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# Imperialism, Technology and Tropicality in Arthur C. Clarke's Geopolitics of Outer Space

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## **Abstract**

This paper addresses geopolitical cultures of outer space by examining the selected life and works of Arthur C. Clarke (1918-2008), one of the leading space technology advocates of the twentieth century, in the specific context of his adopted home of Ceylon / Sri Lanka. Within the framework of studies that have connected critical geopolitics and science, further discussions concerning the interface between imperialism, technology and tropicality help demonstrate the relevance of Clarke's geographical imagination to understanding geopolitical cultures of outer space. Three aspects of Clarke's life and works are examined: First, his underwater exploration activities in Ceylon from the late 1950s to the early 1970s; second, his 1979 Hugo and Nebula Award-winning novel *The Fountains of Paradise*; and finally, his promotion of Sri Lanka as a future hub of outer space technologies in the early 1980s. The paper suggests that geopolitical readings of outer space can be understood through investigating diverse aspects of place, landscape and identity.

## **Introduction**

Emerging research on the geographies of outer space, informed by cross-disciplinary work, has emphasised the significance of place, culture and politics alongside technical knowledge in the formulation of outer space discourse, interpreting diverse source materials including satellite imagery, science fiction novels and policy documents (MacDonald 2007, Dunnett et al. 2017, Klinger and Bednar 2019). At the same time, research in critical geopolitics has

offered a variety of accounts on the ways in which science has affected geopolitical outlooks in the twentieth century, for example, as a mask for Cold War antagonism, as a means of extending regimes of territoriality, or through a thwarted desire for transcendence from politics entirely (Krige 2006, Dodds 2010, MacDonald 2015). By focusing on the case study of Arthur C. Clarke in Ceylon / Sri Lanka,<sup>1</sup> this paper aims to identify some of the ways in which the science of outer space has been conceptualised in geopolitical discourse, to query how particular spaces such as tropical islands have inflected such conceptualisations, and to consider how the experience of postcolonial space has influenced scientific identities.

Arthur C. Clarke (1917-2008) is primarily recognised as a science fiction writer and science populariser, contributing on a range of topics from communications technology to space exploration and extra-terrestrial life. Although his perspectives were in many ways unique, Clarke can be seen as part of a distinct group of twentieth century thinkers including Buckminster Fuller (1895-1983), Gerard K. O'Neill (1927-1992) and Carl Sagan (1934-1996), who sought to anticipate the benefits of a technologically-advanced future, and act as influencers in society. Like many of these figures, Clarke's professional background was in practical science and technology, working on radar technologies for the Royal Air Force during the Second World War. Following a period in London after the war, during which he became interested in the serious possibilities of spaceflight, Clarke started living in Ceylon in 1956, ostensibly to pursue his interest in underwater exploration (McAleer 1992). Clarke's time there was to prove the most productive of his career, and he continued to live in Ceylon / Sri Lanka, involving himself in various aspects of civic life, until his death in 2008, aged ninety. Attuned to Clarke's life story and his most acclaimed written works, researchers have devoted some critical attention to his futuristic visions of space exploration (Poole 2012), his life-long interest in the seas (Rozwadowski 2012), and other aspects of his science fictional *oeuvre*

(Sawyer 2009, Bjørnvig 2012, Dunnett 2012). This paper focuses on some of the less-studied aspects of Clarke's life and work, in maintaining that the place of Ceylon / Sri Lanka became central to his understandings of space exploration, science and society.

In what follows, a mixed textual methodology is employed, incorporating analysis of a selection of Clarke's published science fiction and non-fiction texts, correspondence and personal notes from the 'Arthur C. Clarke Collection of Sri Lanka', held by the Smithsonian Institution, as well as published biographical accounts. Through this approach, the significance of science fiction is emphasised as a methodological tool for scholars interested in the interrelations between science, technology and geopolitics. In this way, rather than being seen as a cold source of 'hard' scientific extrapolation, Clarke's science fiction writing can be understood as intimately connected to various conceptions of space and place, including Ceylon / Sri Lanka, the Tropics, and the geostationary orbit above the earth's equator.

### ***Imperialism, Technology and Tropicality in Cultures of Outer Space***

Approaching concepts of outer space, geopolitics and science through Arthur C. Clarke first requires a broader discussion of relevant debates in postcolonial studies, science and technology studies, and historical geography. Synthesising some of these themes, the anthropologist Peter Redfield's study of the European space programme aimed to 'recombine elements of imaginative discourse with technical practise, tracing the trajectory of adventure as it leaves the planet, and highlighting the historical geography of power that runs through the Final Frontier' (Redfield 2002, 792). This empirically rich work provides a sound theoretical basis for exploring the cultural and political roots of spaceflight in the late modern era, while taking seriously imaginative representations of outer space. Existing studies of outer space in

this period have mostly examined, by contrast, the social and cultural ‘impacts’ of the better-known American and Soviet / Russian space programmes, in the geopolitical context of the Cold War (Dick and Launius 2007, Parker and Bell 2009). Redfield connects outer space and empire in two ways: Firstly, through analysing the imaginative geographies of exploration, conquest and adventure that have long characterised spaceflight narratives, and second, in examining the colonial status of the European Space Agency launch site in French Guiana in South America, home of the *Ariane* satellite launcher rocket since 1979. Other researchers have considered rocket sites in colonial locations such as Hammaguir in Algeria, launch site of the French satellite *Astérix* in 1965, and Woomera in South Australia, where the British Blue Streak rocket was tested in the 1960s (Gorman 2009, Instone 2010). The development of these sites as centres of imperial techno-science notably came at a time when European empires were disintegrating in spaces across the world, and thereby make effective case studies for examining late-modern connections to the empire of outer space.

