure and work, the accumulation of knowledge and its dissemination – yet their ghostly presence at the outer edges of the atmosphere positions them outside our experience of everyday life. Even more pertinently, despite their centrality to the everyday life of political, social or cultural affairs, their management and control rarely enters the conscious circuits of public debate or scrutiny.³

If we may be relatively unconscious as to the everyday significance of the extra-terrestrial organization of social life through the medium of the satellite, we may be far more conscious of the spectacular backstory – of the Cold War space race, of the launch of Sputnik in 1957, of Uri Gagarin and of *Apollo 11*. We might equally be aware of the myriad of contemporary projects that have revitalized interest in outer space in recent years – from the space tourism programme of Virgin Galactic, to projects directed towards the mining of asteroids (Planetary Resources and Deep Space Industries), and the ever more ambitious, and far reaching, programmes of inter-planetary colonization envisaged by companies such as SpaceX.

Of the enabling resources for all such activities, the technological and the imaginative are characteristically at the forefront, evidenced in one direction by developments in rocketry and robotics, in miniaturization and 3D printing and, in the other, by the ongoing production of books and movies in the ever popular genre of science fiction. Of relevance also, however, has been the facilitative environment of law: first, in the construction of a regime for outer space that configured it as a ‘commons’ – as the ‘province of humankind’ or its ‘common heritage’ – open to peaceful exploration and use on the part of all and in the interests of all, and, second, in the enactment of enabling legislation in various states – including the USA and Luxembourg – which have sought to encourage the commercial space resource industry and sanction, in the process, the private appropriation of outer space resources.⁴

In the course of this article, I want to develop the argument that the code for outer space, as it was to be developed during the 1960s and 1970s, configured outer space as a ‘commons’ in order to displace two prevailing ‘dystopic’ socio-technical imaginaries.⁵ One of these was that outer space might become a place of warfare – and, more specifically, a warfare of annihilatory proportions between the two protagonists in the Cold War; the other, that it might be the object of ‘colonization’, ‘appropriation’, and/or ‘primitive accumulation’. I argue that whilst the code itself visibly sought to repress both of these possibilities, it did so by bringing into play a particular ‘technological rationality’ in which each of these aversions were to reappear as sustaining configurations – as the rational irrationalities of a Cold War commons.

² D. Millard, *Satellite: Innovation in Orbit* (2017).

³ Graham, *supra* note 1, at 27.

⁴ See, e.g., US Commercial Space Launch Competitiveness Act (2015) HR 2262; Loi du 20 juillet 2017 sur l’exploration et l’utilisation des ressources de l’espace, Journal Officiel no. 674 (28 July 2017).

⁵ On the productive role of socio-technological imaginaries, see S. Jasanoff and S.-H. Kim, *Dreamscapes of Modernity* (2015), at 4, in which they describe such imaginaries as ‘collectively held, institutionally stabilized, and publicly performed visions of desirable futures’.

2 Outer Space and the Socio-Technical Imaginary

Prior to the time in which H.G. Wells was to popularize the term at the end of the 19th century, 'outer space' was not so much 'outer' space (connoted by a clean demarcation between the atmosphere and that which lay beyond) as a frontier of knowledge and experience, which delineated the earth from the heavens, the known from the unknown, the proximate from the remote and the real from the apparent.⁶ What was to encourage or enable outer space to gain its prospective specificity were developments in the science and technology of flight. Key advances in the understanding of fluid dynamics, wing design and technologies of propulsion provided the conditions of possibility that enabled a practical demarcation between a space that might be moved through or within (a socialized space of kinds) and that which existed only as a site of speculative or imaginative endeavour. 'Air space' was thus to be the preserve of the balloonists and early flight pioneers; 'outer space' that of the nascent amateur astronautic societies⁷ and authors of the emergent genre of science fiction (Jules Verne,⁸ H.G. Wells,⁹ Kurd Laßwitz¹⁰ and Konstantin Tsiolkovsky¹¹). If, for the latter, it was the anticipated feats of scientific and technological ingenuity that provided the groundwork for their fictive accounts of journeys to the moon or encounters with other species (in space ships shot out of guns or spheres coated with anti-gravity material); for the former, it was the inspiration provided by those fictional accounts that both encouraged and directed their scientific and technical energies, shaping their imaginative objectives and refining the operative modalities.

Whilst the central obsession of science fiction authors and rocket enthusiasts alike was the supersession of the boundaries of earthly knowledge and experience – and the development of a set of technologies by means of which they might be traversed – the obsession of governmental advisors and lawyers was its opposite: how to secure state authority by delineating and categorizing the space that technology had threatened to open up. Whereas science fiction looked beyond the space of sovereignty, or sought to efface or provincialize it in the cosmic imagination, the architects of sovereignty sought to render mundane all such imaginings. For it was not just the ability to fly that was at stake, or, indeed, the commercial opportunities that aeronautics seemed to open out, but, rather, the security of the state that had become ever more vulnerable as a consequence of the opportunities for surveillance, espionage and new forms of warfare that flight enabled.¹²

⁶ See, e.g., A. von Humboldt, *Cosmos* (1865) I, at 66.

⁷ E.g., the Verein für Raumschiffahrt (VfR), the British Interplanetary Society and the American Interplanetary (Rocket) Society, the Gruppa izucheniya reaktivnogo dvizheniya and the Wissenschaftliche Gesellschaft für Höhenforschung. The work of these societies was heavily influenced by the work of Konstantin Tsiolkovsky, Robert Goddard, Hermann Oberth, Herman Potocnik and Robert Esnault-Pelterie.

⁸ E.g., J. Verne, *From the Earth to the Moon* (1865).

⁹ E.g., H.G. Wells, *The War of the Worlds* (1897).

¹⁰ K. Laßwitz, *Two Planets* (1897).

¹¹ K. Tsiolkovsky, *Dreams of Earth and Sky and the Effects of Gravitation* (1896).

¹² See M. Neocleous, *War Power, Police Power* (2014); T. Hippler, *Governing from the Skies* (2017).

In the early years of the 20th century, then, jurists turned their attention to defining, as Harold Hazeltine put it, ‘the rights of states in the column of air superincumbent upon the earth’s surface of land and sea’,¹³ and their main concern was to strike a balance between the prospective commercial opportunities of air flight and the security interests that were likely to be engaged by unrestricted overflight. In the ensuing dialogue the old *mare liberum/mare clausum* debate was re-enacted in relation to airspace (the ‘second battle of the books’, as it was called¹⁴), with jurists lining up on either side. Some, like Paul Pradier Fodéré and Ernest Nys, argued that airspace was incapable of being subject to sovereign control; others, like Joachim von Holtzendorf and Paul Fauchille, argued that sovereignty extended into airspace, at least as far as the technology of policing allowed.¹⁵ Of the various ‘juridical societies’ that were to turn their attention to the issue in the years before 1914 (the Institut de Droit International, the Congresso giuridico internazionale per il regolamento della locomozione aerea, the Comité juridique international de l’aviation and the International Law Association), the ‘solution’ was typically either to declare the skies to be ‘free’, subject to a right of regulation in the name of security,¹⁶ or to declare them to be an intrinsic space of sovereignty subject to a right of civilian overflight or ‘innocent passage’.¹⁷ The terms of the 1919 Paris Convention on Aerial Navigation – followed in 1944 by the Chicago Convention on Civil Aviation – broadly opted for the latter, proclaiming that every state had ‘complete and exclusive sovereignty over the air space above its territory’ whilst providing for a right of overflight subject, in both cases, to limitation ‘for reasons of military necessity or public safety’.¹⁸ There was no right of overflight for military/‘state’ aircraft¹⁹ nor for unmanned aircraft,²⁰ and contracting parties were entitled to prohibit or regulate both the overflight of certain areas and the use of photographic equipment.²¹

Whilst the new field of air law provided grounds for states to lay claim to the airspace above their territory, what it did not take account of was the development of rocket technology in the interwar years and the popularizing zeal of the early ‘Astrofuturists’,²² such as David Lasser,²³ Willy Ley²⁴ and Wernher von Braun. By the

¹³ H. Hazeltine, *The Law of the Air* (1911), at 6.

¹⁴ English, ‘Air Freedom: The Second Battle of the Books’, 2 *Journal of Air Law* (1931) 356.

¹⁵ See generally Sand *et al.*, ‘An Historical Survey of International Air Law before the Second World War’, 7 *McGill Law Journal* (1960–1961) 24; Hazeltine, *supra* note 13, at 9–29.

¹⁶ Fauchille’s solution. ‘Régime Juridique des Aérostats’, 19 *Annuaire de Institut de droit international (AIDI)* (1902) 19, at 32.

¹⁷ Westlake’s solution. ‘Régime des Aérostats et de la Télégraphie sans fil’, 21 *AIDI* (1906) 293, at 297.

¹⁸ Convention Relating to the Regulation of Aerial Navigation (Paris Convention) 1919, 11 LNTS 173, Art. 1; Convention on International Civil Aviation (Chicago Convention) 1944, 15 UNTS 295.

¹⁹ Paris Convention, *supra* note 18, Arts 30–32; Chicago Convention, *supra* note 18, Art. 3.

²⁰ Chicago Convention, *supra* note 18, Art. 8.

²¹ Paris Convention, *supra* note 18, Art. 27; Chicago Convention, *supra* note 18, Art. 36.

²² D. Kilgore, *Astrofuturism: Science, Race and Visions of Utopia in Space* (2002). As he describes it, astrofuturism was a ‘tradition of speculative fiction and science writing inaugurated by scientists and science popularizers’ which drew upon the rich history of science fiction but was ‘distinguished by its close connections to engineering projects funded by the government and military’ (at 2).

