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**Peter Dickens and James S. Ormrod, eds. The Palgrave Handbook of Society, Culture and Outer Space. Houndmills, Basingstoke and London, 2016. 480 pp. Cloth, £135, ISBN 978-1-137-36351-0.**

**Reviewed by Andrew M. Butler**

“Outer space” is a curious dialectical zone – on the one hand it consists of a number of elements (stars, planets, moons, meteors, comets, dust, actual empty space) defined as being distinct from the Earth, on the other hand it has a repeated, daily impact on the Earth (navigation, radiation, light, tides). The apparent emptiness of much of outer space – the space of space – suggests a literalisation of the ou-topia, the no place, an inky-black blank in which technology would be required for human survival. But that void can be converted into a tool – especially in the location of the geo-stationery orbit for satellites. Equally the rest of space offers resources that may facilitate the creation of a new society with a new set of rules – a utopian good place – or lead to the continuation of human politics off-planet with dystopian consequences. This collection brings together fifteen excellent chapters and an introduction and conclusion that map out ideas of outer space from the perspectives of geography, law, economics, film studies, cultural studies, politics, utopian studies and more.

Outer space has an ongoing cultural impact on Earth, including what we would call inner space, and, equally, Earth (and inner space) culturally constructs outer space. As Jason Beery and Lionel Sims note in their chapters, almost all creation myths have a set of cosmological signifiers, with supernatural forces connected to the Sun, the Moon, other planets and the stars. Religious architecture is more often constructed according to astronomical alignments than cartographic ones: sunrise, sunset, particular stars or (imagined) constellations.

Religious festivals are tied to solstices or equinoxes, or phases of the Moon. The astronomical

factors give meaning to the celebration; the celebration constructs the astronomy as significant.

Sims examines some of the indigenous astronomies using the critical tools of Lévi-Strauss, in particular his assertion of an invariant grammar of Sun-snare myths across eight hundred versions. Sims describes Lévi-Strauss's meta-myth in which “in a state of nature, women ruled by dominating men and all was chaos through their inability to synchronise their cycles with those of the heavens. Men as heroes had to step in to bring order to this world” (297-8). These are tales of blaming women for the faults of the world, but also of a sense of a paradise lost when there was order. Sims notes the lack of female agency within Lévi-Strauss's kinship structures, which focus on men exchanging women rather than the opposite or a mutual exchange, and locates a deeper meta-myth, a utopia where females had indeed been able to synchronise their menstrual cycles with the Moon. Astronomical narratives thus have their roots in gendered accounts which may not have been overcome in the era of scientific measurement and observation.

Felicity Mellor takes up the notion of narrativisation in her account of science writing and the history of the universe. Narratives not only assign causality to individual events, but they also bring in notions of agency, intention, character, motivation and so on; she notes how elsewhere she examined how “asteroid researchers in the 1980s and 1990s transformed asteroids from historical objects into agents of catastrophe” (221) that could wipe out humanity, presumably just as the dinosaurs had been wiped out. In response, scientists who were proposing defences, usually military in nature, against objects in space, cast themselves as heroic. (Several sf novels from the 1970s about meteors and asteroids threatening the Earth spring to mind, and Mellor acknowledges these in her journal article in *Social Studies of*

Science, but surely borrowing existing narratives of the 1970s is distinct from narrativising for the first time in the 1980s.) The article also mentions Larry Niven and Jerry Pournelle, co-authors of the asteroid disaster novel *Lucifer's Hammer*, who advised Ronald Reagan on the Strategic Defense Initiative. Mellor observes that accounts of the history of the universe keep segueing into histories of the scientists who were researching it. This seems at odds with cosmologists' insistence that there is no "special place for humans in the universe" (240). And yet we are granted a place of vantage. Mellor also discusses the narrating of the discovery that the expansion of the universe is accelerating – with consequent implications for the end of the universe – coinciding with the sense of an ending at the turn of the millennium. Cultural eschatology collided with cosmic eschatology.