An integral argument in critical studies of spaceflight is that space exploration represents a modernist dream that acts as a continuation of empire, implicating discourses of technology-as-progress. In this respect, historian Michael Adas has explained how, in the industrial era, science and technology were seen as ‘measures of human worth’, justifying European colonialism while also acting as the means through which imperial power was exercised (Adas 1989, 3). This pattern has been noted in accounts of technological determinism that frequently characterise narratives of space exploration. For example, the American space programme of the 1960s, specifically Project Apollo, is said to have exemplified and helped proliferate ‘technocratic’ modes of governance in the United States, typified by ‘a utopian attitude towards technology’ as a solution to all the world’s problems (Sage 2014, 57). More recently, ‘NewSpace’ magnates such as Elon Musk and Jeff Bezos have enrolled the language

of utopian technological futurism to promote ambitious space ventures such as the colonisation of Mars (SpaceX 2018). Such framings have been described as ‘depressingly ubiquitous’ in portrayals of so-called ‘frontier technologies’, adding to debates on the extent to which technology can be seen as culturally and politically produced, rather than naturalised as a harbinger of progress and modernity (Bingham 2005, 202; Jasanoff and Kim 2015). Critics have typically rejected technological determinism as an effective explanation of societal development, drawing on postmodernist accounts that define a role for the social construction of science and technology (Shapin and Schaffer 1985). Indeed, researchers have demonstrated how spaceflight technology did not emerge naturally at any given place or time, with political and cultural factors influencing substantial geographical and historical disparities in its development (Winter 1983). Further studies have effectively outlined how various popular cultures, including science fiction novels, astronomical art and the public spectacle of rocketry, worked as integral parts of the wider discourse of twentieth-century outer space technology (Redfield 2002, Sage 2008, MacDonald 2008).

Adding further nuance to debates on the relationship between technology and culture, Redfield explains how a combination of political, cultural and geophysical factors led to the selection of French Guiana as the home of the European Space Agency’s rocket launch facility in the early 1970s (Redfield 2000). Notwithstanding its history as part of the French imperial sphere of influence, French Guiana’s significance for European spaceflight operations lies with its geographical location near to the equator, and its eastward-facing coastline. This is because, firstly, equatorial sites benefit from the maximum ‘latitudinal boost’ resulting from the centrifugal forces of the earth’s rotation, and, second, the Atlantic Ocean is made available as a vast testing range, where spent rockets can safely crash back down into the open seas. Furthermore, the equatorial region becomes prized in the geography of spaceport

site selection because of its alignment with the prime 'real estate' of the geosynchronous orbit, located along a band in space 36,000 km above the earth's equator (Collis 2009). As Clarke illustrated in 1945, satellites placed in this orbit attain specific value as they remain fixed above any given point on the earth's equatorial belt, and can thereby be used for reliable global communications services (Clarke 1945). This new perspective was officially recognised in the 1976 Bogotá Declaration, which stated that '[t]he geostationary orbit is a scarce natural resource', over which equatorial states should have national sovereignty (Bogotá Declaration 1976). While signed by a consortium of equatorial states, the declaration remains unratified by the United Nations, highlighting the unequal power geometries involved in outer space geopolitics. Such concerns demonstrate how the study of space launch sites, both actual and anticipated, presents opportunities for researchers interested in the intersections between science and technology studies, critical geopolitics and cultural-historical geographies of the tropical region.

Indeed, while equatorial sites have their own unique advantages for the space industry, postcolonial scholars have demonstrated how tropical spaces have been assigned particular characteristics, drawing on a wider body of work that has addressed the complicity of western culture in discourses of empire (Pratt 1992, Said 1993). Such characteristics relate to opportunities for adventure, the presence of bountiful natural resources, and the danger and excitement of exotic allure. For Richard Phillips, 'European empires and European masculinities were imagined in geographies of adventure' in children's novels such as Daniel Defoe's *Robinson Crusoe* (1719), famously set on a fictitious tropical island (Phillips 1997). Twentieth century imaginative spaces of adventure have also been interpreted in relation to geographies of empire, whether in relation to historical figures like T E Lawrence, or fictional archetypes such as James Bond or Tintin (Dawson 1994, Dodds 2003, Dunnett 2009).

According to Graham Dawson, ‘the modern adventure tale is imbued with the imaginative resonance of colonial power relations underpinned by science and technology’, while at the same time, adventure becomes ‘balanced with anxiety and desire’ in the colonial context (Dawson 1994, 59, 53). The adventure genre and its associated tropes remain closely connected to narratives of space exploration, as seen in examples such as the 1964 feature film *Robinson Crusoe on Mars*, or Andy Weir’s 2014 novel *The Martian* and subsequent film release, whose extra-terrestrial spaces are represented through a combination of masculine endeavour and exotic encounter (Crossley 2010).