²³ See, e.g., D. Lasser, *The Conquest of Space* (1931).

²⁴ W. Ley, *Rockets, Missiles and Space Travel* (1951 [1944]). Ley was founder of the VfR.

end of World War II, and largely as a consequence of the German adaptation of that technology in the development of the V2 rockets, it became evident not only that it would be technically possible to launch a projectile into the extra-atmospheric void (outer space), but also that such a possibility would open up an entirely new set of legal problems that the rules of air law were barely capable of answering.

In a highly influential series of articles initially published in *Colliers* magazine in 1951,²⁵ Wernher von Braun (the former head of the V2 Rocket programme in Germany, later to become director of the National Aeronautics and Space Administration [NASA]), together with a pre-eminent group of US scientists, drew attention to the technological and scientific possibilities of establishing an orbital space station as a platform for the 'conquest of space'. In a companion contribution entitled 'Who Owns the Universe?', Oscar Schachter set out what he saw to be the new challenges. The problem, as he saw it, was twofold. First, and drawing upon the history of colonial expansion, he speculated that the pathologies of territorial rivalry might well be extended to 'the heavens themselves', leading to the planting of flags and claims of sovereignty over the moon and other celestial bodies: 'We might then be reading of lunar "Washingtons" and "New Yorks", perhaps of King George mountains and Stalin craters'.²⁶ In the second place, he suggested that there was a need for rules governing 'rocket ships and space stations'; 'will they be free to move about', he asked, 'laden with weapons of mass destruction, high above peaceful nations?'²⁷

The answer to the first of these problems, as Schachter saw it, was to eliminate the problem of sovereignty by extending to outer space the same principles that applied with respect to the high seas – to render it 'the common heritage of humanity',²⁸ allowing 'free and equal use rather than exclusive possession'.²⁹ This would, in his view, stave off claims of sovereignty, but would not, at the same time, entirely preclude the possibility of claiming ownership over resources were they to be extracted. In this respect, he drew upon the analogy of the rules relating to 'sedentary fisheries' on the high seas (pearl, oyster and sponge beds and coral deposits). In that context, however, there would have to be a requirement that all spacecraft have a nationality and a flag so as to enable the extraterrestrial (as opposed to merely extraterritorial) application of national laws regulating activities on board (including radio or television broadcasting). Spacecraft seeking to evade that rule, he added, would be subject, like pirates of old, to seizure by any government able to lay hands on it.³⁰

A much more difficult problem, he admitted, concerned the possibility of spacecraft being equipped with 'bombs of mass destruction'.³¹ He doubted the possibility of

²⁵ Subsequently published as C. Ryan (ed.), *Across the Space Frontier* (1952) with contributions from Joseph Kaplan, Wernher von Braun, Heinz Haber, Willy Ley, Fred Whipple, Oscar Schachter and Sir Harold Spencer Jones.

²⁶ O. Schachter, 'Who Owns the Universe?', in C. Ryan (ed.), *Across the Space Frontier* (1952) 118, at 121.

²⁷ *Ibid.*, at 118.

²⁸ *Ibid.*, at 131.

²⁹ *Ibid.*, at 121–122.

³⁰ *Ibid.*, at 125.

³¹ *Ibid.*, at 126.

outlawing completely the use of outer space for military purposes, but he did suggest that satellite space ships might be used as an ‘implement of peace and security rather than of war’. Recalling the Baruch plan of 1946, he suggested that it ‘might not be far-fetched’ to envisage the use of satellite photo reconnaissance for purposes of regulating armaments and atomic energy as part of an international control system.³² But, of course, that would require an international treaty, and it was unlikely that governments ‘will undertake to negotiate such a treaty, or even to consider the issue, until circumstances have made it an actual problem’.³³

The final problem to which Schachter drew attention was that of ‘delimiting’ outer space or, to put it in other terms, of determining the vertical extent of territorial sovereignty.³⁴ Here, he noted that the old Roman law notion that property, and, hence, sovereignty, extended upwards ‘*usque ad coelum*’ encountered very real limits when applied to a satellite in orbit ‘moving 1,075 miles above the rotating earth at 15,840 miles per hour’.³⁵ And he proposed, instead, that the limit should be fixed at the upper boundary of the airspace (wherever that lay) beyond which no nation would be permitted to exercise dominion.

3 The Code for Space

Schachter’s account of the legal questions that he saw to be on the horizon in the development of space technology was remarkably prescient, anticipating by over a decade many of the key features of the new code for outer space that was developed in the aftermath of the launch of Sputnik I on 4 October 1957. If the Sputnik launch inaugurated a space race between the two principal Cold War powers that was to endure at least until the *Apollo 11* moon landing in 1969, it also mobilized a series of legal and institutional initiatives beginning with the formation, in the following year, of what became the Committee on the Peaceful Uses of Outer Space (COPUOS).³⁶ Over the next two decades, in addition to the establishment of both national and international space agencies,³⁷ five treaties were concluded (the Outer Space Treaty [1967],³⁸ the Rescue Agreement

³² *Ibid.*

³³ *Ibid.*, at 127.

³⁴ *Ibid.*, at 128.

³⁵ *Ibid.*, at 129.

³⁶ GA Res. 1348 (XIII), 13 December 1958. It was initially established as an ad hoc committee, but was later made permanent. Report of Ad Hoc COPUOS, UN Doc. A/4141, 14 July 1959.

³⁷ Current international agencies include: International Telecommunication Union (1865, 1992); International Telecommunications Satellite Organization (1971); Intersputnik Organization of Space Communications (1971); European Space Agency (1975); Arab Satellite Communications Organization (1976); Council on International Cooperation in the Study and Utilization of Outer Space (1976); International Mobile Satellite Organization (1976); European Telecommunications Satellite Organization (1982); European Organization for the Exploitation of Meteorological Satellites (1983).

³⁸ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies 1967, 610 UNTS 205; see generally Vlasic, ‘The Space Treaty: A Preliminary Evaluation’, 55 *California Law Review* (1967) 507; Lachs, ‘The International Law of Outer Space’, 113 *Hague Recueil* (1964) 1; J. Fawcett, *International Law and the Uses of Outer Space*

[1968],³⁹ the Liability Convention [1972],⁴⁰ the Registration Convention [1978]⁴¹ and the Moon Treaty [1979],⁴² and a slew of United Nations (UN) General Assembly resolutions adopted (including, in particular, the 1963 Declaration of Legal Principles Governing Activities of States in the Exploration and Use of Outer Space [Declaration on Outer Space]).⁴³ A new field of legal study and expertise came into being, its tentacles spreading, alongside the technology that accompanied it, into the fields of telecommunications, surveillance, meteorology, navigation, arms control and cartography.

One of the initial tasks assigned to COPUOS in 1958 was to 'study the nature of the legal problems which may arise from the exploration of outer space',⁴⁴ and it was immediately apparent that two issues were at the forefront: first, the question of ownership or sovereignty in outer space and, second, the problem of its potential militarization.⁴⁵ These, of course, were not unconnected; it being perfectly obvious to all concerned that the legitimate use of outer space for military purposes depended in the first instance upon the resolution of the issue of sovereignty. And the problem encountered was that both the Paris Convention of 1919 and the Chicago Convention of 1944 had, in almost identical terms, set out the principle that every state enjoyed 'complete and exclusive sovereignty over the airspace above its territory'.⁴⁶ Whilst the

(1968); G. Zhukov and Y. Kolosov, *International Space Law* (1984); B. Cheng, *Studies in International Space Law* (1997); F. Lyall and P. Larsen, *Space Law: A Treatise* (2009); M. Lachs, *The Law of Outer Space: An Experience in Contemporary Law-Making*, edited by T. Masson-Zwaan and S. Hobe (2010).

³⁹ Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space 1968, 672 UNTS 119.

⁴⁰ Convention on International Liability for Damage Caused by Space Objects 1972, 961 UNTS 187.

⁴¹ Convention on Registration of Objects Launched into Outer Space 1975, 1023 UNTS 15.

⁴² Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Moon Treaty) 1979, 1363 UNTS 3. Various other multilateral space-related treaties include: Treaty Banning Nuclear Weapons in the Atmosphere, in Outer Space and under Water 1963, 480 UNTS 43; Convention Relating to the Distribution of Programme-Carrying Signals Transmitted by Satellite 1974, 1144 UNTS 3; International Space Station Agreement 1998, KAV 5899.

⁴³ GA Res. 1962 (XVIII), 13 December 1963. Since the 1980s, the United Nations (UN) General Assembly has adopted three sets of principles relating to the use of satellites for direct television broadcasting (GA Res. 37/92, 10 December 1982); remote sensing (GA Res. 41/65, 3 December 1986) and the use of nuclear power in outer space (GA Res. 47/68, 14 December 1992). It also adopted, in 1996, a Declaration on International Cooperation in the Exploration and Use of Outer Space, GA Res. 51/122, 13 December 1996 and a Resolution on the Prevention of an Arms Race in Outer Space, GA Res. 62/20, 5 December 2007.

⁴⁴ GA Res. 1348 (XIII), 13 December 1958.

⁴⁵ See, e.g., Ryan, 'Introduction', in J. Kaplan *et al.*, *Across the Space Frontier* (1952) xi, at xiii: '[A] ruthless power established on a space station could actually subjugate the peoples of the world. Sweeping around the earth in a fixed orbit like a second moon, this man-made island in the heavens could be used as a platform from which to launch guided missiles. Radar-controlled projectiles armed with atomic war heads could be fired at any target on the earth's surface with devastating accuracy, and because of their enormous speeds and relatively small size, it would be almost impossible to intercept such missiles.'