A number of chapters consider the vexed question of who owns space. Earth's land surfaces have had a complex series of owners over the millennia, shifting from a hunter-gatherer nomadic existence to the squatters' rights model of farming, building and occupation. By the early twentieth century, this was formalised in a series of competing European countries, many with constitutions, who between them had carved up large swathes of the Americas, Africa, Asia and Australasia, with little or no regard for the respective indigenous peoples. The invention of airships and aeroplanes meant that countries wanted to have rights to the air above their territory – whether for reasons of defence or in the commercial exploitation of air transport. How far up does this space go then? Any point directly above the Earth is not fixed but rather moving – can that be owned? 100 km above the Earth's surface is the zone suggested by Theodore Kármán as the start of outer space and this has been accepted as the barrier by the *Fédération Aéronautique Internationale*. Whilst this is a suspiciously round number, it does seem to be the distance from Earth that the traditional aeronautics of heavier

than air flight fails because the atmosphere is too thin to support an object. Common sense might dictate that that is the limit of any national claim.

Yet, at the point 35,786 km above the equator any object will orbit Earth once every rotation; this is the geosynchronous orbit, significant for communications and Global Positioning Satellites (GPS). Much of that orbit is above water rather than land. Nicola Triscott briefly mentions the Bogotá Declaration, in which Brazil, Colombia, Congo, Ecuador, Indonesia, Kenya, Uganda and Zaire objected to the claiming of the geosynchronous space by the richest industrialised nations at the expense of the poorer territories on the equator. However, this moment of resistance has been ignored in international law. Peter Dickens observes that global communications networks may allow for minority voices to speak and distribute cultural productions, but this is against the tide of a homogenising globalisation centred on a few media giants in those powerful nations. Those same technologies of communication aid commerce through surveilling the productivity of warehouse workers or optimising agricultural activities. The shaving of labour and storage costs all adds to surplus value – utopia for capitalists, less comfortable for workers and consumers. Dickens notes David Harvey's work elsewhere on capitalism and neoliberalism, and how state investment in technology and infrastructure feeds into corporate profits. The geosynchronous orbit is a panoptic zone in outer space that regulates the surface of the Earth.

Jocelyn Wills continues this theme with an examination of a specific satellite surveillance and software consulting corporation. MacDonald, Dettwiler and Associates. Canada was very aware of the need to be an independent nation rather than an extension of the US and so the government invested in its own space programme and academic-technological research. This could subsidise and underpin surveillance services offered by MDA, not just for Canadian

security, but also for (problematically) Apartheid-era South Africa, “adversaries in the Middle East” (107), the US and other nations. MDA's drive to make money would appear to transcend any scruples over human rights.

Christy Collins's chapter explores a series of models for understanding the ownership of such space. In legal terms, it might appear to be a kind of *terra nullius*: an area that does not belong to anyone but is available to be possessed after its discovery and the claiming of ownership. *Terra nullius* thus offers extensions to an existing nation state. However, humanity's entry into space coincided with two further legal wrangles: ownership of Antarctica and of the seabed. The former had been partially explored by imperial explorers, and Australia, Britain, France, New Zealand and Norway had made various competing claims on the continent (273). After Scott's 1912 expedition, Antarctica was unoccupied until Germany claimed Norwegian territory as their own in 1939, with various attempts by Argentina, Australia, Britain, Chile and the US to assert ownership and occupy parts of the ice shelf. In 1956, the UN suggested the continent be declared a *res communis*, a space open for all but not owned by any one nation. The Antarctic Treaty of 1959 enshrines this intent, although the seven existing claims prevent full *res communis* status. Meanwhile, offshore oil, high seas fishing and whaling raised the question of how far nations extend out to sea. A further category was established for these territories – *res humanitas*, “the common property of humanity, and [...] resource extraction would have to benefit, directly, all humans” (277). Outer space was also defined as *res communis* in the 1967 Outer Space Treaty, with an attempt to declare the Moon *res humanitas* in the Moon Treaty of 1979. However, only eleven nations have signed up, none of them experienced in crewed space flight and thus the matter remains somewhat academic.