Beyond generic conceptions of adventure, research in cultural and historical geography has drawn on the concept of ‘tropicality’ as a way of understanding certain representations and experiences of tropical spaces, that also relate to wider cosmographic frameworks (Arnold 2000). As Denis Cosgrove reminds us, ‘the originating tropics [of Cancer and Capricorn] are celestial rather than terrestrial markers within a geocentric cosmos’ (Cosgrove 2005, 199). They comprise two great circles that delineate the equatorial band of the earth where the sun passes through the zenith directly above at least once a year, as defined by the earth’s axial tilt. It is the interplay between this cosmographic definition of the tropics, and ethnographic and biological understandings of the tropics, which has defined notions of tropicality in the western world. Such framings can be traced to medieval notions of an equatorial ‘torrid zone’ as part of a Ptolemaic theory of world climatic regions (Cormack 1994). While being considered a barrier to human (European) civilization, the equatorial zone has also been seen as a realm where ‘the superabundance of nature was believed to overwhelm human endeavour’ (Leys Stepan 2001, 18). Yet as voyages of discovery opened up previously unencountered spaces to European experience and representation, imaginative geographies of the tropics persisted. Some, for example, have associated ‘paradisal geographies’ with



'New World islands ... as the location of peoples as yet unfallen and as sites of natural richness' (Withers 1999, 84). Others have recognised the ways in which 'tropicality has frequently served as a foil to temperate nature', or as a 'site for European fantasies of self-realisation' (Driver and Martins 2005, 3, 4). Tropical spaces have also been associated with forms of modernity, whether in relation to early modern voyages of discovery, or in 'modernist abstraction[s] of nature' in twentieth century landscape designs (Leys Stepan 2001, 210). This paper adapts cultural and cosmographical readings of tropicality in the context of late-imperial techno-science to consider a concept of 'cosmological tropicality', a sense in which tropical spaces are more intimately aligned with the heavenly movements of the cosmos, and therefore could hold the key to the future of space exploration.

Geographers Felix Driver and Luciana Martins have argued that understandings of tropicality have been largely framed through 'projections' of imagined geographies, and that researchers should attempt to understand such representations as they have been produced, negotiated or contested (Driver and Martins 2005, 5). Touching on similar themes, Gerry Kearns' research on the late-nineteenth-century travels of Mary Kingsley and Halford Mackinder in colonial Africa has investigated the ways in which personal encounters and travel experiences helped shape the identities of British imperial subjects, informing their broader geopolitical outlooks (Kearns 1997). As such, while Clarke's projections of Ceylon / Sri Lanka are inherently representational, they also relate closely to the tangible, experienced geographies of his life in Ceylon / Sri Lanka, and present the unusual perspective of a western individual who lived on this island for most of his adult life. In approaching Clarke by thinking through his experiences as well as the representational texts he produced, it becomes possible to engage 'socio-technical' understandings of the nuanced relationships between technology, society, representation, discourse and experience. Here, drawing from Bruno Latour's conception of

technology as a social and material construction, Nick Bingham has called for a renewed understanding of socio-technical assemblages ‘between diverse people, non-humans and places’ (Bingham 2005, 201). As such, this paper attempts to understand the extent to which Clarke’s projections of outer space technology were shaped by negotiation with, and experience of, the specific geographies of twentieth century Ceylon / Sri Lanka.

In his aforementioned essay on tropicality, Cosgrove warns that, ‘in rehearsing – even with critical intent – the ways in which Europeans so closely and outrageously have bound tropical ethnography into a mutually deterministic embrace with the physical environments of the tropics, we risk perpetuating the silencing of voices speaking from within tropical space’ (Cosgrove 2005, 198). The same could be said of any account that purports to interpret the visions of one Englishman’s fantasy of space exploration in a tropical ‘paradise’. Yet there remains value in ascertaining the ways in which outer space has been connected to earthly imaginative geographies, and how experiences of particular places have informed geopolitical cultures of outer space. While acknowledging the limitations of such an approach, this paper seeks to investigate the extent to which Clarke’s socio-technical constructions of Ceylon / Sri Lanka were formulated with respect to local culture and politics. Tariq Jazeel has, for example, contested the notion of ‘Sri Lankan island-ness’, explaining how the perceived unity of the Sri Lankan state today can be traced to British imperial rule from 1815 to 1948, before which the island had been made up of a number of separate kingdoms since the fifteenth century (Jazeel 2009, Duncan 1990). The replacement of this multi-cultural space with a unitary British imperial island colony was, according to one researcher, reflected in a sense of modernity in the everyday material cultures of local people, while the damaging legacy of the unification can be clearly seen in the destructive civil war that plagued the country from 1983 to 2009 (Wickramasinghe 2009). Such issues are pertinent to understanding the complex interactions

that Clarke had with the places and landscapes of Ceylon / Sri Lanka, particularly the understandings of modernity and progress that were central to Clarke's world-view.

Discourses of space exploration have, in the ways outlined here, been connected to a variety of familiar geographical imaginations concerning empire, adventure and the anticipation of a technologically-driven future. Yet studying Arthur C. Clarke adds the further perspective of experiencing and representing tropical spaces as part of a critical geopolitics of outer space, an exercise that has only received partial critical attention through Redfield's work on French Guiana. By turning to three phases in Clarke's life and works we can see how cultures of empire, technological determinism and 'cosmological tropicality' are played out in the immediate context of late-twentieth-century Ceylon / Sri Lanka.