⁴⁶ Chicago Convention, *supra* note 18, Art. 8 also prohibited overflight by pilotless aircraft, which led to some discussion as to what constituted an aircraft for such purposes. Annex 7 to the Chicago Convention dealing with aircraft nationality defined an aircraft as 'any machine that can derive support in the atmosphere from the reactions of the air', which presumably excluded extra-atmospheric craft. See generally Cooper, 'Legal Problems of Upper Space', 23 *Air Law and Commerce* (1956) 308.

launch of Sputnik appeared to demonstrate a general acquiescence in the overflight of ‘peaceful’ satellites,⁴⁷ a vigorous debate nevertheless broke out concerning the question as to where sovereignty over airspace might end and how it might be delimited. The solutions varied – some configured around the terms of the Chicago Convention, others based upon technical capabilities of aircraft or the scientific characteristics of the atmosphere (the Karman Line) or by the nature and type of activity – yet the general starting point was a common one – namely, that the ‘cone theory’ associated with the projection outwards of territorial sovereignty *usque ad coelum* made little sense. On that score, Wilfred Jenks had offered an early critique, widely picked up, in which he pointed out that:

missiles, space stations and space ships moving in space would be constantly changing their position in relation to the subjacent territorial sovereignties at such high speeds that whatever relationship of control might subsist between earth stations and such objects in space would have no territorial aspect analogous to the control exerted by a state in its air space or territorial waters.⁴⁸

As a consequence, Jenks supposed, space beyond the atmosphere of the earth must always be ‘a *res extra commercium* incapable of appropriation by the projection into such space of any particular sovereignty based on a fraction of the earth’s surface’.⁴⁹ Georgy Zadorozhnyi’s later argument in defence of the Sputnik programme to the effect that such satellites did ‘not violate the air sovereignty of any state’ because it was not the case that Sputnik was moving but, rather, that the earth was moving underneath it,⁵⁰ however self-serving, only seemed to confirm the same thesis. Some line had to be drawn between (terrestrial) territorial sovereignty and outer space, albeit the precise point of demarcation was almost entirely elusive.⁵¹

However, once it was decided that sovereignty had to stop somewhere, the ancillary question as to what was to exist on the other side opened out. Did principles of international law reach out beyond the atmosphere?⁵² What were the appropriate analogies? And then, of course, there was the question of the status of outer space and the celestial bodies; were they, or their resources, open to acquisition? Or did they

⁴⁷ W. Burrows, *This New Ocean* (1999), at 191. See, e.g., G. Feldman, ‘An American View of Jurisdiction in Outer Space’, 1 *Proceedings on the Law of Outer Space (PLOS)* (1958) 45, at 47.

⁴⁸ Jenks, ‘International Law and Activities in Space’, 5 *International and Comparative Law Quarterly* (1956) 99, at 103.

⁴⁹ *Ibid.*

⁵⁰ G. Zadorozhnyi, ‘The Artificial Satellite and International Law’, *Sovetskaia Rossiia* (17 October 1957), at 3, cited in Kucherov, ‘Legal Problems of Outer Space: USA and Soviet Viewpoints’, 2 *PLOS* (1959) 64, at 67.

⁵¹ One may note, here, the request made by the UN General Assembly in GA Res. 2222 (XXI), 19 December 1966, that the Committee on the Peaceful Uses of Outer Space (COPUOS) should seek to define outer space. It passed the matter on to the Scientific and Technical Sub-Committee, which replied in 1967 that ‘it is not possible at the present time to identify scientific or technical criteria which would permit a precise and lasting definition of outer space’. Report of the Committee on the Peaceful Uses of Outer Space, Agenda Item 32, UN Doc. A/6804, 27 December 1967, Annex II, para. 36.

⁵² For the early view that cosmic space was a ‘legal vacuum’, see Korovin, ‘International Status of Cosmic Space’, 1 *International Affairs* (1959) 54; see generally R. Erickson, *International Law and the Revolutionary State* (1972), at 117–120.

enjoy some other status? How, furthermore, could the demilitarization of outer space be ensured?

The common features of the 'code' for outer space as it developed over the ensuing years (reading cumulatively GA Resolutions 1962 (XVIII) and 1994 (XVIII) of 1963, the 1967 Outer Space Treaty and the 1979 Moon Treaty) were fivefold. First, the exploration and use of outer space should be carried on for the benefit and in the interests of 'all mankind' (astronauts, hence, should be treated as 'envoys of mankind'). Second, outer space should be free for exploration and use by all states on the basis of equality, and there should be freedom of scientific investigation. Third, outer space, including the moon and other celestial bodies, should not be open to 'national appropriation by claim of sovereignty'.⁵³ The moon and its natural resources, according to the Moon Treaty, were to be treated as the 'common heritage of mankind'. Fourth, the moon and celestial bodies should be used 'exclusively for peaceful purposes' and the placing in orbit/stationing of objects carrying nuclear weapons or other weapons of mass destruction should be prohibited.⁵⁴ Finally, their exploration and use should be carried on 'in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international co-operation and understanding'.⁵⁵ Beyond this, the code reaffirms the principle of state responsibility (including responsibility for the activities of nationals and organizations of which the state was a member) and that of continuing jurisdiction and control over objects launched into space. All of the texts that constituted the code emphasize repeatedly the necessity of promoting 'international co-operation'.

Quite apart from the obvious qualifications that have to be made about the status of the meagrely ratified Moon Treaty, two initial aspects of the code are worth emphasizing. In the first place, it is easy to overlook the undoubtedly radical character of this extraversion of international law into outer space⁵⁶ – international law was, on this view, suddenly declared to be of unlimited extent, inter-galactic as much as international, an omnipresent order disarticulated from the site of its geographical origin. In the second place, it was more than evident that the code, thus described, was replete with equivocations and silences. It said nothing about the jurisdictional delimitation of outer space, about remote sensing and direct television broadcasting, or about the allocation of rights over the geostationary orbit.⁵⁷ Still less did it resolve the question

⁵³ See, e.g., P. Jessup and H. Taubenfeld, *Controls for Outer Space* (1959), at 210; C. Chaumont, *Le Droit de L'Espace* (1960), at 114; International Law Association (ILA), Resolution on Air Sovereignty and the Legal Status of Outer Space, Report of 49th Conference of ILA (1960), at 267.

⁵⁴ Moon Treaty, *supra* note 42, Art. 3(4) also prohibits the establishment of military bases on the moon.

⁵⁵ See, e.g., GA Res. 1721A (XVI), 20 December 1961.

⁵⁶ See Beebe, 'Laws Empire and the Final Frontier: Legalizing the Future in the Early *Corpus Juris Spatialis*', 108 *Yale Law Journal* (1998–1999) 1737. Ranganathan draws attention to the way in which the extension of international jurisdiction to the seabed was configured around it being socially or economically 'disembedded'. Ranganathan, 'Ocean Floor Grab: International Law and the Making of an Extractive Imaginary', in this issue, 573.

⁵⁷ On this see Collis, 'The Geostationary Orbit: A Critical legal Geography of Space's Most Valuable Real Estate', in D. Bell and M. Parker, *Space Travel and Culture: From Apollo to Space Tourism* (2009) 47.

as to whether claims to property might be made in relation to resources removed from celestial objects or whether military use of the ‘extra-celestial void’ was legitimate. And, to the extent that these might be attributed to a straightforward failure on the part of the drafters to pay attention to such issues, or perhaps more obviously to an evident lack of ‘political will’, the code may be read as largely transparent – as a literal or manifest representation of the limits of legal regulation in the conflictual circumstances of its production.

Yet, as Louis Althusser points out, such a strategy of ‘innocent’ reading will only take us so far.⁵⁸ It will tell us only what was already palpable to the authors of the code. What it will not do is tell us much about the conditions under which the code appeared, why it assumed the form it did or what pre-suppositions had to be held in place for it to make sense to its authors. For that, a strategy of ‘symptomatic reading’ would seem to be necessary.⁵⁹ Such a strategy, as Althusser explains, involves not simply looking at a text for the purposes of determining what it seeks to make clear or manifest but, rather, attending also to its constitutive silences – by which he means, not simply what was not said but also what could not be said. The latter strategy, as he points out, involves identifying within a text the ‘problematic’ with which it is engaged – a framework or enquiry or mode of thought that enabled certain things to be ‘thinkable’, ‘visible’ or ‘legible’, and others, by contrast, ‘unthinkable’, ‘invisible’ or ‘illegible’. Symptomatic reading, in these terms, is set to reveal what must be silently repressed, or kept out of sight in order for that which is visible to have meaning.

In order to approach the code for space with this strategy of reading in mind, we might want to begin with the observation that the code is structured around a set of oppositions: that outer space is a domain of peace, not of war; a domain of collaborative endeavour, not of competition; a domain of the future, not the past and, finally, a domain entirely beyond the order of sovereignty and the atmospheric conditions that enable it – a commons. Each of these oppositions, however, gives expression to an incipient relationship between the objective in question and its conditions of possibility: between the prohibition of violence and the violence necessary for keeping the peace; between utopian ideas and the dystopian imaginaries that engender them; and between the idea of a commons and the regimes of sovereignty and property from which it derives its content. Taking this formation as my starting point, I want to develop in the ensuing sections of this article the argument that the code for outer space was built upon two forms of illegibility, both of which may be associated with ‘Cold War’ thought. One of these concerns a suppression of the idea of outer space as a site of warfare; the other a suppression of the idea that space might be a site of primitive accumulation.