Nayef R.F. Al-Rodhan attempts to offer a new model for international power relations in the context of outer space. The resources on offer could lead to a utopian expansion of human culture off planet, a continuation of the metanarrative of progress. But if nations and other economic interests compete for those resources, existing inequalities could be continued or deepened. Al-Rodman notes that Carl Dolman Everett offers a blueprint of US Astropolitik: its need to protect its market share may lead it to withdraw from existing international agreements on the shared nature of outer space in favour of a free market economy, at the same time establishing a Ballistic Missile Defence system in space to protect low-Earth orbit and an US agency to coordinate space. The free market thus comes with sticks. After considering other political models and comparisons with sea and air power, Al-Rodhan suggests an understanding based on “meta-geopolitics”. He suggests the focus should be on seven capacities of the state: “social and health issues, domestic politics, economic power, the environment, science and human potential, military and security issues and international diplomacy” (139). Off planet experimentation and satellite communications can lead to improvements for individuals – climate change could be monitored, new drugs developed, operations undertaken by remote control. Al-Rodhan admits that these capacities can also be causes of conflict, but that such conflict could be anticipated and prepared for. A regulatory body is needed. Naturally, the current attitudes of the Trump administration toward climate change and to communications by various scientific agencies and what seem like isolationist, anti-global policies make this seem a utopian dream.

As well as controlling society on land, outer space thus becomes a frontier of the expansionist policies of imperialist nations – utopia for those able to exploit the phenomena, dystopia for anyone who gets in the way or left behind. Jason Beery notes the repeated construction of Mars in Earth's image: the application of surnames to craters and other features recalls the

European colonial naming practices. Naming is assertion of ownership. The NASA Pathfinder missions located Mars as an extension of American Manifest Destiny, a political continuation – although Beery doesn't note this – of Kennedy's Cold War promise to go to the Moon. Alternately, Sean Redmond notes Mars as the source of invasion in *It! The Terror from Outer Space*, *The War of the Worlds* and other films and books, parables about invasion from the point of view of the invaded. He discusses the irradiated Mars of *Rocketship XFM* as a representation of the downside of technological progress.

Nicola Triscott's closing chapter focuses on the utopian images of outer space offered by artists, as well as their commentary on the distance between the dream and reality. She suggests that for the Soviets "Space travel was regarded as an allegory of revolution: the cosmonaut leaving behind a corrupt old world to build a utopia in outer space." (416) Artists in the Independent Group such as Eduardo Paolozzi and Richard Hamilton saw the sf imagery of rockets, computers and robots as offering a new mythology. Other artists undercut the white, male identity of most astronauts – Sun Ra built a cosmology of space aliens and kidnapping to rewrite the exploitation of African Americans and Aleksandra Mir filmed a Moon landing of women, Blacks and others on a beach in the Netherlands. A 2011 and 2014 exhibition held at Liverpool and London respectively, *The Republic of the Moon*, offered a range of artistic responses including Katie Paterson's "Earth-Moon-Earth" in which a programmable piano played a version of Beethoven's "Moonlight Sonata" from a digital signal bounced off the Moon and Agnes Meyer Brandis's *Moon Goose Analogue* where she supposedly trains geese to transport a spacecraft in homage to the seventeenth century's Francis Godwin's *The Man in the Moone* that had imagined such a means of travel.



As writers, artists and filmmakers still imagine space travel and private corporations venture into space, outer space will continue to have an impact on life on Earth and its political significance will remain. The space probes exploring the outer reaches of the solar system and the telescopes locating increasing numbers of theoretically habitable planets continue to impact upon our notions of the relations of humanity to the universe and the degree to which it can be claimed as property for groups or the species as a whole. This is a timely, hugely stimulating volume, cutting across disciplines, which I suspect will be the start of many more focused investigations.