### ***Tropicality and Underwater Adventure in Ceylon***

By the mid-1950s, Clarke had started to establish his reputation as a scientific writer, having produced several influential works on spaceflight, as well as some notable science fiction novels. Clarke's early career success helped him to become internationally mobile, in touring the United States lecture circuit, and also in pursuing his newly-acquired passion for underwater diving, first exploring the Great Barrier Reef in Australia, and then in Ceylon (McAleer 1992). While his interest in underwater diving benefited from the emergence of international tourism as an increasingly significant post-war industry, it was to a large extent enabled by new technologies for underwater breathing, such as the Aqua-Lung, co-invented by the French film-maker and oceanographer Jacques Cousteau in 1943. Moreover, Clarke later revealed, 'I took up diving in the late '40s [...] entirely because of my interest in its mirror image, space exploration', and the associated sensation of weightlessness (Clarke 1989, 114). In this way, Clarke is said to have been enacting a dream of escaping gravity, which was

inherently connected to the anticipated experience of spaceflight (Bjørnvig 2012). Indeed, contemporary research into the embodied practice of underwater diving has explained how ‘diver-technology-seascape interactions’ involve ‘the reconfiguration of the sensorium’, including an adjusted sense of bodily experience underwater that has been likened to the sensation of slow-motion flying or spaceflight (Merchant 2011, 216). As ‘sea and space were connected in Clarke’s mind’, interpreting his experience of underwater diving can inform understandings of Clarke’s approach to space exploration and science fiction, which were all simultaneously-developing aspects of his work in this period (Rozwadowski 2012, 590).

Clarke’s conception of Ceylon at this time can be understood through the imaginative frameworks of tropicality, exploration and adventure, themes that were cultivated in the immersive experiences of diving. From 1956 onwards, Clarke regularly went on diving expeditions around the island with film-maker Mike Wilson and underwater naturalist Rodney Jonklaas, establishing the tourism company ‘Underwater Safaris’ in 1959, and publishing regularly on underwater themes. One dive at the Great Basses Reef off the south-east coast of Ceylon in 1961 involved the discovery of sunken treasure, and formed the basis of a number of non-fiction publications. The first of these was *The Treasure of the Great Reef* (1964), a documentary-style account of the expedition and its findings, illustrated with numerous underwater photographs taken by Mike Wilson. This was later adapted into a juvenile book, *Indian Ocean Treasure*, in which Clarke describes the episode as ‘the greatest adventure of [his] life’, (Clarke 1974 [1972], 143). Clarke’s diving experiences also informed a series of fictional works, including novels *The Deep Range* (1957) and *Dolphin Island* (1963), and his publishing choices at this time demonstrate that, although Clarke could adapt his writing style to different audiences, he saw the categories of fiction and non-fiction, juvenile and adult

fiction, simply as different facets to his writing portfolio, not as great divides between opposing genres.

During the 1961 expedition, Clarke and company used the Great Basses Lighthouse, situated on the reef, as a base of operations, living among the lighthouse operators. The lighthouse was originally installed in the nineteenth century by the British to protect the trade route along the East Coast of India. 'Around the lighthouse', Clarke writes, 'was a fantastic submarine fairyland of caves, grottoes [and] coral-encrusted valleys', and he goes on to explain how Wilson was planning to make a fantasy film about a 'boy who dreams that he's exploring the sea, and wakes up to find that his dream has come true' (Clarke 1974 [1972], 11, 13). These descriptions are suggestive of the ways in which divers in tropical waters have expressed a 'desire [...] to become enchanted by the spectacle of technicolour reefs, sunken ships and otherworldly creatures' (Merchant 2011, 215). Clarke and his companions aimed to photograph aquatic life in and around the reef, picturing sharks, rays and other fish, while some of the giant grouper fish were given the names 'Ali Baba, Sinbad and Aladdin' (Clarke 1974 [1972], 16). In naming the fish after characters from the popular folk tales *Arabian Nights*, Clarke and his associates conflate the South Asian natural environment with Arabic narrative culture, in an amalgamation that recalls Orientalist attitudes towards the generic eastern 'Other' (Said 1993). Such accounts are emblematic of Clarke's early experience of life in Ceylon as a relatively privileged western individual, characterised in terms of fantasy, leisure and dreaming, and through experiences that speak of a sense of liberation and otherworldliness that Clarke found in Ceylon at this time.

The main narrative of both *Indian Ocean Treasure* and *The Treasure of the Great Reef* revolves around the actual discovery of sunken treasure (Throckmorton 1964). Accounts of bullion

salvage and maritime wreckage have been noted for their duplication in narrative forms, helping to reproduce themes of imperial control of global trade networks, and of romanticised encounter in tropical locales (Driver and Martins 2006). Clarke's combination of colonial-style adventure and exotic fantasy is also reminiscent of earlier juvenile novels such as *Treasure Island* and *Robinson Crusoe*. Such stories were often conceptualised on tropical islands, and have been critically interpreted for their re-production of imperialist sensibilities, influencing geographical imaginations well into the twentieth century (Phillips 1997, Kneale 2017). Yet Clarke was not a straightforward imperialist, and further nuances in his global outlook can be ascertained when examining this episode. He mentions the treasure, 'a ton of silver (Mogul rupees)', in correspondence with the famous scientist J. B. S. Haldane, who had been living in India since 1961, while he also triumphantly sent a sample of the silver coins to the Smithsonian Institution in the United States, for identification and cataloguing (ACC-SI [a]). These connections speak to Clarke's sense of internationalism, which had both colonial connotations as well as a sense of new-world promise and independence. Again drawing on such tensions, Clarke stated how he and his diving partners wanted to act as 'scientists, not looters', yet, concerned about the treasure being stolen or the wreck site discovered by other divers, the horde of silver coins remained hidden for an unspecified amount of time, before being donated to a museum in Colombo, minus the Smithsonian sample (Clarke 1974 [1972], 121).