⁵⁸ Althusser’s formulation, in fact, is more forceful: ‘[T]here is no such thing as an innocent reading’ (*‘il n’est toutefois pas de lecture innocente’*). L. Althusser and E. Balibar, *Reading Capital* (1970), at 14.

⁵⁹ *Ibid.*, at 14–29.

4 War and Peace in Space

There was little doubt to any of the observers of the launch of Sputniks I and II in 1957 that, despite their overtly 'scientific' purposes, the arms race had taken a decisive new turn. The exploration of outer space clearly offered a range of potential benefits; alongside the possibility of research into the physics of the atmosphere, it also would facilitate the collection of a host of meteorological, geophysical and cartographic data, enable enhanced capacity for radio communication and television broadcasting, facilitate safe navigation and, finally, open up the possibility of experimental flights to the moon and beyond. No one, however, was blind to the military implications.⁶⁰ Within the USA, in particular, there was a widespread belief that command over outer space was an imperative that could not be missed: '[W]hoever controls outer space', it was often said, 'controls the world'.⁶¹ In the wilder speculations, thus, it was imagined that a nuclear power might be in a position to launch guided missiles from a space platform to any point on earth with barely any possibility of response, that outer space would be filled with 'orbiting bombers' or that the moon would become the site of military rocket installations. 'Control' of outer space, thus, was immediately conceived as being vital as a matter of security.

Such concerns seemed to place a premium upon ensuring that the 'use' of outer space was exclusively peaceful – a view that seemed to be affirmed not merely by the establishment of COPUOS and successive proposals put to the UN by both the USA and Soviet Union. It was also recognized in the US National Aeronautics and Space Act of 1958, which created a civilian space agency (NASA) and declared, in the process, that 'it is the policy of the United States that activities in space should be devoted to peaceful purposes for the benefit of all mankind'.⁶² This theme was carried through into the code for outer space – UN General Assembly Resolution 1962 recognizing 'the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes' and the Outer Space Treaty that added in Article 4 that states should not place nuclear weapons or weapons of mass destruction in orbit and that the moon and other celestial bodies shall be used by all states parties 'exclusively for peaceful purposes' (military bases and fortifications, in particular, being prohibited). Indeed, President Lyndon B. Johnson described the Outer Space Treaty as 'the most important arms-control development since the limited test-ban treaty of 1963'.⁶³

⁶⁰ See, e.g., Report of the President's Science Advisory Committee (1958); J. Killian, *Sputnik, Scientists and Eisenhower* (1977), Appendix 4, at 289, which makes clear that, of the four reasons to invest in space, technology one was 'the defense objective': 'If space is to be used for military purposes, we must be prepared to use space to defend ourselves.'

⁶¹ Lyndon Johnson was to observe in 1958 that '[t]he urgent race we are now in – or which we must enter – is not the race to perfect long-range ballistic missiles, important as that is. There is something more important than any ultimate weapon. That is the ultimate position – the position of total control over earth that lies somewhere out in space.' Cited in Killian, *supra* note 60, at 9.

⁶² National Aeronautics and Space Act, (1958) 42 USC ch. 26, para. 2451, s. 101(a).

⁶³ Cited in Fawcett, *supra* note 38, at 29.

In an immediate sense, then, outer space was configured as a space radically distinct from atmospheric space and was placed at once beyond the field of both sovereignty and of war. These, however, were by no means co-terminous. The preferred analogy when discussing the status of outer space was often that of the high seas – like the seas, outer space should be marked by the principle of freedom of access and movement, a *res communis* incapable of being ‘enclosed’. In fact, this was the analogy used by the USA when defending its use of satellites for reconnaissance purposes; ‘reconnaissance’ from space, it was argued, was the functional equivalent of surveillance from the high seas.⁶⁴ It is clear, however, that this analogy was problematic precisely because the high seas themselves were not immune from being brought within the field of military conflict.⁶⁵ And, with that in mind, alternative modes of analysis were often proffered to ensure that the ‘commons’ was not to be equated with a potential field of battle.⁶⁶

Nevertheless, there was always a certain equivocation running through discussions within the UN and elsewhere as to whether the military/non-military distinction was one that could be effectively held in place. Not only were the Declaration on Outer Space and Outer Space Treaty silent on certain vital matters – on the equipping of satellites, for example, with conventional weaponry or the militarization of the ‘extra-celestial void’ – but the inclusion of Article 3, which instructed states to ‘carry on activities’ in accordance with international law and the UN Charter ‘in the interest of maintaining international peace and security’, gave expression to the idea, vaunted at various moments, that outer space may nevertheless be the site of military action in self-defence.⁶⁷ ‘Peaceful’ use, on such a measure, was not to be calibrated by reference to the equipment or personnel put into space – whether military or civilian – but, rather, by reference to the ends or motivation of the actors in question.⁶⁸ In the case of the USA, this was to resolve itself in the idea that ‘peaceful use’ should not be equated with ‘non-military use’ but, instead, with ‘non-aggressive’ use. As Senator Albert Gore was to put it, when speaking before the UN First Committee in 1962:

[i]t is the view of the United States that outer space should be used only for peaceful – that is, non-aggressive and beneficial – purposes. The question of military activities in space cannot be divorced from the question of military activities on earth. To banish these activities in

⁶⁴ See McMahon, ‘Legal Aspects of Outer Space’, 38 *British Yearbook of International Law* (1962) 339, at 371–372.

⁶⁵ For Soviet objections on this score, see Crane, ‘Soviet Attitude toward International Space Law’, 59 *American Journal of International Law (AJIL)* (1962) 685, at 694–695.

⁶⁶ See, e.g., the differentiation between ‘neutralized’ and ‘demilitarized’ space. Kopal, ‘The Problem of Neutralization and Demilitarization of Outer Space’, 4 *PLoS* (1961) 336.

⁶⁷ See, e.g., L. Lipson and N. Katzenbach, Report to the National Aeronautics and Space Administration (1961), at 25–26; Cooper, ‘Self-Defense in Outer Space’, 11 *German Journal of Air and Space Law* (1962) 186.

⁶⁸ Crane notes that Soviet military doctrine had by 1962 dropped its objections to the militarization of space and embraced a standpoint equivalent to that of the USA – namely, that it might be used for defensive purposes. R. Crane, ‘The Beginnings of Marxist Space Jurisprudence’, 57 *AJIL* (1963) 614; see also E. Jaksetic, ‘The Peaceful Uses of Outer Space: Soviet Views’, 28 *American University Law Review* (1978–1979) 483.

both environments we must continue our efforts for general and complete disarmament with adequate safeguards. Until this is achieved, the test of any space activities must not be whether it is military or non-military, but whether or not it is consistent with the United Nations Charter and other obligations of law.⁶⁹

The same general tenor was maintained in the discussion over Article 4 of the Outer Space Treaty concerning the demilitarization of the moon and celestial bodies. In this treaty, it was admitted that the use of military personnel 'for scientific research or other peaceful purposes shall not be prohibited', largely in recognition of the fact that for both space powers it was the military, not civilian agencies, who were responsible for developing rocket and other outer space capabilities. What one might see in this is a straightforward determination, on the part of both space powers, to continue the practice of exploiting outer space for purposes of defence whilst holding on, at the same time, to the general idea that outer space was a space of peaceful endeavour. Defensive militarization, here, was to be conceptualized as the functional equivalent of total demilitarization. Yet 'defence' was also an unstable category in circumstances of a bipolar military standoff that depended upon a balance of forces. For not only might an effective defence depend upon first strike capability (as the doctrine of 'mutually assured destruction' was to suggest),⁷⁰ but also, as was later to become evident following the announcement of the US Strategic Defense Initiative in 1983,⁷¹ even the construction of an overtly 'defensive' system could assume an offensive cast if only one party possessed that capacity.⁷²

There was, however, also a much deeper problematic at work here, which related to the persistence of a governmental rationality that was held over from the earlier decades of the 20th century, that understood the necessity of bringing all social resources – economic, technical, scientific and human – to bear in defence of the state against an existential threat. This was articulated in the interwar years in the theories of total war developed by the likes of Erich Ludendorff⁷³ and Ernst Jünger,⁷⁴ but was carried forward, well into the aftermath of World War II.⁷⁵ Even if, at Nuremberg,

⁶⁹ UN Doc. A/C.1/PV.1289, 3 December 1962, at 13. For a critique, see Gorove, 'Arms Control Provisions in the Outer Space Treaty: A Scrutinizing Reappraisal', 3 *Georgia Journal of International and Comparative Law* (1973) 114; Cheng, 'The Legal Status of Outer Space and Relevant Issues: Delimitation of Outer Space and Definition of Peaceful Use', 11 *Journal of Space Law* (1983) 89.

⁷⁰ The idea of mutually assured destruction had underpinned the strategic disarmament limitation talk (SALT) agreements, including the Treaty on the Limitation of Anti-Ballistic Missile Systems (1972, 944 UNTS 13), which had sought to avoid conflict through limiting the deployment of defensive anti-ballistic missile systems. The second SALT on 18 June 1979 included a provision prohibiting the development, testing and deployment of systems for placing into Earth's orbit nuclear weapons or weapons of mass destruction, including fractional orbital missiles. It was never ratified and expired in 1985.

⁷¹ See Burton, 'Daggers in the Air: Anti-Satellite Weapons and International Law', 12 *Fletcher Forum* (1988) 143. The proposed system included space- and ground-based nuclear X-ray lasers, subatomic particle beams and computer-guided projectiles fired by electromagnetic rail guns. It was eventually abandoned after publication of a negative report by the American Physical Society in 1987.