Clarke's adventures at the Great Basses Reef formed just one part of his diving experiences around Ceylon. One of his earlier Ceylon books, *The Reefs of Taprobane*, presents a broader and more contextualised account, including encounters at several ship-wrecks including 'the *Elysia*, the *Conch*, the *Earl of Shaftesbury*, the *Hardingham* and the *Aenos*', while also describing the diverse sea-life that is captured, hunted and photographed around the wreck

sites (Clarke 1957, 120). Although diving is the main focus of the book, Clarke's references to the history and people of Ceylon are not infrequent, and demonstrate a nuanced attitude towards issues of modernity, colonialism, development and conservation. So, while Clarke is critical of former imperial conquests, and romantically invokes the achievements of the pre-colonial kingdoms of Ceylon, he also points towards the perceived benefits of western modernity:

'I only hope that the new spirit of nationalism that is now abroad, with its insistence of Sinhalese as the state language, will not undo the good work of the past and so cut Ceylon off from the culture of the West' (Clarke 1957, 60)

'Will the new rulers of Ceylon, I wondered, ever match the achievements of their ancestors, and use the techniques of modern science to reconquer the virtually uninhabited three-quarters of their land?' (Clarke 1957, 192)

Clarke's insistence on the transformative potential of western science and technology is implicit here, and foreshadows his later work promoting technocratic futures for Sri Lanka. While not specifically mentioning spaceflight, Clarke anticipates his science fiction novel *The Fountains of Paradise* through references to Ceylon's wider cosmographic context. The opening chapter, for example, is entitled 'Capricorn to Cancer', outlining his journey from the Australian Great Barrier Reef to Ceylonese waters (Clarke 1957, 13). In a later passage, Clarke describes a night-time walk:

'I was only six degrees from the Equator, and the Pole Star was barely visible in the northern haze. Hanging in the sky before me now were the constellations of the antipodes [...] The richest star-fields of the Milky Way, with their glowing outriders

the Clouds of Magellan, arched across the heavens in a spectacle unmatched in the misty skies of England' (Clarke 1957, 62).

Here, Clarke describes a cosmographic sense of place for Ceylon, aware as he was of its equatorial proximity, and the specific features of a tropical night sky, with star-fields 'hanging' tantalisingly before him, in contrast to the remembered gloom of his English homeland. Indeed, such accounts help engender a sense of *cosmological* tropicality, understanding tropical space not just in terms of the familiar tropes of exoticism and natural abundance, but also in the mathematical sense of the 'great circles' of the tropics, defined by the movements of heavenly spheres. This was a vision that would recur more strongly in Clarke's later science fictional and technological imaginations.

### ***Taprobane and the Space Elevator***

While Clarke's activities as an underwater explorer are largely unstudied, his work in conceptualising the future application of outer space technologies has received only slightly more scholarly attention. One important strand of Clarke's work was in theorising and promoting satellite communications technology as a transformative medium for development. This began in 1945 with his paper 'Extra-terrestrial relays', which has been credited as the first documented explanation of geostationary satellites. In his essay, Clarke suggested that three '[satellite] stations would be arranged approximately equidistantly around the earth [at] the following longitudes: 30E – Africa and Europe. 150E – China and Oceania. 90W – The Americas' (Clarke 1945, 306). This vision of inter-continental connectivity was ordered cosmographically through meridian lines and orbital mechanics, and Clarke thought this would help to break down the borders and rivalries of nation-states, ushering in a new era of international co-operation and global cultural exchange (Clarke 1964).



However, these ideas constituted more than a simple internationalist utopia, and Clarke reconciled his futuristic visions of spaceflight with the specificities of place in interesting ways, particularly in his understanding of how Ceylon / Sri Lanka could act as an important part of future extra-global networks. Recent work in Island Studies has pointed out how islands in speculative fiction have been seen as 'laboratories of modernity' at the margins of empire, and in his 1979 novel *The Fountains of Paradise*, Clarke imaginatively frames Sri Lanka as the setting for the establishment of the world's first 'space elevator' (Kneale 2017, 207). In some ways a logical extension of the geostationary satellite concept, this theoretical structure involves a tether that has been lowered from geosynchronous orbit to a point on the earth's equator, along which an elevator would ascend (Pugno 2013). Although by no means imminent, the space elevator concept remains an active focus of space research, with the International Space Elevator Consortium being established in 2008 to promote this 'revolutionary and efficient way to space for all humanity' (ISEC 2017). The key point is that, as with the geostationary satellite, equatorial space becomes the mirror image of the orbital space such technologies would occupy, thereby extending new significance to tropical locales such as Sri Lanka.

The overriding theme of *The Fountains of Paradise*, suggests one reviewer, concerns an 'edifice complex', a masculine desire to build high and impressive constructions (Hume 1983). Others have focused on Clarke's conflation of spiritual and technological themes, which is typical of his later science fiction (Reid 1997, Sawyer 2009). By focusing on the specific spaces of the novel, including cosmographical and topographical features, new critical insights into this text can be gained, that illustrate Clarke's shifting conceptions of tropicality, space exploration and technological futurism. Clarke explains the novel's geographical setting in an afterword as 'about ninety percent congruent with the island of Ceylon', with several

important changes having been made (Clarke 1980 [1979], 229). In the first instance, Clarke names the island of his novel 'Taprobane', a name that can be traced to Claudius Ptolemy's *Geography* of the second century, and subsequent colonial mappings (Jazeel 2009). In resurrecting this westernised signifier, the conflation of idealised technological futures for Ceylon with narratives of its European colonial past is naturalised. As well as this change in name, Clarke states that he has 'moved the island eight hundred kilometres south, so that it straddles the equator', thereby being ideally situated for the anchor point of the space elevator (Clarke 1980 [1979], 229). Here, cosmographical inconsistencies are ironed out, in the re-staging of Sri Lanka's geography for the benefit of the narrative. The final alteration, states Clarke, was to double the height of the peak of Sri Pada from 2,240m to over 4,000m, a decision presumably made to add a further sense of grandeur to the narrative. This holy mountain of central Sri Lanka, also known as 'Adam's Peak', serves as the base of the space elevator in *The Fountains of Paradise*.

Adding further context, Clarke reveals that the title of the novel itself was in reference to Friar Marignolli, a medieval traveller from Florence, who wrote, 'From Paradise to Taprobane is forty leagues; there may be heard the fountains of Paradise' (in Clarke 1980 [1979], 9). As Withers reminds us, the notion of Paradise as 'somewhere in the east' was 'part of wider Orientalist interests' from the medieval period onwards, and forms a contextual referent that Clarke was clearly influenced by (Withers 1999, 72). Withers further points out that the association of Paradise specifically with Sri Pada / Adam's Peak on the island of Ceylon can be traced through European writers such as the Swede Kioping in the seventeenth century, and later Carl Linnaeus, part of a wider narrative of mountains as sacred or holy spaces (Withers 1999, Della Dora 2016). As such, Clarke emphasises the significance of the mountain both cosmographically, as an elevated point on the earth's equator, and also spiritually, through

associations with Paradise and the idea of being closer to 'the heavens'. This type of conceptual genealogy, and the imaginative environmental engineering through which the novel's setting is shaped, further suggests that Clarke viewed Ceylon / Sri Lanka as a place that could be moulded through western ideas, as part of a transition from arcadian past to utopian future.

The mountain of Sri Pada is pivotal to the narrative of *The Fountains of Paradise* (where it is named 'Sri Kanda'). In Clarke's novel, the base of the space elevator, at the top of the mountain, is secured only by the negotiated removal of a Buddhist temple which sits at its peak. This reflects the actual shrine that is situated at the top of Sri Pada, devoted to what is believed to be a stone imprint of the foot of Buddha (or, in alternate accounts, the biblical figure of Adam). The novel's protagonist, Morgan, considers how, 'in the name of progress, he was attempting to destroy something ancient and noble; and something that he would never fully understand' (Clarke 1980 [1979], 73). In explaining his reasoning to one of the monks of the temple, Morgan maintains that 'the choice is not ours, but Nature's. The Earth terminus [of the space elevator] has to be on the equator, and at the greatest possible altitude' (Clarke 1980 [1979], 75). In these extracts, Clarke suggests that ignorance of religious cultures is no barrier to scientific and technological progress, and that technologies such as the space elevator are naturally ordained through cosmographic certainties, regardless of local cultural considerations.

Clarke ascended Sri Pada by foot in 1969, accompanied by the writer Jeremy Bernstein, who was researching a profile piece on Clarke for *The New Yorker*. Clarke mentions this in the afterword to *The Fountains of Paradise*, while Bernstein offers his own account of the ascent:

‘[T]he sight of Adam’s Peak at night is one of the most extraordinary I have ever encountered. The trail that hundreds of pilgrims take [to] the summit is a four-mile illuminated flight of steps reaching three thousand feet into the air. At night, it gives the impression of some sort of fairyland staircase that has disappeared into the sky.’  
(Bernstein 1969, n.p.)

The mountain is also known for an optical phenomenon that occurs at dawn, whereby the sun casts the peak in shadow across the landscape below. This spectacle appealed to Clarke’s sense of cosmographical order, with the experience described in *The Fountains of Paradise*:

‘One moment there was nothing. Then, suddenly, it was *there*, stretching half the width of Taprobane – a perfectly symmetrical sharp-edged triangle of deepest blue [...] The apex of that misty triangle must be racing towards him at enormous speed, as the sun rose vertically behind the mountain’. (Clarke 1980 [1979], 68-69)

In the novel’s final projected future, Clarke describes a great artificial wheel encircling the earth, with several space elevators descending to points along the equator as its spokes, as humankind is driven into space by an advancing glacial epoch on earth. This period in Clarke’s work clearly demonstrates the development of a sense of cosmological tropicality that was hinted at in earlier works, as equatorial spaces become the key to humanity’s imagined future in outer space. Furthermore, Clarke’s representations of ‘Taprobane’, alongside his experiences when writing *The Fountains of Paradise*, reveal a tension in his understanding of Sri Lanka as a postcolonial space, both romanticising its pre-colonial past and cosmological sense of place, and also characterising Sri Lanka’s future in terms of western technological determinism and associated cultures of empire.