⁷² See Fisher, 'US Foreign Policy under Regan and Bush', in M. Leffler and O.A. Westad, *The Cambridge History of the Cold War* (2010), vol. 3, 267, at 277–279.

⁷³ E. Ludendorff, *Der totale Krieg* (1935).

⁷⁴ E. Junger, 'Total Mobilization', in R. Wolin (ed.), *The Heidegger Controversy* (1991) 119.

⁷⁵ See, e.g., B. Liddell Hart, *The Revolution in Warfare* (1947).

the tribunal had associated the practice of total war with the pathologies of National Socialism,⁷⁶ as the likes of Georg Schwarzenberger and Josef Kunz were to observe, it was a method of waging war that was only, in small part, to be associated with the problem of totalitarianism. For both, the phenomenon of total warfare was a much more general one – associated with technological developments in arms, indiscriminate modes of warfare and the mobilization of the civilian population – and was as much in play in the 1950s as it had been in earlier decades.⁷⁷ If the prospect of nuclear annihilation meant that no element of society would be spared, so also, it seemed to follow, no element of society should be excluded from preparations to ward off that eventuality.

Whilst, in the case of the Soviet Union, the ethos of centralized planning and a party bureaucracy equipped with an ideology of collective ownership and class warfare naturally dissolved any operative distinctions between the civil and the military establishment,⁷⁸ the same was also apparent in the USA where, as was recognized as early as 1945, the ongoing development of new technologies of offence and defence, in conditions of competition, would require ‘the participation of every element of the civilian population’ and, in particular, the enlistment of the countries research capabilities.⁷⁹ Alongside the development of what Dwight Eisenhower later described as a ‘military-industrial complex’, guided by a ‘scientific-technological elite’,⁸⁰ the rationalities of the Cold War were to envelop US society in a much more profound way – from the mobilization of the media in defence of free thought, the enlistment of corporations, unions and research establishments in defence of national security and the co-option of cultural institutions (from Hollywood to the universities⁸¹) in the affective management and policing of public life.⁸²

The significance of this in the context of outer space was the almost total loss of any way to distinguish effectively between military and civilian activities. Just as the requirements of resourcing a technologically dependent military armature increasingly depended upon a civilian infrastructure of research, industry and economic management,⁸³ so also was it clear that prospective civilian and scientific activities in space

⁷⁶ International Military Tribunal, *Nuremberg Judgment*, 1 October 1946, reprinted in 41 *AJIL* (1947) 172, at 224.

⁷⁷ G. Schwarzenberger, ‘The Law of Air Warfare and the Trend towards Total War’, 1 *University of Malaya Law Review* (1959) 120, at 136; Kunz, ‘The Chaotic State of the Law of War and the Urgent Necessity for Their Revision’, 45 *AJIL* (1951) 37, at 41–42; see also Kelly, ‘A Legal Analysis of the Changes in War’, 13 *Military Law Review* (1961) 89.

⁷⁸ Eisenhower was famously to observe that ‘what makes the Soviet threat unique in its history is its all-inclusiveness. Every human activity is pressed into service as a weapon of expansion. Trade, economic development, military power, arts, science, education, the whole world of ideas – all are harnessed to this same chariot of expansion. The Soviets are, in short, waging total cold war.’ D. Eisenhower, Annual Message to the Congress of the State of the Union, 9 January 1958.

⁷⁹ Joint Statement of Secretaries of the War and the Navy, 12 February 1945.

⁸⁰ D. Eisenhower, Farewell Radio and Television Address to the American People, 17 January 1961.

⁸¹ See generally A. Rubin, *Archives of Authority: Empire, Culture and the Cold War* (2012).

⁸² H. Marcuse, *One Dimensional Man* (1964), at 21.

⁸³ S. Meacham, *Labor and the Cold War* (1959), at 9.

(such as meteorology, remote sensing, navigation systems and telecommunications) all had military dimensions. If, for example, developments in meteorological knowledge and environmental science seemed to open up the possibility of weather control for the purposes of combating drought, improving agriculture or the avoidance of natural disasters, so also could that same science assist in the development of military communications and ballistic missile capability (which depended upon information about the lower and upper atmosphere, ionospheric behaviour, geodesy and geomagnetism).⁸⁴ Such knowledge also opened up new possibilities for manipulating weather systems in order to procure military advantage (such as the manipulation of thunderstorms to disable communication systems or the creation of fog or cloud).⁸⁵

But it was not just about scientific knowledge enabling new avenues of military innovation; it was also about the purposes to which the same technology might be put. Thus, for example, the camera-equipped satellite programmes (Tiros, CORONA), with the auxiliary systems of information recovery and reproduction, were virtually identical (give or take a few degrees of resolution) whether they were used for the purposes of geodetic measurement and weather prediction or military reconnaissance. In some cases, furthermore – such as the US Galactic Radiation Background satellite – intelligence-gathering electronics was incorporated within the same instrument used for the measurement of solar radiation.⁸⁶

For the most part, the integrated utility of scientific and military technology came to be expressed through the language of 'dual use'; just as nuclear science was capable of use for both pacific and military purposes, so also were satellites, rockets and space stations equally capable of deployment in pursuit of scientific, as well as military, ends.⁸⁷ Overtly, of course, the notion of dual use took as its starting point an idea of 'pure science' being concerned with the discovery or production of politically innocent knowledge, which might then be put to 'use' or be 'applied' for either civilian or military purposes. Aside from the fact that the degree of control and influence exercised by defence establishments over the direction of science within research institutions put in question any idea of there being such a thing as 'innocent' scientific knowledge,⁸⁸ it was, as Marcuse has observed, a conception of science that was already fully instrumentalized. Its very claim to objectivity was

⁸⁴ See Doel, 'Constituting the Postwar Earth Sciences: The Military's Influence on the Environmental Sciences in the USA after 1945', 33 *Social Studies of Science* (2003) 635.

⁸⁵ See Taubenfeld and Taubenfeld, 'Some International Implications of Weather Modification Activities', 23 *International Organization (IO)* (1969) 808. Concern as to the potentially damaging effects of the militarization of environmental science led to the conclusion of the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques 1977, 1108 UNTS 151.

⁸⁶ See G. van Keuren, 'Cold War Science in Black and White: US Intelligence Gathering and its Scientific Cover at the Naval Research Laboratory 1948–62', 31 *Social Studies of Science* (2001) 207, at 220–222.

⁸⁷ The control of 'dual use' technology was subject to control by Western powers through the Coordinating Committee on Multilateral Export Controls. This was later replaced by the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies on 11–12 July 1996; see also EC Reg. 1334/2000 (2000) (as amended).

⁸⁸ See generally N. Oreskes and J. Krige, *Science and Technology in the Global Cold War* (2014); Reynolds, 'Science, Technology and the Cold War', in Leffler and Westad, *supra* note 72, vol. 3, 378.

a sign of its subordination to technology and to an instrumental logic of ends. As he put it:

True, the rationality of pure science is value-free and does not stipulate any practical ends, it is 'neutral' to any extraneous values that may be imposed upon it. But this neutrality is a *positive* character. Scientific rationality makes for a specific societal organization precisely because it projects mere form ... which can be bent to practically all ends.⁸⁹

Whilst the scientific method allowed nature to be brought under human domination through the medium of an enabling technology, it was, in the same measure, a means for the domination 'of man by man' insofar as the human subject would always appear before it as a mere 'object of organization'. Both the human and the natural worlds would thus become the calculable objects of a technological rationality that knew no limits – 'in which society and nation, mind and body are kept in a state of permanent mobilization for the defense of this universe'.⁹⁰

Marcuse's critique of the totalitarian rationalities of what he saw to be the Cold War regimes of 'total administration' found particular expression in the fact that scientific knowledge itself was understood to be a facet of ideological competition in its own right.⁹¹ What was at stake was not just ballistic missiles and warheads but also a capacity for scientific or technological innovation that would, itself, demonstrate to the world at large the superior social merits of capitalism or communism, respectively. The shock experienced at the launch of Sputnik I, after all, was not that the Soviet Union had suddenly acquired command over outer space or imminently threatened the USA with annihilation but, rather, that it demonstrated the superiority of its scientific and technical expertise. It was apparent to both powers at that moment that such spectacular demonstrations of scientific achievement⁹² were an essential part of a competitive ideology of rule that required the broad enlistment of the population to enable it to function.⁹³ Science had its part to play, in that sense, in the affective production of fear, awe and loyalty, all of which were necessary for the operations of the Cold War to remain in place.⁹⁴

If, in that sense, the governing rationalities of Cold War thought led to a disintegration of the classical demarcation between war and peace through practices of

⁸⁹ Marcuse, *supra* note 82, at 160.

⁹⁰ *Ibid.*, at 172.

⁹¹ See K. Osgood, *Total Cold War: Eisenhower's Secret Propaganda Battle at Home and Abroad* (2006), at 323–353.

⁹² David Nye speaks here of the US space programme as being a vehicle for the 'American technological sublime', renewing faith in America and the 'ultimate beneficence of advanced industrialisation'. D. Nye, *American Technological Sublime* (1994), at 256.

⁹³ Marcuse, *supra* note 82, at 54–55, was to observe that 'the foreign policy of containment appears as the extension of the domestic policy of containment. ... Free institutions compete with authoritarian ones in making the Enemy a deadly force *within* the system. And this deadly force stimulates growth and initiative, not by virtue of the magnitude and economic impact of the defense "sector", but by virtue of the fact that the society as a whole becomes a defense society. For the enemy is permanent. He is not in the emergency situation by in the normal state of affairs.'

⁹⁴ See J. Masco, *The Theater of Operations* (2014), at 128–129.

total mobilization, the fact that it was operationalized through the technologies of outer space was nevertheless significant. For what was produced through those technologies was, above all else, a new planetary optic – a new way of visualizing and imagining the world – instanced most affectively in the images 'Earth Rise' and 'Whole Earth',⁹⁵ but operationalized more routinely in the knowledge production systems of satellite reconnaissance and remote sensing. The fact that the world came into view through the *media res* of a militarized system of surveillance, which knew no limits as to what forms of knowledge might offer military advantage, opened up the spectre of an unlimited battlefield, no longer encased within any prescriptive spatial limits, but a battlefield planetary in scale. The imperative of peace that was to mark the code, then, was as urgent as it appeared impossible – there being no longer any available way of speaking of peace other than in the language of warfare, no conceivable operations or forms of knowledge that could not be at service to that end, no space which it might not occupy. Even if the annihilatory conditions of East–West confrontation might have passed, the formation that enabled it has certainly not, and its traces are to be found in the imaginative and technological conditions of the 'everywhere war' of the contemporary era.⁹⁶

5 Constructing the Outer Space Commons

A key feature of Schachter's account of the anticipated law of outer space, as we have seen, was that it should be recognized as being part of the 'common heritage of humanity' and placed beyond the order of sovereignty, open to free and equal use. However, this was not to preclude, in his view, the free use and exploitation of the resources of outer space, and, for him, the analogy with the resources of the sea was dominant. Whilst it was by no means obvious how a state might go about extracting resources from other planets given the payload limits of rocket technology, he was nevertheless channelling a prevalent theme that had been a mark of science fiction literature for some time: asteroid mining, terraforming planets and the exploitation of the various rich resources of outer space.⁹⁷

Whilst the early satellite experiments in the aftermath of Sputnik I made clear that both peaceful exploration of outer space, and satellite overflight, were to be regarded as permissible activities, it was not until the end of that same decade, however, that scholars and legal advisors alike began to take seriously the task of assigning a particular character to outer space and address themselves to the question of its

⁹⁵ See Henry and Taylor, 'Re-thinking Apollo: Envisioning Environmentalism in Space', in Bell and Parker, *supra* note 57, 190.

⁹⁶ Gregory, 'The Everywhere of War', 177 *Geographical Journal* (2011) 238 (in which he notes three prevailing geographies of war: in which war has become the matrix within which social life is constituted; in which the battlefield has given way to an all-enveloping 'battlespace' and in which military operations now take place in the global borderlands); see also Mégret, 'War and the Vanishing Battlefield', 9 *Loyola University Chicago International Law Review* (2011–2012) 131.

⁹⁷ See, e.g., G. Serviss, *Edison's Conquest of Mars* (1898); R. Heinlein, *The Rolling Stones* (1952).

potentially divisible structure. On the one hand, even if it was clear that, in general, outer space should remain free of claims to sovereignty, it was not quite clear what would take its place. Roman law terminology abounded – was it *res nullius*, *res communis omnium*,⁹⁸ *res extra commercium*,⁹⁹ *res communis humanitatis*?¹⁰⁰ Or was it a legal void, awaiting the development of ‘legislative facts’ as the US legal advisor put it in 1959?¹⁰¹ Into the mix were regularly thrown two analogous legal regimes – that of the high seas and of Antarctica (the treaty for which had just been signed in December 1959).¹⁰²

On the other hand, it was not entirely clear, even in the context in which outer space was in general to be free of claims of sovereignty, whether that would also apply in equal measure to the planets, asteroids or other objects analogous to land. For if the principles of general international law were to apply to outer space, it would seem to follow that, just as territory was capable of being brought under national sovereignty through effective occupation and foreign recognition, so might also such portions of *terrae firma* in outer space.¹⁰³ However, the fact that this might encourage a practice of symbolic occupation – through the medium of the planting of flags on extraterrestrial objects – was quickly dismissed. Thus, following Lunik II’s ‘collision’ with the moon in 1959, the US State Department insisted that ‘[t]he placing of national insignia would not of course constitute a sufficient basis to found a claim to sovereignty over unoccupied land masses’.¹⁰⁴ What was left open was whether some other kind of more ‘effective’ occupation – through perhaps, the imagined construction of space installations on the moon – might yet become ‘sufficient’ for such purposes.

In its Declaration on Outer Space, the UN General Assembly had affirmed that outer space was to be ‘free for exploration and use’ by all states ‘on a basis of equality’, and that the celestial bodies were not to be ‘subject to national appropriation by claim of sovereignty, by means or use of occupation, or by any other means’.¹⁰⁵ This was given a further gloss in the Outer Space Treaty, which declared that outer space ‘including the moon and other celestial bodies’ to be ‘the province of all mankind’ (Article

⁹⁸ *Contra* Cheng, ‘The Extra-Terrestrial Application of International Law’, 18(1) *Current Legal Problems* (1965) 144 (arguing that international law does not recognize the existence of the concept of *res communis*).

⁹⁹ See, e.g., Jenks, ‘International Law and Activities in Space’, 5 *International and Comparative Law Quarterly* (1956) 99, at 104.

¹⁰⁰ Cocca, ‘The Common Heritage of Mankind: Doctrine and Principle of Space Law’, 29 *PLOS* (1986) 17 (who distinguishes this from a *res communis omnium*).

¹⁰¹ Becker, ‘United States Foreign Policy and the Development of Law for Outer Space’, *JAG Journal* (1959) 4, at 6; see also McDougal and Lipson, ‘Perspectives for a Law of Outer Space’, 52 *AJIL* (1958) 407, at 420.

¹⁰² The defunct Protocol for Spitzbergen of 1912 was also regarded as a relevant source. See Jessup and Taubenfeld, ‘Outer Space, Antarctica and the United Nations’, 13 *IO* (1959) 363, at 372–373.

¹⁰³ Jenks, *supra* note 99, at 111; Cheng, *supra* note 98, at 148.

¹⁰⁴ ‘Pleas Are Expected to Mount for UN Control of Outer Space’, *New York Times* (15 September 1959), at 20. Khrushchev famously dismissed any concerns on this front and suggested that the question itself was simply a product of the ‘capitalist psychology’. ‘Khrushchev Speech at National Press Club’, *New York Times* (17 September 1959).

¹⁰⁵ GA Res. 1962 (XVIII), 13 December 1963; see also Institut de Droit International Resolution, 11 September 1963.

1(1)) and reiterated that they should be 'free for exploration and use by all States' (Article 1(2)), and that they should not be subject to 'national appropriation by claim of sovereignty, by means of use or occupation, or by any other means' (Article 2). This appeared, as many noted, to not only rule out the possibility of claiming the moon or other bodies as falling within the sovereignty of the state, but also, by logical extension, the establishment of any claims to property over, or within, such spaces.¹⁰⁶

In adopting the text of the Outer Space Treaty in UN General Assembly Resolution 2222 (1966), however, the General Assembly simultaneously pointed to its limits, recommending in the process that COPUOS study further the question of the 'utilization of outer space and celestial bodies' particularly as regards 'space communications'.¹⁰⁷ For what was immediately apparent, as the French delegate to COPUOS pointed out in the following year,¹⁰⁸ was that the principle of freedom of use only barely engaged the range of issues that were already starting to appear on the horizon – from direct television broadcasting and remote sensing through to environmental modification and the occupation of space in the geostationary orbit. Still less did it absolutely resolve the potential future exploitation of space resources. With respect to the latter, furthermore, he observed that 'the equality in the utilization of celestial bodies which is proclaimed by the Treaty would remain a dead letter if the exploitation of that wealth were not regulated even before the first users undertook it'.¹⁰⁹

With these considerations in mind, Argentina, France and Poland submitted a proposal in the following year,¹¹⁰ leading the legal sub-committee of COPUOS to embark upon a ten-year project to draft what was to become the, largely abortive, Moon Treaty of 1979. Whilst much of the text of the Moon Treaty tracked the parallel provisions in the Outer Space Treaty, the main area of contention concerned the question of resource exploitation. As early as 1967, the Argentinian representative, Aldo Armando Cocca, had argued that the wealth and natural resources of the moon and other celestial bodies could be used 'solely for the benefit of mankind as a whole',¹¹¹ and had subsequently submitted a draft agreement to COPUOS proclaiming such resources to be the 'common heritage of all mankind'.¹¹² What this was generally understood to mean was not that outer space resources should be free from ownership or exploitation (as

¹⁰⁶ See, e.g., Quadri, 'Droit International Cosmique', 98 *Hague Recueil* (1959) 505, at 596–597: '*Dans la mesure où un Etat ne peut contrôler la disposition des ressources cosmiques, ces ressources ne sont pas juridiquement des choses: elles échappent au domaine du droit qui n'est pas infini*'; Cepelka and Gilmour, 'The Application of General International Law in Outer Space', 36 *Journal of Air Law and Commerce* (1970) 30, at 38.

¹⁰⁷ GA Res. 222 (XXI), 19 December 1966.

¹⁰⁸ Seydoux (France), UN Doc. A/AC.105/PV.47, 17 April 1967, at 26–28.

¹⁰⁹ *Ibid.*, at 28.

¹¹⁰ Argentina, France and Poland: Proposal, UN Doc. A/AC.105/C.2/L.69 (1969), Annex I, at 7.

¹¹¹ Committee on the Peaceful Uses of Outer Space Legal Sub-Committee, UN Doc. A/AC.105/C.2/SR.82 (1967), at 5. For Pardo's similar arguments in relation to the deep seabed in the same year, see Ranganathan, *supra* note 56.