### ***Sri Lanka as Global Information Centre***

Clarke's anticipation of the future of humankind in outer space was given further impetus by the iconic achievements of Sputnik and Apollo, and was driven by the Cold War rivalries of the 1950s and 1960s. He spent much of the 1960s working with director Stanley Kubrick on the screenplay for the landmark science fiction film *2001: A Space Odyssey*, which would expose Clarke's ideas to a global cinematic audience for the first time. After the release of this film in 1968, and his subsequent role as a CBS News commentator on the Apollo 11 Moon Landing in 1969 alongside anchor Walter Cronkite, Clarke's association with spaceflight in the popular imagination had never been greater. According to Bernstein, 'the actual landing on the moon was, in many ways, the fulfilment of a life's dreaming and prophesying' for Clarke (Bernstein 1969, n.p.). By the 1980s the pace of change in outer space technology had slowed, even though Clarke was still predicting rapid advancements in space exploration and global communications.

Perhaps as if to spur on outer space technologies to match earlier achievements, Clarke lent his name to a number of initiatives to promote spaceflight and communications industries in Sri Lanka. In a letter to Cronkite on August 2<sup>nd</sup> 1981, Clarke stated that 'there are moves to make Sri Lanka [an] information centre for the Third World', while in September that year he was invited as a Sri Lankan delegate to a UNESCO conference in Paris (ACC-SI [b]). Here Clarke made an address outlining his doctrine of space technologies for international development, which later appeared in *Analog Science Fiction / Science Fact*, the title that had published some of his first science fiction stories (Clarke 1989). He iterated that 'to many developing countries, satellites are *essential*' for communications, allowing them to leapfrog expensive investments in ground networks (Clarke 1982, 39). Such technological improvements, claimed Clarke, would herald the onset of an educational and communications revolution in developing countries such as Sri Lanka. Furthermore, Clarke warned with an air of desperation

that 'unless major investments are made in space, millions are going to die, or eke out brief and miserable lives [...] in the Third World' (Clarke 1982, 39). Ending on a more optimistic note, and echoing his earlier work on the importance of satellite networks, Clarke claimed that a new open, global society enabled by space technologies would render national boundaries increasingly obsolete, and in a statement of technological determinism that was typical of Clarke, he stated that 'in the struggle for freedom of information, technology, not politics, will be the ultimate decider' (Clarke 1982, 43-44). Here, in ostensibly promoting outer space technologies for the benefit of the developing world, Clarke reveals his reciprocal desire to use 'Third World development' as a moral hook to encourage investment in space technologies.

Clarke anticipated the eventual 'dispersion and decentralisation' of the global population away from urban centres, with space communications technologies advanced enough to enable a fully-functioning society without the need for direct physical proximity between colleagues, friends or even family. He conceptualised this as a logical extension of existing networks of telegraph cables that were first laid down by ocean-going steamships in the mid nineteenth century (Clarke 1992). Through this association, we can see how Clarke's configuration of the twentieth century was in many ways tethered to a nineteenth century understanding of the world's geographies. Perhaps naively, Clarke held that, whereas in the imperial age, technologies of communication spread across the world's oceans, converging on the metropole, the space age would witness the emergence of satellite technologies as part of a long-term process of unifying humankind in a more equitable way. In anticipating a form of global cultural unity as one of the benefits of such technologies, Clarke tapped in to the late-twentieth-century discourse of the Global Village, popularised by media theorist Marshall McLuhan, whereby the communities of the world would be connected through

modern communications technologies, forming a basis for both economic and cultural development (McLuhan 1989). However, the basis for Clarke's imagined future was arguably grounded in the supremacy of western ideologies that connected technological determinism with empire (Adas 1989).

Clarke's ambition of a global technological society was not entirely restricted to rhetoric, and when he was awarded the 1982 Marconi Prize for his conceptualisation of the communications satellite, he invested \$25,000 of the cash prize into the establishment of the Arthur C. Clarke Centre for Modern Technologies, which opened at Moratuwa University in 1984, just south of the capital Colombo. Jarringly, Colombo had only one year previously witnessed the 'Black July' anti-Tamil pogroms that signalled the start of the 26-year Sri Lankan civil war (BBC 2003). The Clarke Centre also received financial support from the Sri Lankan government, and the US-based Arthur C. Clarke Foundation, which was founded in 1983 to promote the 'wisdom and values' of Clarke's ideas around the world (A.C.C. Foundation 2018). The Centre was formally established by a Sri Lankan Act of Parliament in 1984, the aim being 'the acceleration of the process of introduction and development of modern technologies in the field of communications, computers, space technologies, energy and robotics', fields of science that were close to Clarke's core interests (Sri Lanka Consolidated Acts 1984). A White House press release of June 23<sup>rd</sup> 1983 reveals the close involvement of US authorities in promoting the Centre through the Clarke Foundation, stating that:

'The new US [Arthur C. Clarke] Foundation will seek to strengthen the educational, training and R&D programs at the new Clarke centre [in Sri Lanka] [...] to share the technology with developing countries, particularly in the Asia / Pacific region' (ACC-SI [c]).