¹¹² Draft Agreement on the Principles Governing Activities in the Use of Natural Resources of the Moon and Other Celestial Bodies, UN Doc. A/AC.105/C.2/L.71 and Corr. 1 (1970).

an early Soviet draft proposed¹¹³) but, rather, that, as and when they were exploited, it should be for the benefit of the entirety of humanity.¹¹⁴ From that point on, the debate stabilized around two alternative schemes: whether, on the one hand, states should be entitled to exploit the resources individually subject only to an obligation to distribute the benefits ‘to all’ or whether, in the alternative, the exploitation of resources was only to take place through the medium of an international regime/agency and, pending its establishment, be subject to a moratorium.¹¹⁵

The final agreement offered support for both positions.¹¹⁶ On the one hand, it declared the moon and its natural resources to be the common heritage of mankind and that the resources ‘in place’ should not become the property of any state, international organization, non-governmental entity or natural person. It also committed parties to ‘undertake to establish an international regime’ to govern exploitation as soon as it became feasible.¹¹⁷ On the other hand, by limiting the prohibition on ownership of surface and subsurface resources to those ‘in place’, it offered the possibility that they might nevertheless be claimed once removed. The absence of a vaunted ‘moratorium’ on extraction, furthermore, was to suggest that exploitation might proceed subject only to the principle of ‘equitable sharing’ until the moment at which the international regime came to be established.¹¹⁸ In the end, however, the Moon Treaty remained largely unratified as many of its vocal opponents in the USA objected to the way in which it appeared to inaugurate a ‘system of international socialism’,¹¹⁹ foreclosing ‘the commercial uses of outer space by American enterprise’.¹²⁰

What is worth bringing out here is not the surface-level disagreement as to the relationship between collective and individual modes of extraction or, indeed, the way in which an ‘east–west adversarialism’ appeared to have given way to a dynamic

¹¹³ The Soviet Union had momentarily championed this idea. See Soviet Union Draft Treaty, UN Doc. A/C.1/L.568 (1971), Art. VIII, in which it was stipulated that such resources should not be the object of ‘concession, exchange, transfer, sale or purchase, lease, hire, gift or any other arrangements with or without compensation’. A Bulgarian draft had similarly proposed this as one of two alternative texts. Draft Treaty Relating to the Moon, UN Doc. A/AC.105/C.2/L.93 (1974).

¹¹⁴ See US proposal, Article VIII – Natural Resources, UN Doc. A/AC.105/C.2(XI)/WP.12/Rev.1 (1972).

¹¹⁵ For similar debates in the context of the deep seabed, see Mickelson, ‘Common Heritage of Mankind as a Limit to Exploitation of the Global Commons’, in this issue, 635.

¹¹⁶ For contrasting interpretations, see discussion of the Moon Treaty within the ILA in its Report on ‘Space Law’, 60 *International Law Association Reports* (1982) 479.

¹¹⁷ Moon Treaty, *supra* note 42, Art. 11, paras 1, 3, 5.

¹¹⁸ The interpretation placed upon this by the US delegate was that ‘equitable’ sharing should also include consideration being given to the ‘contribution’ made by those states or companies that have contributed directly or indirectly to the exploration of the moon. Hosenball (USA), Committee on the Peaceful Uses of Outer Space, UN Doc. A/AC.105/PV.203 (1979), at 25.

¹¹⁹ As at January 2018, the treaty has been ratified by 18 and signed by four. Status of International Agreements Relating to Activities in Outer Space, UN Doc. A/AC.105/C.2/2018/CRP.3 (2018). Neither of the two major space powers has ratified and, of the governments possessing launch capabilities, only France and India have signed.

¹²⁰ See Goedhuis, ‘Some Recent Trends in the Interpretation and the Implementation of the Rules of International Space Law’, 19 *Columbia Journal of Transnational Law* (1981) 213, at 231–232; see further Report of the Senate Committee on Commerce, Science and Transportation, 96th Cong, 2d Sess (1980) 381, at 465–468.

of 'north-south resource disparity' but, rather, to the conditions under which the formation of the outer space commons was to appear.¹²¹ In the first place, as the Nigerian representative in COPUOS noted, the language of the 'common heritage of mankind' had facilitated a subtle shift from a language of exploration to that of exploitation.¹²² Outer space was no longer simply a site of speculative scientific endeavour or open to projects of exploration and discovery, but it had become a resource or, indeed, as Myres McDougal and others were to explain, a myriad of resources of varying kinds, in which everything from solar radiation, magnetic and gravitational forces, wave lengths, geostationary locations¹²³ through to meteors tracking through the solar system came to be conceptualized in terms of their ultimate 'value' or 'utility'.¹²⁴

Once again, thus, one sees the presence of a particular technological rationality undergirding the outer space regime, in which the natural and human environments were to be understood to be the objects of an instrumental reasoning that concerned itself with how they might be manipulated, controlled, exploited and, ultimately, commodified, and in which the technology through which those ends were to be both conceived and achieved (space rockets, probes, telescopes, satellites, planetary rovers and so on) would take the form of a passive, neutral, medium – as mere machines and mechanisms or as ways of doing things.¹²⁵ The embrace of this rationality may, on the face of it, be seen to have been utterly perverse: the ultimate outcome of a desire to avoid a competitive stripping of the resources of the moon and other celestial bodies, resolving itself in the creation of a regime in which that objective, and that way of thinking about our planetary environment, was not just dominant but also subordinate to everything else. The technology through which those projects were to be made thinkable, furthermore, was clearly only 'neutral' to the extent that one could

¹²¹ Gabrynowicz, 'Space Law: Its Cold War Origins and Challenges in the Era of Globalization', 37 *Suffolk University Law Review* (2004) 1041, at 1046.

¹²² Committee on the Peaceful Uses of Outer Space, Legal Sub-Committee, Doc. A/AC.105/C.2/SR. 249 (1976) at 3. It is clear, however, that the question of the exploitation of resources had been in the background for some time. See GA Res. 1348 (XIII), 13 December 1958, in which the UN General Assembly expressed its desire 'to promote energetically the fullest exploration and exploitation of outer space for the benefit of mankind'. For a fuller account of the 'exploitation bias' located within the principle of Common Heritage, see Feichtner, 'Sharing the Riches of the Sea: The Redistributive and Fiscal Dimension of Deep Seabed Exploitation', in this issue, 601.

¹²³ Cf. Declaration of Bogota, ITU Doc. 81-E, 3 December 1976, Annex 4, at 16, which provided that devices placed in geosynchronous orbit above a state 'require previous and expressed authorization on the part of the concerned state, and the operation of the device should conform with the national law of that territorial country over which it is placed'.

¹²⁴ For an elaboration of space activities in the language of 'resources', see M. McDougall *et al.*, 'The Enjoyment and Acquisition of Resources in Outer Space', 111 *University of Pennsylvania Law Review* (1963) 521.

¹²⁵ It is to be noted that the Moon Treaty, *supra* note 42, conceptualizes the environment of the moon and that of the earth as distinct. According to Art. 7(1), states should seek to prevent the disruption of the moon environment through the introduction of 'extra-environmental matter', and the same should be the case in respect of the earth.

separate its existence from the fact of its (largely exclusive) possession and control by two violent, competitive, superpowers.¹²⁶

As Marcuse observed, however, that same rationality – common to both Western and Soviet state forms¹²⁷ – cut deeper than this. On the one hand, the technologies of mass communication, surveillance and warfare were to profoundly shape the perception, experience and apprehension of everyday life, creating a ‘technological reality’ of an ‘object world’ conceived ‘as a world of *instrumentalities*’.¹²⁸ On the other hand, however, that same rationality would serve to alienate the subject from their life world through their incorporation into the ‘technological community of the administered population’.¹²⁹ The domination of nature that technology appeared to enable was thus only one side of a formation that had, as its complement, a human domination propagated through the technological ‘administration’ of the subject and the manufacture of human desires, needs and interests.¹³⁰ To the extent, then, that the Moon Treaty embraced this rationality, it was one that was ultimately pacifying in effect, swallowing up and repulsing all alternatives, bringing all within the sway of the same totalitarian tendency.

In the second place, and as an apparently countervailing measure, was the idea that access to, and the use of, outer space resources should be subject to an international regime, the ‘purposes’ of which were set out in Article 11(7). Just as the International Telecommunication Union managed the ‘technical’ distribution of wavelengths and frequencies, allocating slots in the geostationary orbit, and just as the World Meteorological Organization coordinated the collection and dissemination of meteorological data, so also it was envisaged that the resources of the moon should similarly be subject to the oversight of an international regime of rational administration. The anticipated regime, it was explained, would concern itself with the ‘orderly and safe development of the natural resources’, their ‘rational management’, ‘the expansion of opportunities in the use of those resources’ and an ‘equitable sharing of the benefits’. The model of administration imagined here was one clearly designed to displace the possibility of unrestricted pillage or of primitive accumulation, and the language deployed elicited a sense of distance from precisely those ideas. No mention is made of the practices of extraction, commodification or exploitation that might be enabled; rather, it is faintly suggested, the moon might be ‘improved’ through its ‘development’, terraformed perhaps into a site fit for tourism or colonization?

Yet, by the same token, the arrangements seemed to be concerned merely with the transfiguration of relations of power into bureaucratic technique and, in doing so, maintained in place the very same conditions that underpinned the practices to which

¹²⁶ Cf. T. Adorno and M. Horkheimer, *Dialectic of the Enlightenment* (1972), at 121: ‘[N]o mention is made of the fact that the basis on which technology acquires power over society is the power of those whose economic hold over society is greatest. A technological rationale is the rationale of domination itself. It is the coercive nature of society alienated from itself.’

¹²⁷ See H. Marcuse *Soviet Marxism* (1957), at 196.