This kind of rationale for technology transfer should be seen in the context of Cold War rivalries in the region, which the United States saw as part of its sphere of influence in the late twentieth century (Dalby 1990).

Although Clarke was in many ways an internationalist, he was not averse to leveraging nationalist discourse to promote investment in outer space technology. As early as 1958, when the US was still in a state of 'Sputnik shock' and having recently legislated for the creation of NASA, Clarke wrote to US Congressman John W. McCormack, then chair of the Select Committee on Astronautics and Space Exploration, and a staunch anti-communist:

'Living as I do in the Far East, I am constantly reminded of the struggle between the western world and the USSR for the uncommitted millions of Asia [...] when line-of-sight transmissions become possible from satellites directly overhead, the propaganda effect may be decisive [...] It may well determine whether Russian or English is the main language of the future'. (ACC-SI [d])

Here we can see that, although Clarke's later role in institutions such as the Arthur C. Clarke Centre and the Arthur C. Clarke Foundation was ostensibly to act as a kind of international figurehead, his activity in lobbying United States authorities behind the scenes for greater investment in outer space technologies in Sri Lanka was palpable. We can also see how the 'anti-conquest rhetoric of science' that had characterised some of Clarke's discourse on a superficial level, had become diminished in the context of Cold War rivalries for hearts and minds (Kearns 1997, 455).

Clarke's notions of technological development and space science in tropical regions were becoming more closely connected to his experiences of life in Sri Lanka. Yet Clarke was removed from the actualities of life for the vast majority of Sri Lankan people. His self-framing



as a kind of global citizen, or as one newspaper article put it, ‘the authentic citizen of the global village’ put him at odds with the local culture and politics of Sri Lanka, with the Clarke Centre becoming seen as ‘somewhat of an enigma to Sri Lankans’ (ACC-SI [e]). This disconnect was also seen in his reluctance to comment on the emerging hostilities in a Sri Lankan society that was on the verge of civil war. At the same time, his concept of a global society based on space communications technologies was in actuality hampered by geopolitical interests of the ‘new’ cold war of the 1980s, with space technologies largely being framed by nationalist geopolitical interests by the end of the twentieth century.

### ***Conclusion***

Researching the geopolitics of outer space means engaging with particular spaces, timeframes and scales that each offer individual meanings and perspectives on humanity’s relationship with the cosmos. The geographies of Ceylon / Sri Lanka become significant because of the effect they had on Clarke’s vision of space exploration, and the influential nature of Clarke’s *oeuvre* on dominant outer space cultures in the twentieth century. In considering the relationship between geopolitical narratives of outer space and the spaces of Clarke’s life and works in Ceylon / Sri Lanka, conceptions of tropicality and empire have been identified as central, interwoven through Clarke’s works in various ways, and pointing to a latent vision of western superiority in outer space technologies in the twentieth century. It is hoped that, in recognising the colonialist basis of much of today’s outer space cultures, alternative or resistive cultures shall form part of a more diverse engagement with outer space in the years to come.

Clarke’s geographical imagination of Ceylon / Sri Lanka was expressed in different ways over the course of his life there, including its early conceptualisation as a space of adventure and

excitement, and, later, its imaginative re-configuration as the epicentre of a transformative space technology enterprise. Through tracing Clarke's representations and experiences of Ceylon / Sri Lanka, including its surrounding waters and high places, some key trends in his conceptualisation of outer space have been elucidated. Firstly, there is a sense in which outer space and empire are closely connected imaginatively, with relics of the British imperial presence in Ceylon recurring in Clarke's writings and in the broader themes of his work. Second, it is made clear throughout Clarke's works that any future world order would be created through technology, with space exploration central to this vision, whether in terms of advanced satellite connectivity, or in the case of the space elevator. Such technologically-determinist futures in the geopolitics of outer space are intrinsically connected to cultures of empire by Clarke. Finally, a sense of cosmological tropicality has been identified in Clarke's works, which conceptualised tropical spaces such as Ceylon / Sri Lanka as central to the future of outer space technologies, drawing from earlier discourses of tropicality and their complicity in cultures of empire.

The positive vision of outer space from the tropics that Clarke outlined was nonetheless limited by political realities defined by Cold War interests, and by the increasing prominence of nationalist politics, and ultimately civil war, in Sri Lanka. Whereas he presented himself as a global citizen, Clarke involved himself in Cold War geopolitics, whether through active lobbying or in the projection of his international persona. As such, Clarke's world-view was restricted, in many ways, to the scales of the global, on the one hand, and the individual, on the other, lacking a full appreciation of anything in between. Indeed, there is a sense in which Clarke resolved the impossibility of engaging with his micro-scale surroundings in Ceylon / Sri Lanka, by seeking salvation in the macro-scale of the earth, humankind as a whole, and their place in the cosmos. It is hoped that further critical accounts of Clarke will be provoked by

this paper, considering aspects such as Clarke's relationship with the culture and politics of his home country, or his sense of spirituality and how this related to understandings of outer space.

<sup>1</sup> Ceylon was an independent dominion of the British Commonwealth from 1948 until 1972, when it became a republic and changed its name to Sri Lanka. When referring to pre-1972, the paper will use 'Ceylon', and post-1972, 'Sri Lanka'. In non-specific instances, 'Ceylon / Sri Lanka' will be used.

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