¹²⁸ Marcuse, *supra* note 82, at 223 (emphasis in original).

¹²⁹ *Ibid.*, at 28.

¹³⁰ *Ibid.*, at xlvi.

it was opposed. Certainly, it was clearly envisaged that a further agreement would follow, setting out in more detail the administrative arrangements required for the purposes of the 'equitable sharing of benefits'. Certainly, it was also possible that such arrangements might include the transfer of technology, the sharing of science and the distribution of profits. But no measure of administration could avoid the observation that the regime was to authorize in space precisely the same operations that had been productive of the material inequalities on earth, albeit this time it was 'colonization' or 'conquest' in the name of humanity ('mankind') rather than some small subset of the same.

Finally, and related to this, the very 'commonness' of humanity to which the regime gave expression was ultimately a vestigial one. Humanity was to be represented here, not as a universal community of free-willing subjects or as a set of values – of rights or needs – but, rather, through the mediate category of material 'interests'; the exploration and use of the moon, as Article 4 puts it, 'shall be carried out for the benefit and in the interests of all countries'. What humanity had in common, thus, and what defined it once one took away the categories of rule and ownership, was a fluid, economy of 'interests',¹³¹ the fulfilment of which was always more or less and which was open to be bargained, traded, sacrificed and exchanged.

These 'interests' assumed the same metaphorical function of assets and liabilities in double-entry bookkeeping – as abstract quantities capable of being compiled, indexed, managed, balanced and administered in the same way as the material resources to which they appeared to relate. Whilst undoubtedly central to the foundations of both capitalism¹³² and liberal democratic thought,¹³³ they bespoke, in the same measure, of a natural social mechanism or instinct that transcended time and place, that was universally operable and ascribable equally to 'future generations' as much as to those of the present. They were/are, in that sense, always 'common' and everywhere present, even if the plea to 'commonness' would frequently arrive in the form of a demand for their moderation. Their function, however, has been to rationalize social relations, describe their operative mechanics and authorize sovereignty, all in a manner akin to the market – in which human life, *qua* interests, is the formal subject matter of processes of transaction and exchange. If then the ultimate telos of the regime was to turn, by some bewitching magic, something that was not capable of being owned into something that might become so (through its removal), so also it seemed to imagine that this was also the case with respect to the category of 'humanity' that it ushered into existence. Humanity comes to be expressed, ultimately, in a metaphorically commodified form of life identified in and through its relationship to the resources over which it seeks to have control. To be human is to partake of the 'interests' in the resources of the moon and other planetary bodies in which all are deemed to share.

¹³¹ For the significance of 'interests' in political realism, see, e.g., H. Morgenthau, *Politics among Nations: The Struggle for Power and Peace* (5th edn, 1978), at 5: 'The main signpost that helps political realism to find its way through the landscape of international politics is the concept of interest defined in terms of power.'

¹³² A. Hirschman, *The Passions and the Interests* (1977).

¹³³ For a critique, see M. Horkheimer, *The Eclipse of Reason* (1946), at 26.

Just as outer space was a site in which the distinction between peace and war became blurred so as to make warfare itself an illegible part of the regime, so also we might observe, in this context, another similar construction. Here, the regime takes on the character of that which it seeks to prevent or avoid – a system of resource extraction and of primitive accumulation, through which every other relationship human-kind might have with the outer space environment, and, indeed, with itself, comes to be mediated. As the instrumental object of a regime of management that has the ‘use’ of nature as its operative configuration, outer space becomes enmeshed within the one-dimensional dynamics of the total administrative state that was central to its formation and, with it, the very meaning of what it is to be human in space.

6 Conclusion

In a brief article entitled ‘Des Espaces Autres’ written in 1967, Michel Foucault suggested that, whilst the ‘great obsession’ of the 19th century was history – its mythological resource being the second law of thermodynamics – the middle of the 20th century was better characterized as the ‘epoch of space’; ‘we are’, he suggests, ‘in the epoch of juxtaposition, the epoch of the near and far, of the side-by-side, of the dispersed’.¹³⁴ In the course of that essay, however, he was to draw attention to a particular type of space (or ‘site’/‘emplacement’) that had emerged in the modern era – namely, one that has ‘the curious property of being in relation with all other sites, but in such a way as to suspect, neutralize, or invert the set of relations that they happen to designate, mirror or reflect’.¹³⁵ Such ‘heterotopias’, as he was to call them, ‘are something like counter-sites, a kind of effectively enacted utopia in which the real sites ... that can be found within the culture, are simultaneously represented, contested, and inverted’.¹³⁶

Whilst he was not to refer to it himself, a case may be made for suggesting that the regime of ‘outer space’ as it was to be constructed in the 1960s represented a near perfect exemplar of the heterotopian sites to which Foucault referred, both in the sense of being a site constructed through the enactment of a utopian imaginary (as the placing of ‘placeless place’) and in the sense of it operating as a counter-site in which social relations come to be ‘represented, contested, and inverted’. It bears a particularly striking resemblance to Foucault’s example of the mirror:

In the mirror, I see myself there where I am not, in an unreal, virtual space that opens behind the surface; I am over there, there where I am not, a sort of shadow that gives my own visibility to myself, that enables me to see myself there where I am absent: such is the utopia of the mirror. But it is also a heterotopia in so far as the mirror does exist in reality, where it exerts a sort of counteraction on the position that I occupy. From the standpoint of the mirror I discover my absence from the place where I am since I see myself over there. Starting from this gaze that

¹³⁴ Foucault, ‘Of Other Spaces, Heterotopias’, 5 *Architecture, Mouvement, Continuité* (1984) 46, para. 1, <https://foucault.info/doc/documents/heterotopia/foucault-heterotopia-en.html>.

¹³⁵ *Ibid.*, para. 10.

¹³⁶ *Ibid.*, para. 11.

is, as it were directed toward me, from the ground of this virtual space that is on the other side of the glass, I come back toward myself; I begin again to direct my eyes toward myself and to reconstitute myself there which I am.¹³⁷

This image of the mirror evokes the complex functions of the outer space code, bringing into being, through its conceptual and institutional architecture, a space that is at once imaginary (futural, anticipatory, mythopoetic¹³⁸) and real (operated through the mediated technology of satellites and space stations). It is constituted, furthermore, in the outward projection of a set of rationalities that found their origins in Cold War thought (the totalization of war and the instrumentalization of nature), a site in which the protagonists of the Cold War could image/ imagine the globe and situate themselves at its centre, seeing themselves in, and through, where they were not. The commons of outer space was thus, in a first sense, expressive simply of a Cold War 'commonness', reflecting what held the protagonists together and what pathologies they shared rather than what divided them. But, in the sense that outer space was a site in which a shared vision or common agenda might come to be expressed (evidenced in the occasional spectacular performance of *détente*), it was also invested with the same very common coldness that set them apart.

Even in the aftermath of the pronounced 'closure' of the Cold War, the residue of the formation that was brought into play in space remains very much with us today. On the one hand, outer space has been progressively enveloped within the technological infrastructure of warfare and policing actions – the first Gulf War of 1990 ushering in a new era of 'smart' weaponry and GPS-configured surgical violence¹³⁹ – anticipating, in the process, the 'remote' operations of the drone and cyber warfare of the contemporary era. The blurring of the demarcation between the (outer space) technologies of war and peace finds its contemporary parallels in the collapse of a range of other operative distinctions – between the virtual and the real, the combatant and the civilian, the battlefield and the battle space, the interstate and the intra-state. The juridical formations on which these depend, furthermore, have themselves become enveloped within the same strategic operations – 'lawfare' becoming the adjunct to a new form of totalized warfare stripped of any spatial determinacy.

On the other side, outer space has increasingly become the terrain of speculative capitalism, which, following the growth of space tourism (pioneered by the Russian space administration in the 1990s¹⁴⁰), has seen the active development of a range of commercial projects from the construction of sub-orbital 'space planes' to asteroid and lunar mining undertaken by both public and private agencies. The imaginative resources for such projects have come from various directions, but a common theme is that impending resource depletion on earth will soon bring such resources within commercial and technological reach, and that outer space will therefore provide

¹³⁷ *Ibid.*

¹³⁸ Shukaitis, 'Space Is the (Non)Place: Martians, Marxists, and Outer Space of the Radical Imagination', in Bell and Parker, *supra* note 57, 98.

¹³⁹ See Millard, *supra*, note 2, at 122–129.

¹⁴⁰ See generally Parker, 'Capitalists in Space', in Bell and Parker, *supra* note 57, 83.

a ‘spatial fix’ for a system of global capitalism that might otherwise run into the ground.¹⁴¹ There is, as Katarina Damjanov has noted,¹⁴² a deep parallelism here between the juridical opening of the seas (*mare liberum*), which served to stabilize the system of sovereignty within Europe in the 17th century by extroverting the site of conflict and competition,¹⁴³ and the opening of outer space three centuries later as another prophylactic measure, even if, in this case, that which was to be guarded against was a planetary-wide, environmental catastrophe. Perhaps the deepest irony, here, is that the mode of salvation on offer is precisely the same as that which is the extant cause of crisis, which one may take to be a remorseless instrumentalization of nature.

¹⁴¹ Dickens, ‘The Cosmos as Capitalism’s Outside’, in Bell and Parker, *supra* note 57, 66.

¹⁴² Damjanov, ‘The Matter of Media in Outer Space: Technologies of Cosmobiopolitics’, 33 *Environment and Planning* (2015) 889.

¹⁴³ See M. Foucault, *The Birth of Biopolitics*, translated by G. Burchell (2008), at 55–56.